SYMPOSIUM AGENDA

Equity in Gifted Education and Neurodiversity

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

9:00 AM - Welcome and Introductions

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

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

11:30 - 12:30 - Lunch

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

PM Session A - Providing Gifted Services

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

PM Session B - Twice-exceptional Students

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

1:45 - 2:00 - Whole Group Debrief

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Neurodiversity and PASS Profiles for Twice Exceptional Gifted Students with Specific Learning Disability, Autism or ADHD

Jack A. Naglieri, Ph.D. jnaglieri@gmail.com
www.jacknaglieri.com www.naglierigiftedtests.com

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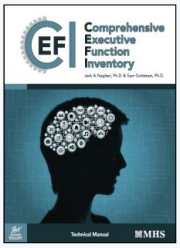
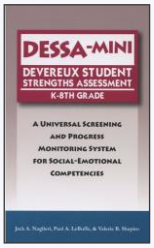
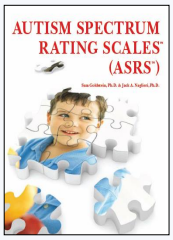
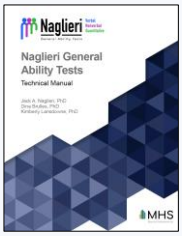
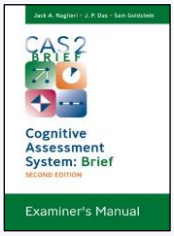
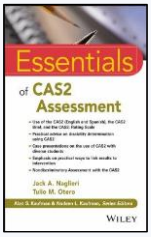
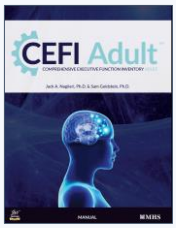
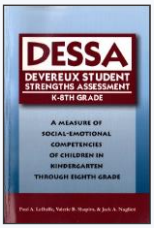
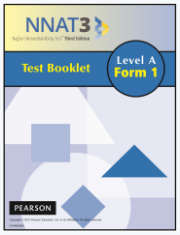
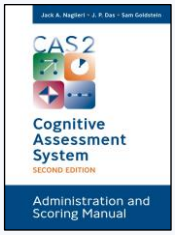
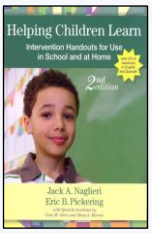
Disclosures

Executive Function	Social Emotional	Autism & Impairment	Gifted Identification	Neurocognitive Assessment	PASS Theory & Instruction
					
					

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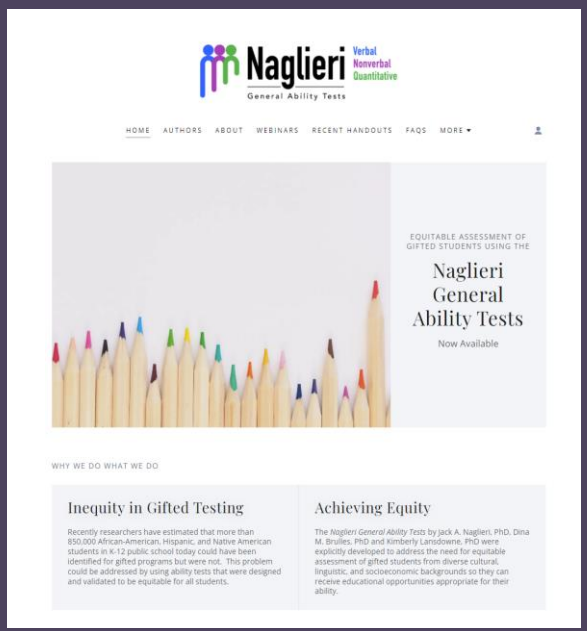
FOR MORE INFORMATION PLEASE GO TO MY WEB PAGES



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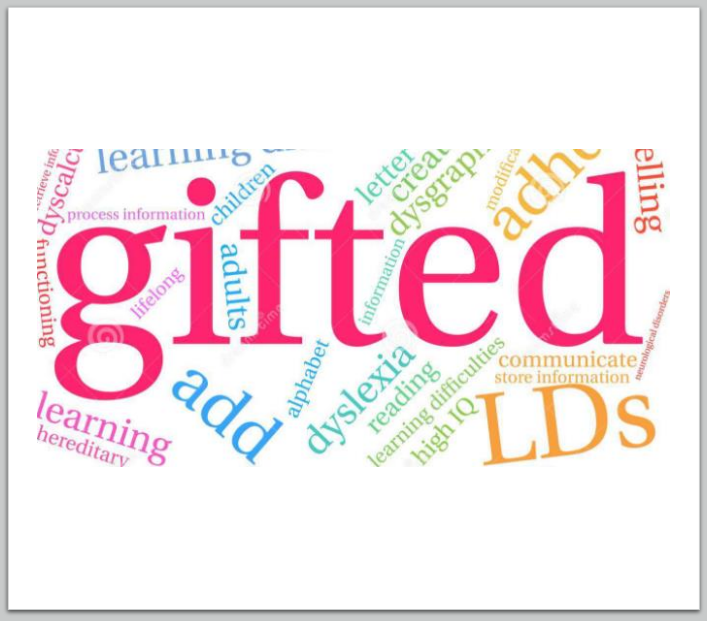
Twice exceptional gifted students with

- Specific Learning Disabilities (SLD)
- Attention Deficit Hyperactivity Disorder (ADHD)
- Autism Spectrum Disorders (ASD)
- Can be described as '*Neurodiverse*'
- Which means…



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Neurodiversity Described by Judy Singer

An idea that beautifully captures the plain fact that autism and a range of other conditions – ADHD, dyspraxia, dyslexia and more – are part of the endlessly different ways that human minds are wired.

6

Neurodiversity Defined

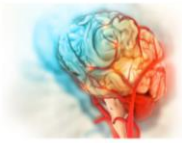
What would happen if the world viewed neurodevelopmental differences like ADHD, autism, and learning disabilities differently? If everyone noticed the *strengths* that can come from these differences first, instead of the challenges?

WebMD

What Is Neurodiversity?

By Keri Wiginton

Medically Reviewed by Smitha Bhandari, MD on April 07, 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).

'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 Classification: 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/10.1007/978-3-030-27275-3_8

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Neurodiversity and Twice Exceptional Gifted students

- Identification of gifted students with a disability (2E) demands consideration of guidelines in the
  - ***DSMV*** for Attention Deficit Disorder and Autism Spectrum disorder and
  - ***IDEA*** for Specific Learning Disabilities.
- These students are better understood when we describe neurodiversity according to a theory of BRAIN FUNCTION (e.g., A. R. Luria)
- We will examine PASS patterns of strengths and weaknesses for these three groups

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Specific Learning Disability Assessment

Why measure "basic psychological processes"

9

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.

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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

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)** (MR, 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, CD, 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'?

Journal Information
Journal TOC

PsycARTICLES: Journal Article

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

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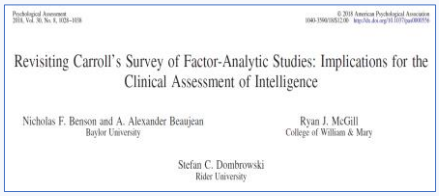
Canivez, Gary L.,Watkins, Marley W.,Dombrowski, Stefan C.
Canivez, G. L., Watkins, M. W., & Dombrowski, S. C. (2017). Structural validity of the Wechsler Intelligence Scale for Children–Fifth Edition: Confirmatory factor analyses with the 16 primary and secondary subtests. *Psychological Assessment,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

- …The 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 EFA results (Canivez, Watkins, & Dombrowski, 2015); Dombrowski, Canivez, Watkins, & Beaujean (2015); and Canivez, Dombrowski, & Watkins (2015).



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

Nicholas F. Benson and A. Alexander Beaujean
Baylor University

Ryan J. McGill
College of William & Mary

Stefan C. Dombrowski
Rider University

- **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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Research Supports 'g' but little More

Watkins, M. W., & Canivez, G. L. (2021). Assessing the psychometric utility of IQ scores: A tutorial using the Wechsler intelligence scale for children–fifth edition. School Psychology Review, 1-15.

Benson, N. F., Beaujean, A. A., McGill, R. J, & Dombrowski, S. C. (2018). Revisiting **Carroll's Survey of Factor-Analytic Studies**: Implications for the Clinical Assessment of Intelligence. *Psychological Assessment,* 30, 8, 1028–1038.

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

Canivez, G. L., & McGill, R. J. (2016). Factor structure of the **Differential Ability Scales–Second Edition**: Exploratory and hierarchical factor analyses with the core subtests. *Psychological Assessment, 28,* 1475-1488. http://dx.doi.org/10.1037/pas0000279

Canivez, G. L., & McGill, R. J. (2016). Factor structure of the **Differential Ability Scales-Second Edition**: Exploratory and hierarchical factor analyses with the core subtests. Psychological Assessment, 28, 1475–1488. https://doi.org/10.1037/pas0000279

Canivez, G. L. (2008). Orthogonal higher order factor structure of the **Stanford-Binet Intelligence Scales-Fifth Edition** for children and adolescents. School Psychology Quarterly, 23, 533–541.

Dombrowski, S. C., **Canivez, G. L.,** & Watkins, M. W. (2017, May). Factor structure of the 10 **WISC–V** primary subtests across four standardization age groups. *Contemporary School Psychology.* Advance online publication.

Dombrowski, S. C., McGill, R. J., & Canivez, G. L. (2017). Exploratory and hierarchical factor analysis of the **WJ IV Cognitive** at school age. *Psychological Assessment, 29,* 394-407.

McGill, R. J., & **Canivez, G. L.** (2017, October). Confirmatory factor analyses of the **WISC–IV Spanish** core and supplemental Subtests: Validation evidence of the Wechsler and CHC models. *International Journal of School and Educational Psychology*. Advance online publication.

Watkins, M. W., Dombrowski, S. C., & **Canivez, G. L.** (2017, October). Reliability and factorial validity of the **Canadian Wechsler Intelligence Scale for Children–Fifth Edition**. *International Journal of School and Educational Psychology*.

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School Psychology Quarterly
2011, Vol. 26, No. 4, 305–317

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1045-3830/11/$12.00 DOI: 10.1037/a0025973

Hierarchical Factor Structure of the Cognitive Assessment System: Variance Partitions From the Schmid–Leiman (1957) Procedure

Gary L. Canivez
Eastern Illinois University

Orthogonal higher-order factor structure of the Cognitive Assessment System (CAS; Naglieri & Das, 1997a) for the 5–7 and 8–17 age groups in the CAS standardization sample is reported. Following the same procedure as recent studies of other prominent intelligence tests (Dombrowski, Watkins, & Brogan, 2009; Canivez, 2008; Canivez & Watkins, 2010a, 2010b; Nelson & Canivez, 2011; Nelson, Canivez, Lindstrom, & Hatt, 2007; Watkins, 2006; Watkins, Wilson, Kotz, Carbone, & Babula, 2006), three- and four-factor CAS exploratory factor extractions were analyzed with the Schmid and Leiman (1957) procedure using MacOrtho (Watkins, 2004) to assess the hierarchical factor structure by sequentially partitioning variance to the second- and first- order dimensions as recommended by Carroll (1993, 1995). Results showed that greater portions of total and common variance were accounted for by the second-order, global factor, but compared to other tests of intelligence CAS subtests measured less second-order variance and greater first-order Planning, Attention, Simultaneous, and Successive (PASS) factor variance.

Keywords: CAS, construct validity, hierarchical exploratory factor analysis, Schmid–Leiman higher-order analysis, structural validity

Support for PASS Scales

- "…compared to the WISC–IV, WAIS–IV, SB–5, RIAS, WASI, and WRIT, the CAS subtests had less variance apportioned to the higher-order general factor (g) and *greater proportions of variance apportioned to first-order (PASS…) factors*.
- This is consistent with the subtest selection and construction in an attempt to measure PASS dimensions linked to PASS theory … and neuropsychological theory (Luria)." (p. 311)

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CAS2 Factor Analytic Study (in review 2024)

Unravelling the Multifaceted Nature of Intelligence: A Correlated Factor Model Approach with Insights from the PASS Theory

Papadopoulos, Spanoudis, Naglieri and Das concluded: "Our results unambiguously support the notion that intelligence is not a unidimensional entity but a composite of distinct cognitive processes…Planning, Attention, Simultaneous and Successive processing."

- **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 advanced structural equation modeling techniques to examine theory-driven conceptualizations of the construct. We tested g factor 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 PASS (Planning, Attention, Simultaneous, Successive) theory and the Cognitive Assessment System 2 (CAS2), which was standardized in the US. Results showed that the correlated factor model, which posits separate 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 gender invariance underscores the importance of considering gender-related differences in cognitive processes. By endorsing a correlated factor model, our study encourages a nuanced understanding of intelligence that acknowledges the diversity and interconnectedness of cognitive processes, with potential implications for education and clinical assessment practices.

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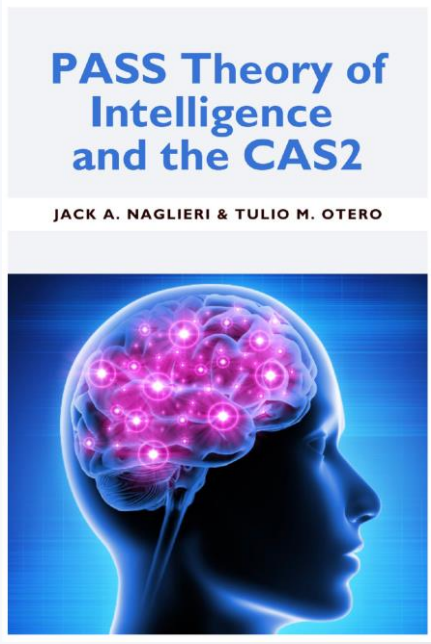

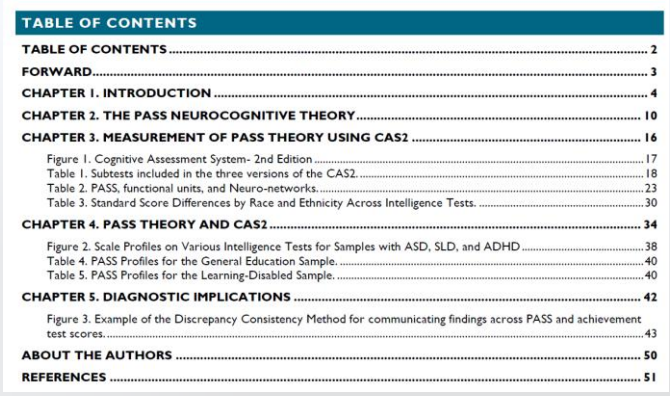
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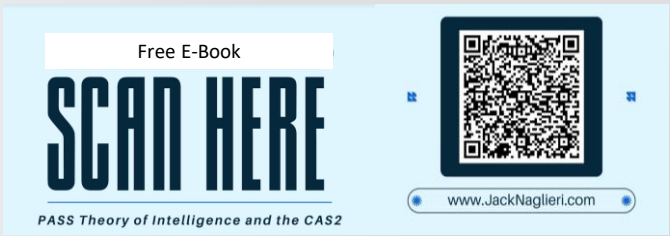

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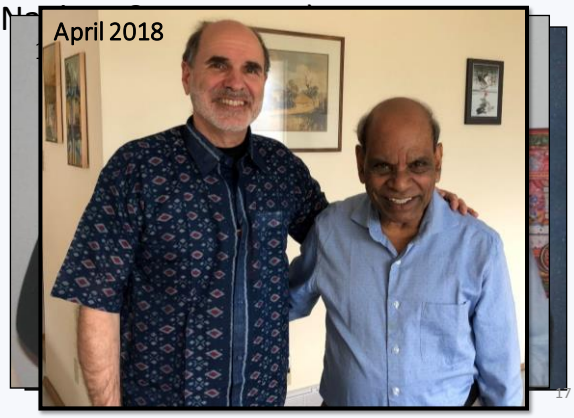
Intelligence as Neurocognitive Functions

- In my first working meeting with JP Das (February 11, 1984) we proposed that intelligence was better REinvented as neurocognitive processes andwe began development of the **C**ognitive **A**ssessment **S**ystem (N

➢ We conceptualized intelligence as Planning, Attention, Simultaneous, and Successive (PASS) neurocognitive processes based on Luria's concepts of brain function.



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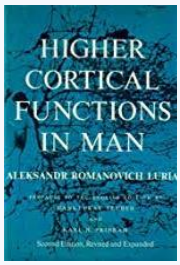
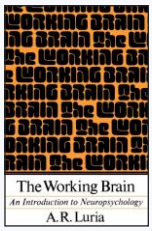
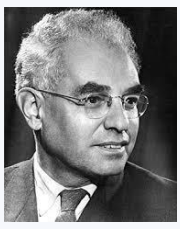
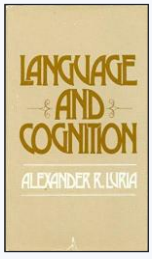
PASS Neurocognitive Theory









- **P**lanning = THINKING ABOUT HOW YOU DO WHAT YOU DECIDE TO DO
- **A**ttention = FOCUSED THINKING AND RESISTANCE TO DISTRACTIONS
- **S**imultaneous = THINKING ABOUT HOW THINGS GO TOGETHER
- **S**uccessive = THINKING ABOUT THE SEQUENCE OF THINGS

PASS = 'basic psychological processes'

NOTE: Easy to understand concepts!

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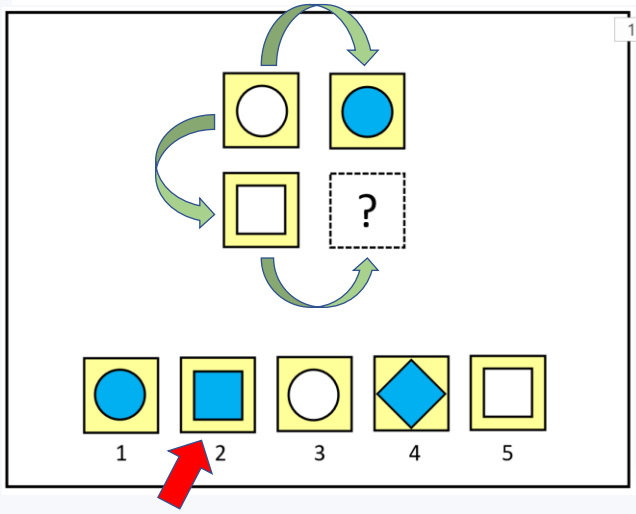
Tests that Measure Thinking or Knowing?



Girl is woman as boy is to man ?

3 is to 6 as 5 is to 10 ?

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

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

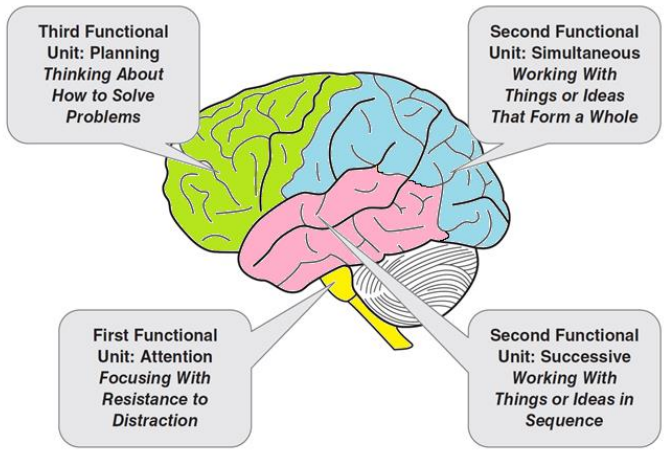

Figure 1.2 Three Functional Units and Associated Brain Structures

From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

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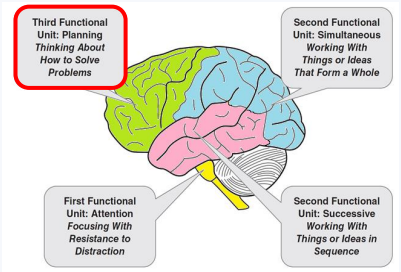
PASS Theory: Planning

- **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



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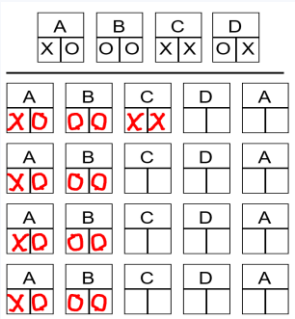

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PASS Theory: Attention

- 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

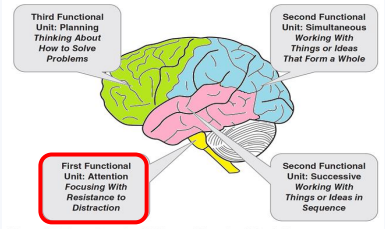

Figure 1.2 Three Functional Units and Associated Brain Structures

From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

RED	RED	BLUE
YELLOW	YELLOW	RED
BLUE	RED	YELLOW
BLUE	BLUE	BLUE

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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

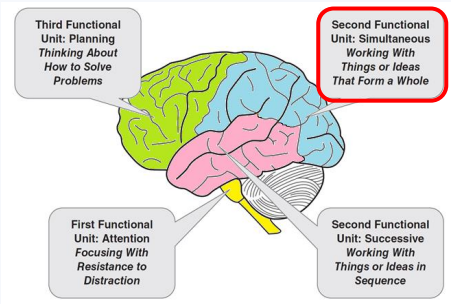
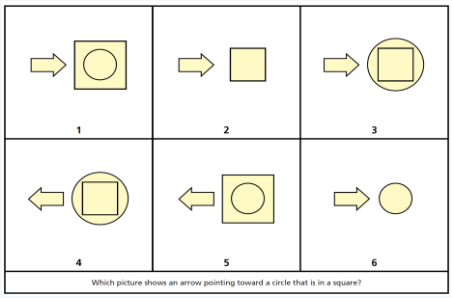


Figure 1.2 Three Functional Units and Associated Brain Structures

From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017



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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

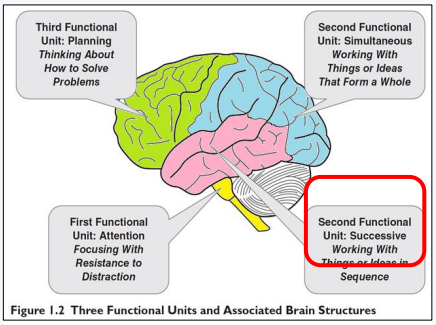
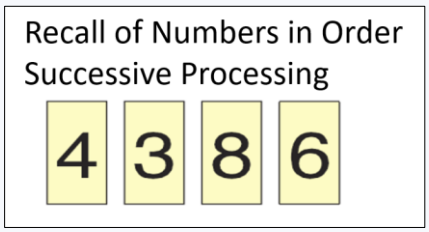


Figure 1.2 Three Functional Units and Associated Brain Structures

From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017



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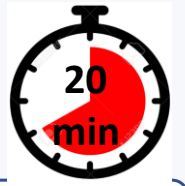
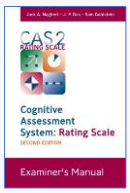
How to Measure PASS with CAS2

- **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



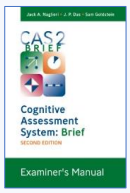
CAS2 Rating Scale
(4 subtests)

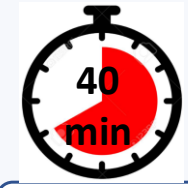
Total Score
Planning
Simultaneous
Attention
Successive



CAS2 Brief
(4 subtests
20 minutes)

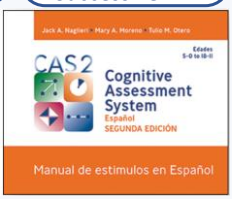
Total Score
Planning
Simultaneous
Attention
Successive





CAS2 Core
(8 subtests
40 minutes)

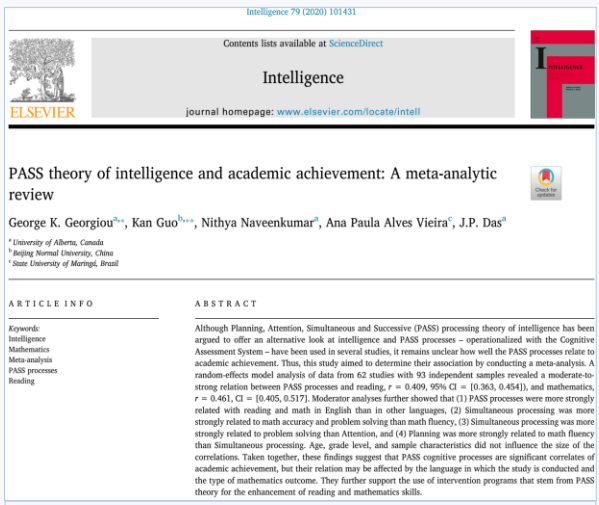
Full Scale
Planning
Simultaneous
Attention
Successive



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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PASS theory of intelligence and academic achievement: A meta-analytic review

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PASS processes
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ABSTRACT

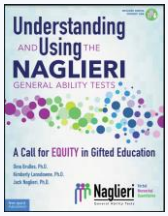
Although Planning, Attention, Simultaneous and Successive (PASS) processing theory of intelligence has been argued to offer an alternative look at intelligence and PASS processes – operationalized with the Cognitive Assessment System – have been used in several studies, it remains unclear how well the PASS processes relate to academic achievement. Thus, this study aimed to determine their association by conducting a meta-analysis. A random-effects model analysis of data from 62 studies with 93 independent samples revealed a moderate-to-strong relation between PASS processes and reading, $r = 0.409$, 95% CI = [0.363, 0.454]), and mathematics, $r = 0.461$, CI = [0.405, 0.517]. Moderator analyses further showed that (1) PASS processes were more strongly related with reading and math in English than in other languages, (2) Simultaneous processing was more strongly related to math accuracy and problem solving than math fluency, (3) Simultaneous processing was more strongly related to problem solving than Attention, and (4) Planning was more strongly related to math fluency than Simultaneous processing. Age, grade level, and sample characteristics did not influence the size of the correlations. Taken together, these findings suggest that PASS cognitive processes are significant correlates of academic achievement, but their relation may be affected by the language in which the study is conducted and the type of mathematics outcome. They further support the use of intervention programs that stem from PASS theory for the enhancement of reading and mathematics skills.

Georgiou, G., Guo, K., Naveenkumar, N., Vieira, A. P. A., & Das, J. P. (2020) PASS theory of intelligence and academic achievement: A meta-analytic review.

PASS Validity

- "The CAS Full Scale correlates **.60 with reading** and **.61 with mathematics**."
- "**These correlations are significantly stronger … than the correlations reported in previous meta-analysis for other measures of intelligence** (e.g., WISC) that require knowledge (e.g., Arithmetic & Vocabulary)…"
- "if we **conceptualize intelligence as … PASS processes … linked to the … brain**" it leads to **significantly higher relations with academic achievement…**and these processes have direct **implications for instruction and intervention**…"

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



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).

	By Race	By Ethnicity
Tests that require knowledge	**Mn = 9.4**	**Mn =6.6**
Otis-Lennon School Ability Test (district wide)	13.6	
Stanford-Binet IV (normative sample)	12.6	
WISC-V (normative sample)	11.6	
WJ- III (normative sample)	10.9	10.7
CogAT7 Nonverbal	11.8	7.6
CogAT7 - Verbal	6.6	5.3
CogAT7-Quantitative	5.6	3.6
CogAT- Nonverbal	6.4	2.9
CogAT-Total (V, Q & NV)	7.0	4.5
K-ABC II Fluid-Crystallized Index	9.4	9.8
K-ABC II Mental Processing Index	8.1	8.2
WISC-V (statistical controls)	8.7	
Tests that require minimal knowledge	**Mn = 4.3**	**Mn = 2.9**
K-ABC (normative sample)	7.0	
K-ABC (matched samples)	6.1	
KABC-II (adjusted for gender & SES)	6.7	5.4
CAS-2 (normative sample)	6.3	4.5
CAS (statistical control normative data)	4.8	4.8
CAS-2 (statistical control normative data)	4.3	1.8
CAS-2 Brief (normative samples)	2.0	2.8
NNAT (matched samples)	4.2	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

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

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

PASS scores from the CAS2 are measures of "basic psychological processes" that define a Specific Learning Disability

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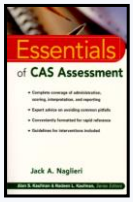
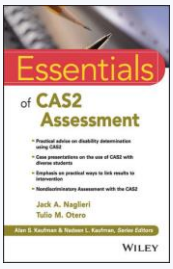
Discrepancy Consistency Method (DCM)

- …first introduced in 1999 and most recently in 2017





jnaglieri@gmail.co

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. The method involves a systematic examination of variability of PASS and academic 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

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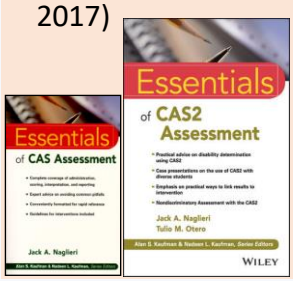
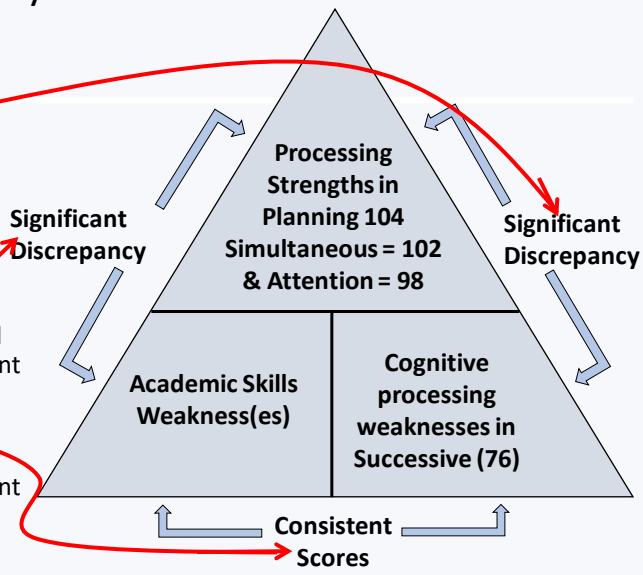
Answering the Question: Why the student fails?

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



- 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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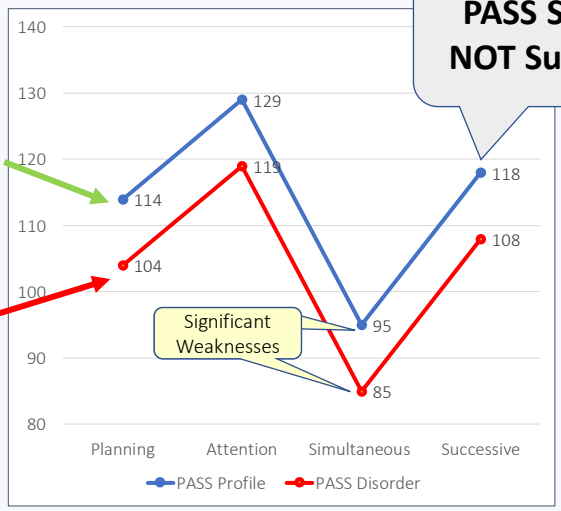
How to Determine a Disorder

- 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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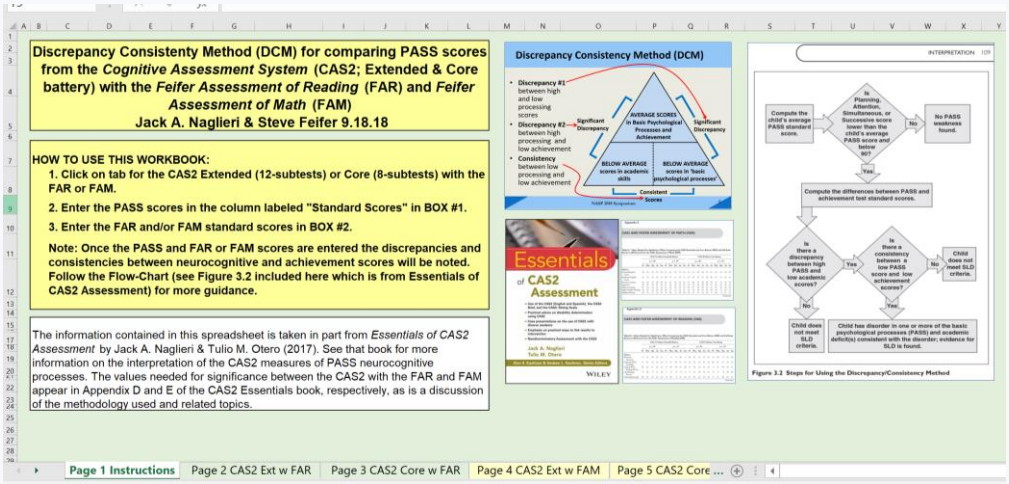
FREE CAS2 PSW Analyzer for FAR, FAM, & FAW, WJ4, KTEA3, WIAT4



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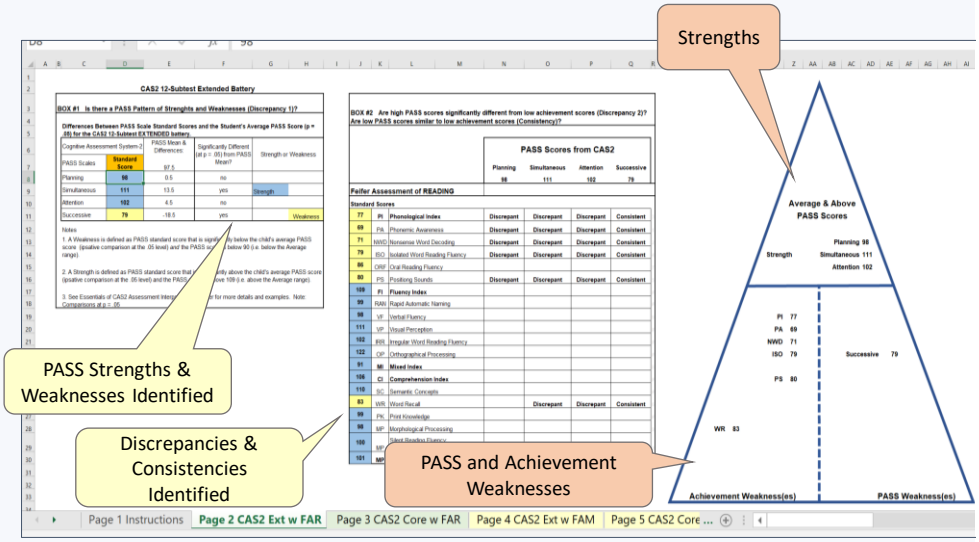
CAS2 PSW Analyzer for WJ4, KTEA3, FAR, FAM

- Enter PASS and Achievement test standard scores and all comparisons are evaluated for statistical significance of the differences



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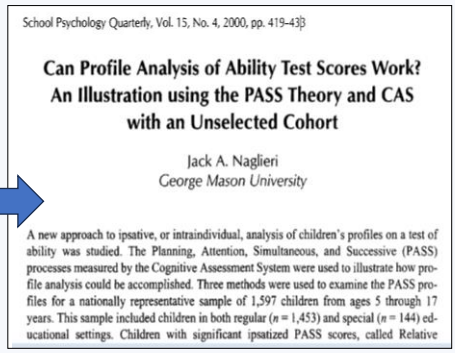
Research on PASS Profiles

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

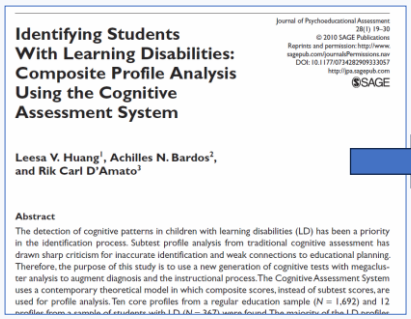


School Psychology Quarterly, Vol. 15, No. 4, 2000, pp. 419–433

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 ipsative, or intraindividual, analysis of children's profiles on a test of ability was studied. The Planning, Attention, Simultaneous, and Successive (PASS) processes 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 1,597 children from ages 5 through 17 years. This sample included children in both regular (n = 1,453) and special (n = 144) educational settings. Children with significant ipsatized PASS scores, called Relative



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

Journal of Psychoeducational Assessment
28(1) 19–30
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DOI: 10.1177/0734282909333057
http://jpa.sagepub.com
SAGE

Leesa V. Huang[1], Achilles N. Bardos[2], and Rik Carl D'Amato[3]

Abstract

The detection of cognitive patterns in children with learning disabilities (LD) has been a priority in the identification process. Subtest profile analysis from traditional cognitive assessment has drawn sharp criticism for inaccurate identification and weak connections to educational planning. Therefore, the purpose of this study is to use a new generation of cognitive tests with megacluster analysis to augment diagnosis and the instructional process. The Cognitive Assessment System uses a contemporary theoretical model in which composite scores, instead of subtest scores, are used for profile analysis. Ten core profiles from a regular education sample (N = 1,692) and 12

"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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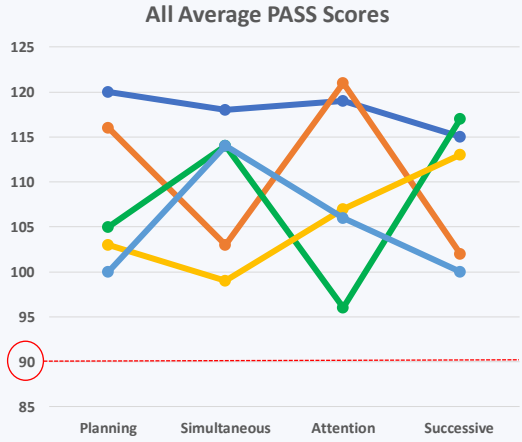
Haung, Bardos, D'Amato (2010)

- PASS Profiles from standardization sample

TABLE 4. PASS PROFILES FOR THE GENERAL EDUCATION SAMPLE.

Cluster	1	2	3	4	5	6	7	8	9	10
Planning	*120*	116	105	103	100	*111*	*102*	87	93	79
Simultaneous	118	103	114	99	*114*	102	86	101	92	*82*
Attention	119	*121*	96	107	106	106	99	87	*96*	81
Successive	115	102	*117*	*113*	100	89	99	*103*	82	81
Average PASS	118	110	108	106	105	102	96	94	91	81
Range	5	19	21	14	14	23	15	16	14	3

Note: PASS scores less than 90 are in bold font. Range of PASS scores within each group greater than 10 are in bold.



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Haung, Bardos, D'Amato (2010)

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Attention	119	*121*	96	107	106	106	99	**87**	*96*	**81**
Successive	115	102	*117*	*113*	100	**89**	99	*103*	**82**	**81**
Average PASS	118	110	108	106	105	102	96	94	91	81
Range	5	19	21	14	14	23	15	16	14	3

Note: PASS scores less than 90 are in bold font. Range of PASS scores within each group greater than 10 are in bold.

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Naglieri (2001) Regular and Special Ed Groups

- CW = Significant difference between any PASS score and the student's average PASS score and one of the PASS scores is below 80, 85 or 90.
- CWAW = There is a significantly low PASS score AND a similarly low Achievement test score.

TABLE 6. Number and Percentages of Children in Regular Education (n = 1,453) and Special Education (n = 144) with PASS Relative Weakness and Cognitive Weaknesses at Three Levels and Cognitive and Academic Weaknesses at Three Levels

	CW < 80		CW < 85		CW < 90		RW		CWAW < 80		CWAW < 85		CWAW < 90	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Regular Education	196	13.5	304	20.9	423	29.1	610	42.0	94	6.5	172	11.8	281	19.3
Special Education	46	31.9	52	36.1	60	41.7	74	51.4	40	27.8	47	32.6	56	38.9
χ^2 Value	40.54*		17.45*		9.79*		4.73		77.39*		48.6*		30.1*	

Note: Percentages are based on the Regular Education and Special Education samples sizes of 1,453 and 144, respectively. χ^2 values marked with an asterisk are significant at 0.05 using Bonferroni correction.

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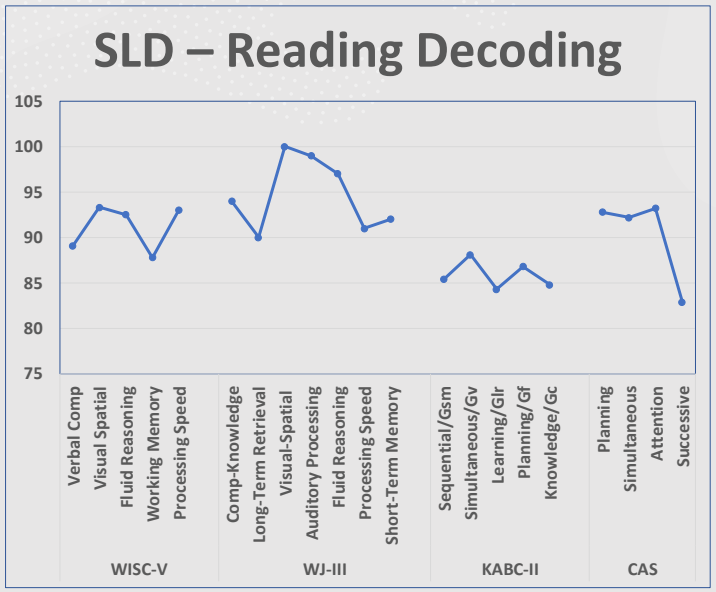
Traditional Intelligence Tests and PASS Cognitive Processing Test Profiles for SLD (Dyslexia)

PASS Profile reveals Successive processing weakness



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A Study of Gifted Students (Neurocognitive Profiles of Intellectually Gifted Children: A Pilot Study, In press, 2022).

- 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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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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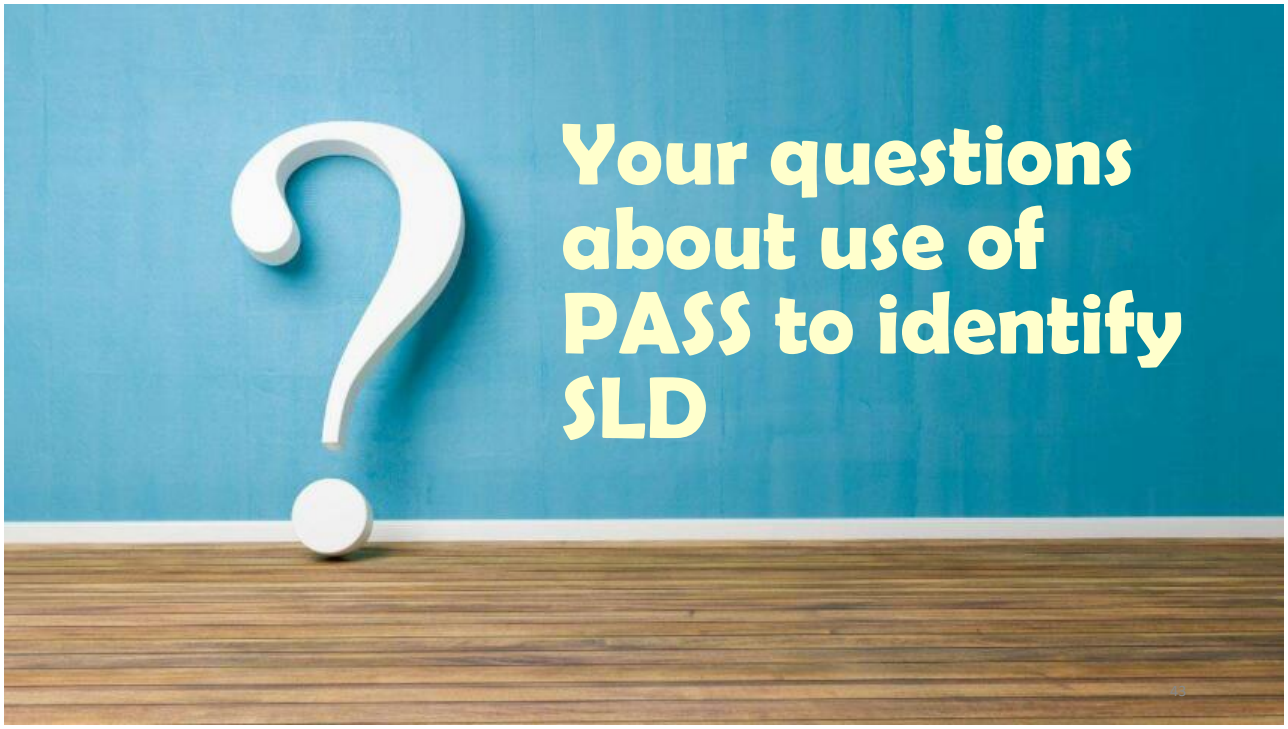

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ADHD Assessment

'basic psychological processes associated with ADHD'

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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 negatively impacted academic, social, and/or occupational functioning. In patients aged < 17 years, ≥ 6 symptoms are necessary; in those aged ≥ 17 years, ≥ 5 symptoms are necessary.	
Inattentive Type Diagnosis Criteria	• Displays poor listening skills • Loses and/or misplaces items needed to complete activities or tasks • Sidetracked by external or unimportant stimuli • Forgets daily activities • Diminished attention span • Lacks ability to complete schoolwork and 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 Diagnosis Criteria	**Hyperactive Symptoms:** • Squirms when seated or fidgets with feet/hands • Marked restlessness that is difficult to control • 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 blurts out answers before questions completed
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:*** • Patient meets both inattentive and hyperactive/impulsive criteria for the past 6 months ***Predominantly Inattentive Type:*** • Patient meets inattentive criterion, but not hyperactive/impulse criterion, for the past 6 months ***Predominantly Hyperactive/Impulsive Type:*** • Patient meets hyperactive/impulse 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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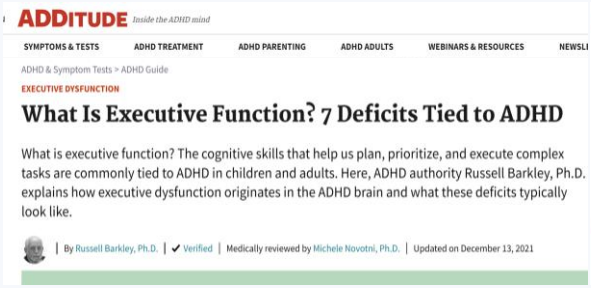
ADHD & Executive Function – Russell Barkley

- 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


ADDITUDE Inside the ADHD mind

SYMPTOMS & TESTS ADHD TREATMENT ADHD PARENTING ADHD ADULTS WEBINARS & RESOURCES NEWSLI

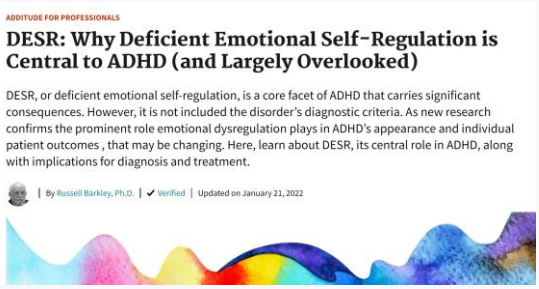
ADHD & Symptom Tests > ADHD Guide

EXECUTIVE DYSFUNCTION

What Is Executive Function? 7 Deficits Tied to ADHD

What is executive function? The cognitive skills that help us plan, prioritize, and execute complex tasks are commonly tied to ADHD in children and adults. Here, ADHD authority Russell Barkley, Ph.D. explains how executive dysfunction originates in the ADHD brain and what these deficits typically look like.

By Russell Barkley, Ph.D. | ✓ Verified | Medically reviewed by Michele Novotni, Ph.D. | Updated on December 13, 2021


ADDITUDE FOR PROFESSIONALS

DESR: Why Deficient Emotional Self-Regulation is Central to ADHD (and Largely Overlooked)

DESR, or deficient emotional self-regulation, is a core facet of ADHD that carries significant consequences. However, it is not included the disorder's diagnostic criteria. As new research confirms the prominent role emotional dysregulation plays in ADHD's appearance and individual patient outcomes , that may be changing. Here, learn about DESR, its central role in ADHD, along with implications for diagnosis and treatment.

By Russell Barkley, Ph.D. | ✓ Verified | Updated on January 21, 2022

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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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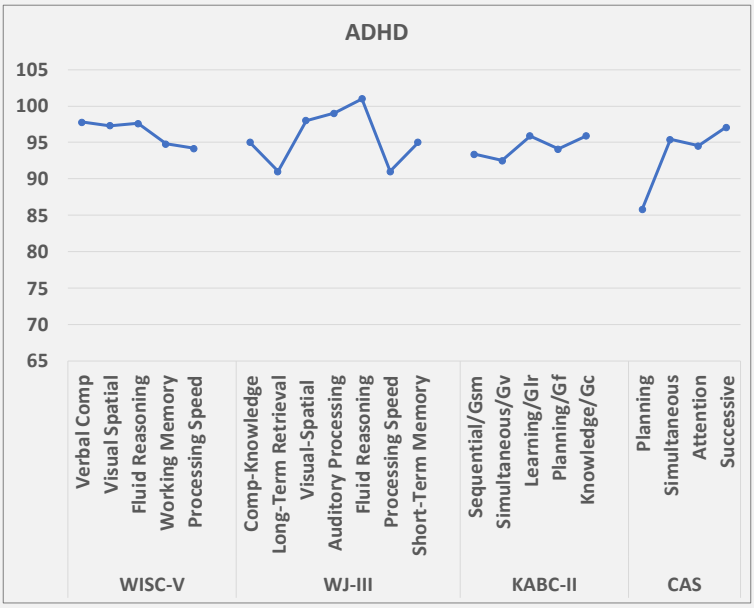
Intelligence and Cognitive Processing Tests' Profiles for Students with **ADHD**

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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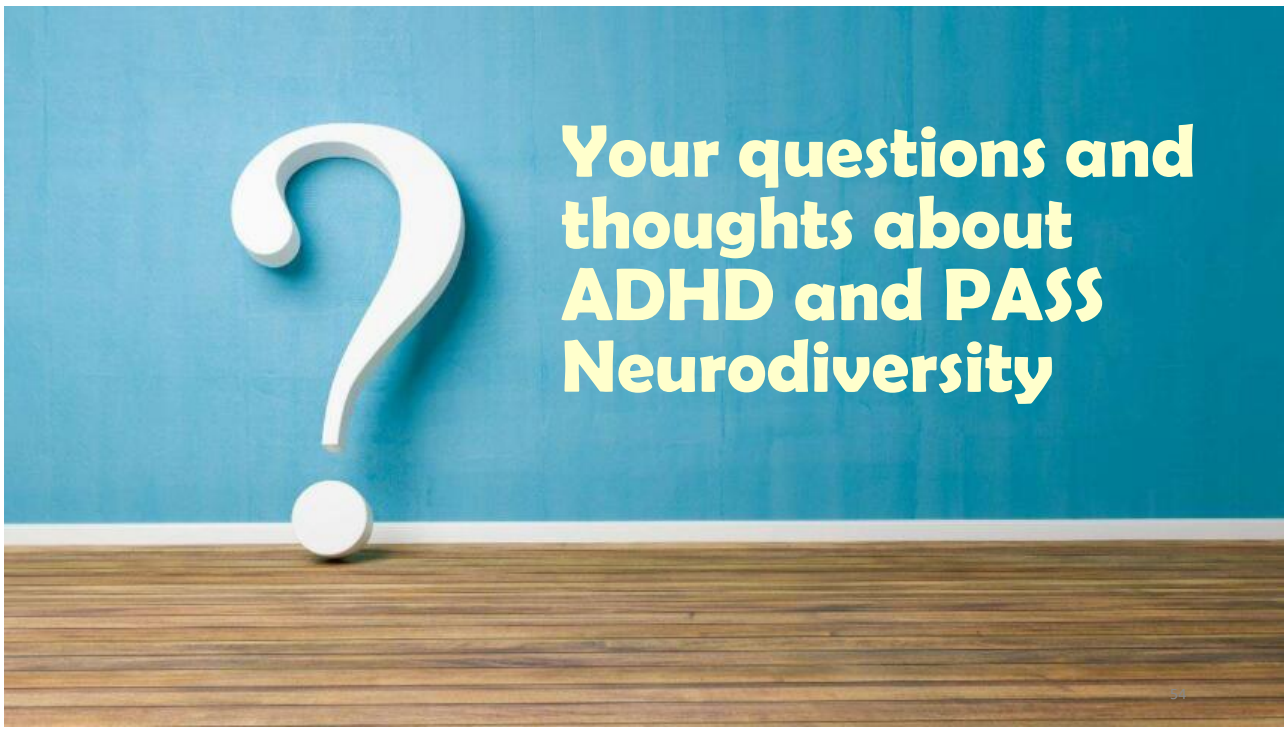

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Assessment of Individuals with Autism Spectrum Disorder

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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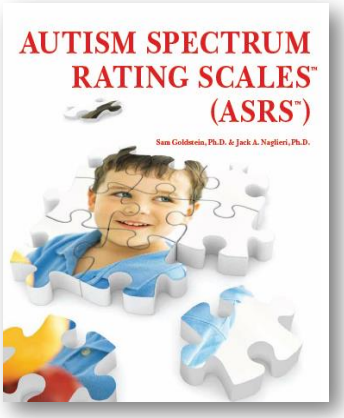

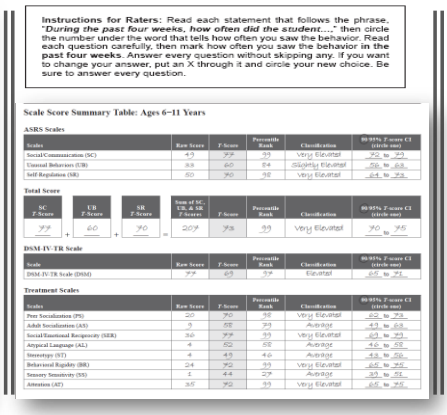

Behavioral Evaluation of ASD

Parents and teacher Rating Scales for ages 2 – 18 years

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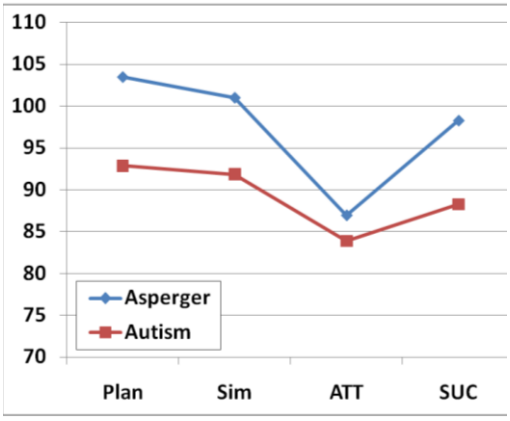
PASS Scores, Autism and Asperger



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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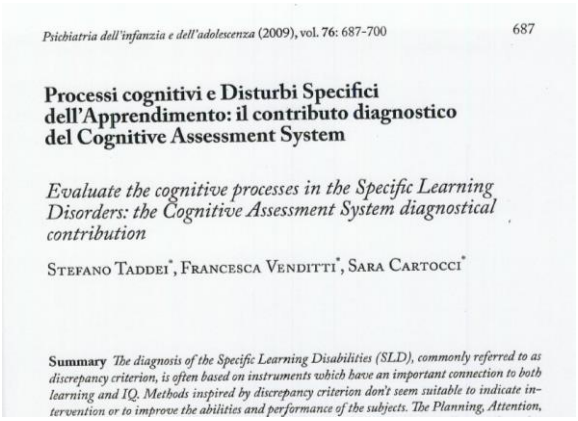
ASD - Italy



Psichiatria dell'infanzia e dell'adolescenza (2009), vol. 76: 687-700 687

Processi cognitivi e Disturbi Specifici dell'Apprendimento: il contributo diagnostico del Cognitive Assessment System

Evaluate the cognitive processes in the Specific Learning Disorders: the Cognitive Assessment System diagnostical contribution

STEFANO TADDEI*, FRANCESCA VENDITTI*, SARA CARTOCCI*

Summary *The diagnosis of the Specific Learning Disabilities (SLD), commonly referred to as discrepancy criterion, is often based on instruments which have an important connection to both learning and IQ. Methods inspired by discrepancy criterion don't seem suitable to indicate intervention or to improve the abilities and performance of the subjects. The Planning, Attention,*

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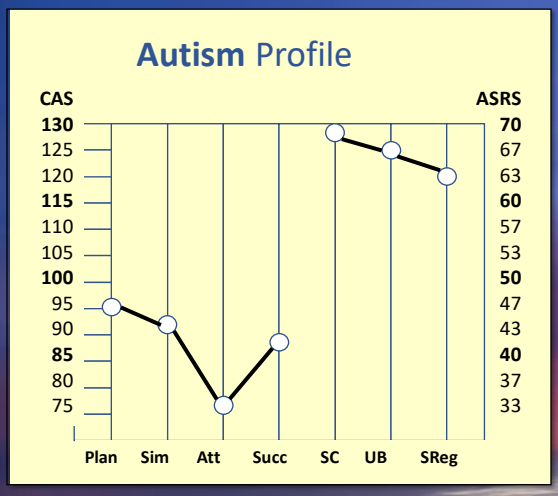
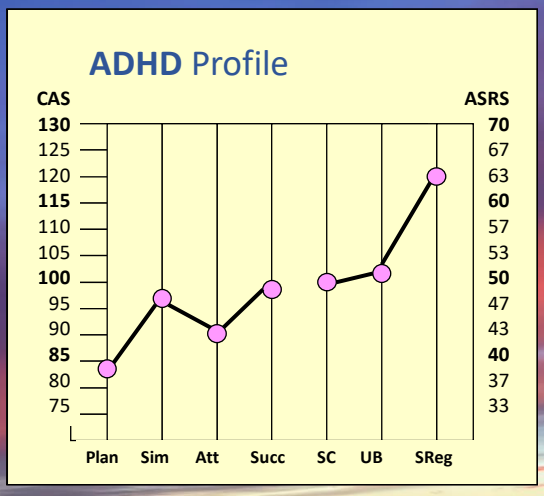
Differential Diagnosis: ADHD vs ASD





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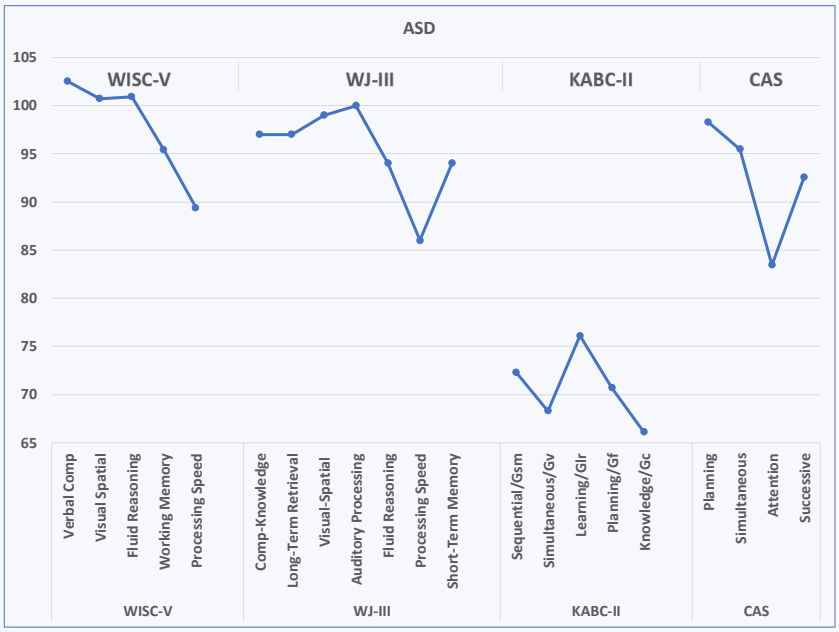
Intelligence and Cognitive Processing Tests' Profiles for Students with **ASD**

PASS Profile reveals Attention processing weakness



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An Important Case from Norway

PASS scores from CAS and Autism Spectrum Rating Scale (ASRS) results

- **From school:**
- 14-Year-old young man has good social functions with certain limits e.g. rigidity. Many interests, but some of them were thought of as childish by his peers.
- Reading: OK reading, making appropriate progress.
- Difficulties with multi-syllable-words
- Difficulties with finding words. Mispronunciations, received services by speech therapist.

- **From parents:**
- Autism diagnosed at age 7.
- He has had a great deal of his schooling as 1-1 with a special needs teacher or assistant.
- In school-years 8-10 a lot of outdoors activities and kitchen work, not so much curriculum content, which the parents think he could benefit from.
- We met him one year ago, for three days assessment and teaching. Based on this, and the CAS2 and Autism Spectrum Rating Scale from 2018 we completed an evaluation and recommendations for his schooling.

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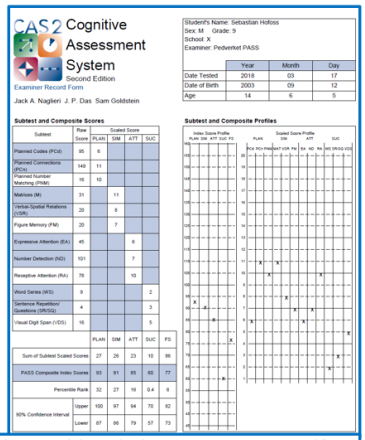
PASS Scores – Successive Processing Weakness and Social Communication Problems

Scale	T-score (90% CI)	Percentile	Classification	Interpretive Guideline
TOTAL SCORE				
Total Score	52 (49-55)	58	Average Score	No problem indicated.
ASRS SCALES				
Social/ Communication	64 (59-67)	92	Slightly Elevated Score	Has difficulty using verbal and non-verbal communication appropriately to initiate, engage in, and maintain social contact.
Unusual Behaviors	54 (50-58)	66	Average Score	No problem indicated.
Self-Regulation	37 (34-42)	10	Low Score	No problem indicated.

ASRS®

Autism Spectrum Rating Scales (6-18 Years) Parent Ratings

By Sam Goldstein, Ph.D. & Jack A. Naglieri, Ph.D.



Differences Between PASS Scale Standard Scores and the Student's Average PASS Score Required for Sig Subtest EXTENDED battery AGES 8-18 Years.

Cognitive Assessment System - 2		Difference from PASS Mean of:	Significantly Different (at p = .05) from PASS Mean?	Strength or Weakness
PASS Scales	Standard Score	82.3		
Planning	93	10.8	yes	
Simultaneous	91	8.8	yes	
Attention	85	2.8	no	
Successive	60	-22.3	yes	Weakness

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PASS Profiles for Individuals with SLD, ADHD, & ASD

Getting the BIG PICTURE

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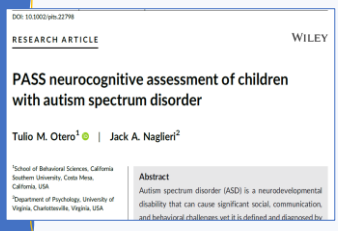

DOI: 10.1002/pts.2279R

RESEARCH ARTICLE

WILEY

PASS neurocognitive assessment of children with autism spectrum disorder

Tulio M. Otero[1] | Jack A. Naglieri[2]

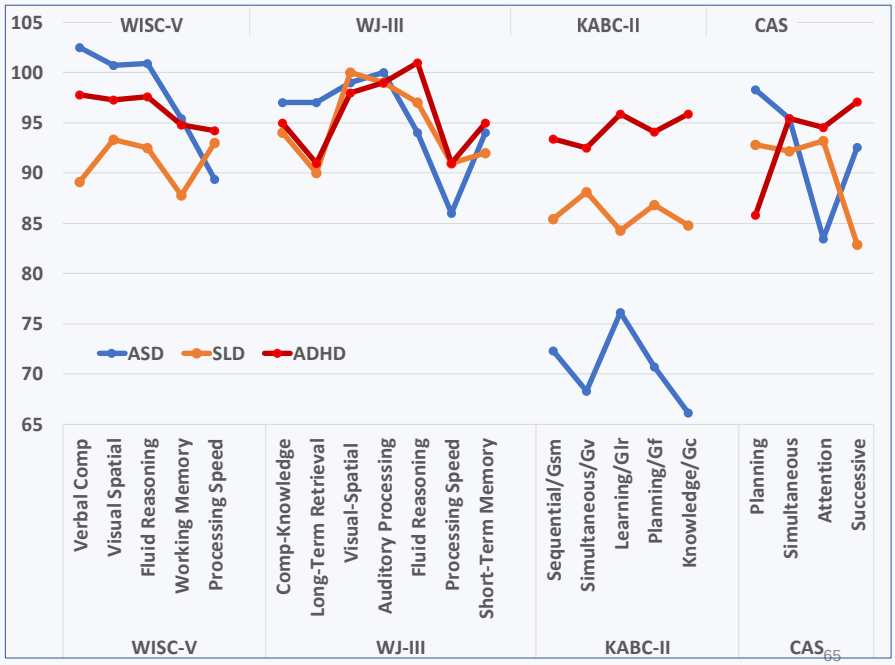
[1]School of Behavioral Sciences, California Southern University, Costa Mesa, California, USA

[2]Department of Psychology, University of Virginia, Charlottesville, Virginia, USA

Abstract

Autism spectrum disorder (ASD) is a neurodevelopmental disability that can cause significant social, communication, and behavioral challenges yet it is defined and diagnosed by

Intelligence and PASS Cognitive Processing Test Profiles for students with **Dyslexia, ADHD & ASD**



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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 ad 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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