SLD Identification Using a Pattern of Strengths and Weaknesses in Basic Psychological Processes (PASS) as measured by CAS2

Jack A. Naglieri, Ph.D.
University of Virginia
Devereux Center for Resilient Children
jnaglieri@gmail.com
www.jacknaglieri.com
Introductions

- Introduce yourself to those at your table
- My interest in intelligence and instruction
- Initial degrees in psychology
- Experiences at UGA
- Need for evidence based interpretation
- My personal perspective on being a researcher and test developer
- Why this topic?
From achievement ability discrepancy to a pattern of strengths and weaknesses

- The Discrepancy/Consistency model
- Which tests to use to define a “basic psychological process”
- A neurocognitive theory will be suggested
  - complex decision making (frontal lobes – Planning)
  - focus and resistance to distractions (brain stem - Attention)
  - visual/verbal spatial ability (Occipital/Parietal - Simultaneous)
  - visual/verbal sequencing (Temporal area - Successive)
- Illustrative Case studies
  - How Discrepancy/Consistency yields more accurate eligibility determination
  - How Discrepancy/Consistency leads to intervention planning.
IDEA and NASP Guidelines

What are some of the details of the Law?
One Hundred Eighth Congress of the United States of America

At the Second Session.

Begun and held at the City of Washington on the twentieth day of January, two thousand...

An Act

To reauthorize the Individuals with Disabilities Education Act of 2004.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the “Individuals with Disabilities Education Improvement Act of 2004”.

SEC. 2. ORGANIZATION OF THE ACT.
IDEA 2004

“Specific learning disabilities—In general.—Notwithstanding section 607(b), when determining whether a child has a specific learning disability as defined in section 602, a local educational agency shall not be required to take into consideration whether a child has a severe discrepancy between achievement and intellectual ability in oral expression, listening comprehension, written expression, basic reading skill, reading comprehension, mathematical calculation, or mathematical reasoning.

Additional authority.—In determining whether a child has a specific learning disability, a local educational agency may use a process that determines if the child responds to scientific, research-based intervention as a part of the evaluation procedures described in paragraphs (2) and (3).
IQ Achievement Discrepancy Model

Ability
Achievement model is still permitted in IDEA
But it doesn’t reveal the reason for the academic failure

Significant Discrepancy

Full Scale IQ

Academic Skills Weakness(es)
“(2) CONDUCT OF EVALUATION.—In conducting the evaluation, the local educational agency shall—

“(A) use a variety of assessment tools and strategies to gather relevant functional, developmental, and academic information, including information provided by the parent, that may assist in determining—

“(i) whether the child is a child with a disability; and

“(B) not use any single measure or assessment as the sole criterion for determining whether a child is a child with a disability or determining an appropriate educational program for the child; and

“(C) use technically sound instruments that may assess the relative contribution of cognitive and behavioral factors, in addition to physical or developmental factors.

“(D) assess cognitive factors

“use a variety of assessment tools”
IDEA 2004

“(3) ADDITIONAL REQUIREMENTS.—Each local educational agency shall ensure that—

“(A) assessments and other evaluation materials used to assess a child under this section—

“(i) are selected and administered so as not to be discriminatory on a racial or cultural basis;

“(ii) are provided and administered in the language and form most likely to yield accurate information on what the child knows and can do academically, developmentally, and functionally, unless it is not feasible to so provide or administer;

“(iii) are used for purposes for which the assessments or measures are valid and reliable;

“(iv) are administered by trained and knowledgeable personnel; and

“(v) are administered in accordance with any instructions provided by the producer of such assessments;

“(B) the child is assessed in all areas of suspected disability;

“(C) assessment tools and strategies that provide relevant information that directly assists persons in determining the educational needs of the child are used;
“(6) SPECIFIC LEARNING DISABILITIES.—

“(A) IN GENERAL.—Notwithstanding section 607(b), when determining whether a child has a specific learning disability as defined in section 602, a local educational agency shall not be required to take into consideration whether a child has a severe discrepancy between achievement and intellectual ability in oral expression, listening comprehension, written expression, basic reading skill, reading comprehension, mathematical calculation, or mathematical reasoning.

“(B) ADDITIONAL AUTHORITY.—In determining whether a child has a specific learning disability, a local educational agency may use a process that determines if the child responds to scientific, research-based intervention as a part of the evaluation procedures described in paragraphs (2) and (3).

RTI may be used AS A PART of the evaluation... but not as sole method
IDEA 2004

“(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 spoken, written, which disorder may manifest itself in the ability to listen, think, speak, read, write, spell, or do mathematical calculations.

EXCLUDED.—Such term includes such conditions as intellectual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

EXCLUDED.—Such term does not include a disorder in attention or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.

These statements describe a pattern of strengths and weaknesses in basic psychological processes; but not low in all processes. Definition of SLD remains the same.
IDEA Law Summary

- Ability achievement discrepancy is no longer required (not disallowed)
- We must use a variety of assessment tools
- The use of any single measure or assessment as the sole criterion for determining SLD is *not permitted*
- RTI alone is not permitted
- Use assessments that are not discriminatory on racial or cultural basis
- Definition of SLD remains
  - ‘a disorder in one or more of the basic psychological processes’
- For more information see: [http://idea.ed.gov/](http://idea.ed.gov/)
Position Statement

IDENTIFICATION OF STUDENTS WITH SPECIFIC LEARNING DISABILITIES

NASP endorses the provision of “effective services to help children and youth succeed academically, socially, behaviorally, and emotionally” (Standards for Graduate Preparation of School Psychologists, 2010b, p. 1). NASP’s position is that identification of and service delivery to children identified as having a specific learning disability (SLD) should be based on the outcomes of multilitered, high quality, research-based instruction. Such instruction best occurs in the least restrictive environment and is accompanied by regular data collection. School psychologists have long had a prominent role as members of school teams that identify students exhibiting SLD. Accordingly, NASP is dedicated to promoting policies and practices that are consistent with scientific research and that yield optimal student outcomes. School psychologists are scientist-practitioners, and, as consumers of and contributors to research, they generally agree on the following statements (LD Roundtable, 2002; National Joint Committee on Learning Disabilities, 2010; Shinn, 2007; Swanson, Harris, & Graham, 2003).

- Specific learning disabilities are endogenous in nature and are characterized by neurologically based deficits in cognitive processes.
- These deficits are specific; that is, they impact particular cognitive processes that interfere with the acquisition of academic skills.
- Specific learning disabilities are heterogeneous—there are various types of learning disabilities, and there is no single defining academic or cognitive deficit or characteristic common to all types of specific learning disabilities.
- Specific learning disabilities may coexist with other disabling conditions (e.g., sensory deficits, language impairment, behavior problems), but are not primarily due to these conditions.
- Of children identified as having specific learning disabilities, the great majority (over 80%) have a disability in the area of reading.
- The manifestation of a specific learning disability is contingent to some extent upon the type of instruction, supports, and accommodations provided, and the demands of the learning situation;
- Early intervention can reduce the impact of many specific learning disabilities.
- Specific learning disabilities vary in their degree of severity, and moderate to severe learning disabilities can be expected to impact performance throughout the life span.
- Multilitered systems of student support have been effective as part of comprehensive approach to meet students’ academic needs.
NASP 2011 SLD Position

- “NASP recommends that initial evaluation of a student with a suspected specific learning disability includes an individual comprehensive assessment...

- This evaluation may include measures of academic skills (norm-referenced and criterion-referenced), cognitive abilities and processes, and mental health status (social-emotional development); measures of academic and oral language proficiency as appropriate; classroom observations; and indirect sources of data (e.g., teacher and parent reports).”
NASP 2011 SLD Position

- “Existing data from a problem-solving process that determines if the child responds to scientific evidence-based intervention may be considered at the time of referral, or new data of this type may be collected as part of the Tier 3 comprehensive evaluation.
- Eligibility determination should not be based on any single method, measure, or assessment.”
Policy Forum

Specific Learning Disability Classification in the New Individuals with Disabilities Education Act: The Danger of Good Ideas

James B. Hale
Children’s Evaluation and Rehabilitation Center, Albert Einstein College of Medicine

Jack A. Naglieri
Center for Cognitive Development, George Mason University

Alan S. Kaufman
Yale Child Study Center, Yale University School of Medicine

Kenneth A. Kavale
College of Education, University of Iowa

Abstract

The recently revised IDEA guidelines indicate that a Specific Learning Disability (SLD) can be identified if a child has a disorder in the basic psychological processes. The criteria in the new guidelines for identifying SLD state that: a) a severe discrepancy between achievement and intellectual ability shall not be required; and b) a response to intervention (RTI) may be considered. These criteria are ambiguous regarding how the traditional ability-achievement discrepancy approach should be applied, and they are equally ambiguous about the recently adopted failure to RTI model. Absent from these criteria is any mention of integrities. Identifying a child’s unique pattern of performance on standardized measures not only assures compliance with the new IDEA guidelines, but also allows for recognition of individual cognitive strengths and needs, one of the prerequisites for intervention efficacy.

Specific Learning Disability Classification in the New Individuals With Disabilities Education Act: The Danger of Good Ideas

The National Assessment of Educational Progress (NAEP) recently released the nationwide results of reading and math scores for children in fourth and eighth grades. Averaging across all students, no gains were made in reading scores from
Because the definition of SLD is

- “… 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.”

- “Establishing a disorder in the basic psychology processes is essential for determining SLD”

- So that the legal definition is aligned with the procedural methods used for eligibility

- But how, exactly, would measuring basic psychological processes be used for SLD eligibility determination?
The key question is:

How can we operationalize the identification of a “disorder in one or more of the basic psychological processes” which manifests as “the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations”?
Presentation Outline

• From achievement ability discrepancy to a pattern of strengths and weaknesses

The Discrepancy/Consistency Model (DCM)
• Which tests to use to define a “basic psychological process”
• A neurocognitive theory will be suggested
  • complex decision making (frontal lobes – Planning)
  • focus and resistance to distractions (brain stem - Attention)
  • visual/verbal spatial ability (Occipital/Parietal - Simultaneous)
  • visual/verbal sequencing (Temporal area - Successive)

• Illustrative Case studies
  • How Discrepancy/Consistency yields more accurate eligibility determination
  • How Discrepancy/Consistency leads to intervention planning.
Discrepancy / Consistency Model

- The Discrepancy / Consistency model is a conceptual framework that was first introduced in 1999.
- Similar models have been proposed by Hale and Flanagan.
Discrepancy/Consistency Model (DCM)


- This chapter can be downloaded from www.jacknaglieri.com
The Discrepancy / Consistency Model is a method used to ensure that there is evidence of “a disorder in 1 or more of the basic psychological processes ... which manifests itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.”

- The disorder in 1 or more basic psychological processes is found when a student shows a pattern of strengths and weaknesses in basic psychological processes, and...
- The imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations is found when a student shows a pattern of strengths and weaknesses in achievement
- The result is two discrepancies and a consistency
Discrepancy Consistency Model for SLD

- **Discrepancy #1** between high and low processing scores
- **Discrepancy #2** between high processing and low achievement
- **Consistency** between low processing and low achievement
Evidence of a ‘disorder in processing’

- **Significant Difference**
  - *Is low relative* to the child’s mean score

- **Cognitive Weakness**
  - Is a Significant weakness and the score falls below the Average range (<90)
Case of Alejandro
CASE STUDY: ALEJANDRO (C.A. 7-0 GRADE 1)

REASON FOR REFERRAL

• Academic:
  • Could not identify letters/sounds
  • October 2013: Could only count to 39
  • All ACCESS scores of 1

• Behavior:
  • Difficulty following directions
  • Attention concerns
  • Refusal/defiance
WISC-IV ASSESSMENT

- Full Scale IQ: 73
- Processing Speed Index: 75
- Working Memory Index: 86
- Perceptual Reasoning Index: 79
- Verbal Comprehension Index: 75

Standard Score Range: 40 to 100
WISC-IV SUBTESTS

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Scaled Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symbol Search</td>
<td>1</td>
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<tr>
<td>Coding</td>
<td>10</td>
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<tr>
<td>Letter-Number Sequencing</td>
<td>9</td>
</tr>
<tr>
<td>Digit Span</td>
<td>6</td>
</tr>
<tr>
<td>Matrix Reasoning</td>
<td>6</td>
</tr>
<tr>
<td>Picture Concepts</td>
<td>5</td>
</tr>
<tr>
<td>Block Design</td>
<td>9</td>
</tr>
<tr>
<td>Comprehension</td>
<td>7</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>4</td>
</tr>
<tr>
<td>Similarities</td>
<td>6</td>
</tr>
</tbody>
</table>
KTEA-II

- Written Language Composite: 78
- Written Expression: 82
- Spelling: 77
- Math Composite: 77
- Math Computation: 84
- Math Concepts & Applications: 76
- Reading Composite: 79
- Reading Comprehension: 78
- Letter & Word Recognition: 85

Standard Score Range: 40 to 100
PASS basic psychological processes

<table>
<thead>
<tr>
<th></th>
<th>CAS2</th>
<th>WISC-IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Scale</td>
<td>83</td>
<td>73</td>
</tr>
<tr>
<td>Successive</td>
<td>84</td>
<td>75</td>
</tr>
<tr>
<td>Simultaneous</td>
<td>96</td>
<td>86</td>
</tr>
<tr>
<td>Attention</td>
<td>67</td>
<td>79</td>
</tr>
<tr>
<td>Planning</td>
<td>102</td>
<td>75</td>
</tr>
</tbody>
</table>
Thoughts about Alejandro

- We want to help our students, but how?
- What have tried to get information from the Wechsler Scales
  - Subtest analysis (doesn’t work)
  - Interpretation of subtests according to other views (Working Memory, Speed, CHC, etc.) -doesn’t work
- Cross Battery approach?
  - Reliability and Validity evidence is weak
- Which test/method should we use?
- All these questions will be answered...
Significant Discrepancy

Planning (102) & Simultaneous (96)

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

Math Composite=77
Reading Composite=79
Written Language =78

Attention (67) & Successive (84)

Consistent Scores

Discrepancy Consistency Model for SLD
The case of Alejandro (by Dr. Otero)

- Alejandro has a “disorder in one or more of the basic psychological processes”
  - Attention = 67 and Successive = 84
- Good scores in basic psychological processes:
  - Simultaneous = 96 and Planning = 102
- He has documented academic failure
- Conclusions: He has intra-individual differences in basic psychological processes that underlie his academic problems
The Discrepancy / Consistency Model is a conceptual approach to ensure that there is evidence of...

- a *discrepancy* between high and low (e.g., a significant weakness) scores in basic psychological processes
- a *discrepancy* between high scores in basic psychological processes and low academic scores
- a *consistency* between low scores in basic psychological processes and low academic scores

The discrepancies ensure that the student has (1) within student variability in psychological processes and (2) a difference between processing and achievement.

The consistency helps us understand WHY the student has failed and WHAT to do about it.
How to Operationalize this Model

- IDEA – “each local educational agency shall ensure that assessments ...used to assess a child” are:
  - “selected ... so as not to be discriminatory on a racial or cultural basis”
  - “used for purposes for which the ... measures are valid and reliable”
  - “technically sound [to assess] cognitive factors”
- Standardized norm based tests are the best way to evaluate and calibrate academic skills
  - Tests like the K-TEA, WIAT-III, WJ-IV, FAR, etc.
- Standardized norm based tests are the best way to evaluate and calibrate basic psychological processes
Time to Think and Talk

- Reactions?
- Which test results make more sense?
- Was WISC-IV information Helpful?
- Did CAS2 Results change your mind?
- Can you determine if the student has a SLD using DCM?
- Your thoughts...
Presentation Outline

- From achievement ability discrepancy to a pattern of strengths and weaknesses
- The Discrepancy/Consistency model
  Which tests to use to define a “basic psychological process”
- A neurocognitive theory will be suggested
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Tests that we specifically developed to measure basic psychological processes should be used:
- The K-ABC II (Kaufman & Kaufman, 2004)
- Planning, Attention, Simultaneous, Successive (PASS) theory as measured by the CAS2 (Naglieri, Das & Goldstein, 2014)

These and any other tests, will be evaluated based on two essential criteria included in IDEA:
- Suitability for assessment of diverse populations
- Validity for use in SLD eligibility determination
Non-discriminatory Tests

Do Students with SLD Have a Pattern of Cognitive Strengths and Weaknesses?

This is essential for intervention planning
IDEA 2004

“(3) ADDITIONAL REQUIREMENTS.—Each local educational agency shall ensure that—
“(A) assessments and other evaluation materials used to assess a child under this section—
“(i) are selected and administered so as not to discriminate on a racial or cultural basis;
“(ii) are provided and administered in the language and form most likely to yield accurate information on what the child knows and can do academically, developmentally, and functionally, unless it is not feasible to so provide or administer;
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“(iv) are administered by trained and knowledgeable personnel; and
“(v) are administered in accordance with any instructions provided by the producer of such assessments;
“(B) the child is assessed in all areas of suspected disability;
“(C) assessment tools and strategies that provide relevant information that directly assists persons in determining the educational needs of the child provided
Evolution of IQ (Goldstein, Princiotta & Naglieri, 2015)

Hundred Years of Intelligence Testing: Moving from Traditional IQ to Second-Generation Intelligence Tests

Jack A. Naglieri

“Do not go where the path may lead, go instead where there is no path and leave a trail.”

—Ralph Waldo Emerson

Context

April 6, 1917, is remembered as the day the United States entered World War I. On that same day a group of psychologists held a meeting in Harvard University’s Emerson Hall to discuss the possible role they could play with the war effort (Yerkes 1921). The group agreed that psychological knowledge and methods could be of importance to the military and utilized to increase the efficiency of the Army and Navy personnel. The group included Robert Yerkes, who was also the president of the American Psychological Association. Yerkes made an appeal to members of APA who responded by training School in Vineland, New Jersey, on May 28. The committee considered many types of group tests and several that Arthur S. Otis developed when working on his doctorate under Lewis Terman at Stanford University. The goal was to find tests that could efficiently evaluate a wide variety of men, be easy to administer in the group format, and be easy to score. By June 9, 1917, the materials were ready for an initial trial. Men who had some educational background and could speak English were administered the verbal and quantitative (Alpha) tests and those that could not read the newspaper or speak English were given the Beta tests (today described as nonverbal).

The Alpha tests were designed to measure general information (e.g., how many months are
## Race by test (Naglieri, 2015)

Psychological processes measured by KABC and CAS are the more fair than traditional tests.

### Table 20.1 Mean score differences in standard scores by race on traditional IQ and second-generation intelligence tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Difference</th>
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<tbody>
<tr>
<td><strong>Traditional</strong></td>
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<tr>
<td>SB-IV (matched)</td>
<td>12.6</td>
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<tr>
<td>WISC-IV (normative sample)</td>
<td>11.5</td>
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<td>WJ-III (normative sample)</td>
<td>10.9</td>
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<td>WISC-IV (matched)</td>
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<tr>
<td><strong>Second generation</strong></td>
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<td>KABC (normative sample)</td>
<td>7.0</td>
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<td>KABC (matched)</td>
<td>6.1</td>
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<td>KABC-2 (matched)</td>
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<td>CAS2 (normative sample)</td>
<td>6.3</td>
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<td>CAS (demographic controls)</td>
<td>4.8</td>
</tr>
<tr>
<td>CAS2 (demographic controls)</td>
<td>4.3</td>
</tr>
</tbody>
</table>
Hispanic White difference on CAS Full Scale of 4.8 standard score points (matched)
Bilingual Hispanic Children’s Performance on the English and Spanish Versions of the Cognitive Assessment System

Jack A. Naglieri  
George Mason University

Tulio Otero  
Columbia College, Elgin Campus

Brianna DeLauder  
George Mason University

Holly Matto  
Virginia Commonwealth University

School Psychology Quarterly  

This study compared the performance of referred bilingual Hispanic children on the Planning, Attention, Simultaneous, Successive (PASS) theory as measured by English and Spanish versions of the Cognitive Assessment System (CAS; Naglieri & Das, 1997a). The results suggest that students scored similarly on both English and Spanish versions of the CAS. Within each version of the CAS, the bilingual children earned their lowest scores in Successive processing regardless of the language used during test administration. Small mean differences were noted between the means of the English and Spanish versions for the Simultaneous and Successive processing scales; however, mean Full Scale scores were similar. Specific subtests within the Simultaneous and Successive scales were found to contribute to the differences between the English and Spanish versions of the CAS. Comparisons of the children’s profiles of cognitive weakness on both versions of the CAS showed that these children performed consistently despite the language difference.
# English Spanish CAS

Means, *SDs*, *d*-ratios, Obtained and Correction Correlations Between the English and Spanish Version of the CAS (*N* = 55).

<table>
<thead>
<tr>
<th></th>
<th>CAS English</th>
<th>CAS Spanish</th>
<th><em>d</em>-ratio</th>
<th>Correlations</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
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<td>Mean</td>
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<td>Successive</td>
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<td>13.1</td>
<td>83.1</td>
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<td>Full Scale</td>
<td>84.6</td>
<td>13.6</td>
<td>87.6</td>
<td>13.8</td>
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</tbody>
</table>
The Neurocognitive Assessment of Hispanic English-Language Learners With Reading Failure

Tulio M. Otero
Departments of Clinical Psychology and School Psychology, Chicago School of Professional Psychology, Chicago, Illinois

Lauren Gonzales
George Mason University, Fairfax, Virginia

Jack A. Naglieri
University of Virginia, Fairfax, Virginia

This study examined the performance of referred Hispanic English-language learners (N = 40) on the English and Spanish versions of the Cognitive Assessment System (CAS; Naglieri & Das, 1997). The CAS measures basic neuropsychological processes based on the Planning, Attention, Simultaneous, and Successive (PASS) theory (Naglieri & Das, 1997; Naglieri & Otero, 2011c). Full Scale (FS) scores as well as PASS processing scale scores were compared, and no significant differences were found in FS scores or in any of the PASS processes. The CAS FS scores on the English (M = 86.4, SD = 8.73) and Spanish (M = 87.1, SD = 7.94) versions correlated .94 (uncorrected) and .99 (corrected for range restriction). Students earned their lowest scores in Successive processing regardless of the language in which the test was administered. PASS cognitive profiles were similar on English and Spanish versions of the PASS scales. These findings suggest that students scored similarly on both versions of the CAS and that the CAS may be a useful measure of these four abilities for Hispanic children with underdeveloped English-language proficiency.
“Fagan (2000) as well as Suzuki and Valencia (1997) suggested that a cognitive processing approach like that used in the CAS would avoid the knowledge base required to answer verbal and quantitative questions found on most traditional IQ tests and would be more appropriate for culturally and linguistically diverse populations. The results of this study support the assertion (p. 8).”

<table>
<thead>
<tr>
<th>CAS Subtests and Scales</th>
<th>CAS English</th>
<th>CAS Spanish</th>
<th>Correlations</th>
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<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
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<tr>
<td><strong>Scales</strong></td>
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<tr>
<td>Planning</td>
<td>94.60</td>
<td>8.78</td>
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<tr>
<td>Simultaneous</td>
<td>92.58</td>
<td>11.34</td>
<td>93.63</td>
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<tr>
<td>Attention</td>
<td>94.08</td>
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<tr>
<td>Successful</td>
<td>78.65</td>
<td>10.29</td>
<td>78.25</td>
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<tr>
<td><strong>Full Scale</strong></td>
<td>86.40</td>
<td>8.73</td>
<td>87.10</td>
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</table>
WJ-III and ELL Hispanic Students  
(Sotelo-Dynega, Ortiz, Flanagan & Chaplin, 2013)

11 point mean score difference in GAI

As English skills go down so does the GAI
The First IQ TEST: Alpha

1. Bull Durham is the name of tobacco
2. The Mackintosh Red is a kind of fruit
3. The Oliver is a typewriter
4. A passenger locomotive type is the Mogul
5. Stone & Webster are well known engineers
6. The Brooklyn Nationals are called Superbas
7. Pongee is a fabric
8. Country Gentleman is a kind of corn
9. President during the Spanish War Mckinley
10. Fatima is a make of cigarette

From: Psychological Examining the United States Army (Yerkes, 1921, p. 213)
CAS in Italy

Multigroup Confirmatory Factor Analysis of U.S. and Italian Children’s Performance on the PASS Theory of Intelligence as Measured by the Cognitive Assessment System

Jack A. Naglieri
University of Virginia and Devereux Center for Resilient Children

Stefano Taddei
University of Florence

Kevin Williams
Multi-Health Services, Toronto, Ontario, Canada

This study examined Italian and U.S. children’s performance on the English and Italian versions, respectively, of the Cognitive Assessment System (CAS; Naglieri & Conway, 2009; Naglieri & Das, 1997), a test based on a neurocognitive theory of intelligence entitled PASS (Planning, Attention, Simultaneous, and Successive; Naglieri & Das, 1997; Naglieri & Otero, 2011). CAS subtest, PASS scales, and Full Scale scores for Italian (N = 809) and U.S. (N = 1,174) samples, matched by age and gender, were examined. Multigroup confirmatory factor analysis results supported the configural invariance of the CAS factor structure between Italians and Americans for the 5- to 7-year-old (root-mean-square error of approximation [RMSEA] = .038; 90% confidence interval [CI] = .033, .043; comparative fit index [CFI] = .96) and 8- to 18-year-old (RMSEA = .036; 90% CI = .028, .043; CFI = .97) age groups. The Full Scale standard scores (using the U.S. norms) for the Italian (100.9) and U.S. (100.5) samples were nearly identical. The scores between the samples for the PASS scales were very similar, except for the Attention Scale (d = 0.26), where the Italian sample’s mean score was slightly higher. Negligible mean differences were found for 9 of the 13 subtest scores, 3 showed small d-ratios (2 in favor of the Italian sample), and 1 was large (in favor of the U.S. sample), but some differences in subtest variances were found. These findings suggest that the PASS theory, as measured by CAS, yields similar mean scores and showed factorial invariance for these samples of Italian and American children, who differ on cultural and linguistic characteristics.
## US and Italian Samples—Mean Scores

### Table 5

<table>
<thead>
<tr>
<th>Subtests and scales</th>
<th>Italian M</th>
<th>Italian SD</th>
<th>Italian n</th>
<th>U.S. M</th>
<th>U.S. SD</th>
<th>U.S. n</th>
<th>F</th>
<th>p</th>
<th>d-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS composite scales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning</td>
<td>97.7</td>
<td>13.4</td>
<td>809</td>
<td>100.5</td>
<td>15.4</td>
<td>1,174</td>
<td>18.1</td>
<td>&lt;.01</td>
<td>-0.19</td>
</tr>
<tr>
<td>Simultaneous</td>
<td>103.0</td>
<td>13.9</td>
<td>809</td>
<td>101.1</td>
<td>14.1</td>
<td>1,174</td>
<td>9.3</td>
<td>&lt;.01</td>
<td>0.14</td>
</tr>
<tr>
<td>Attention</td>
<td>104.2</td>
<td>13.7</td>
<td>809</td>
<td>100.6</td>
<td>14.4</td>
<td>1,174</td>
<td>32.2</td>
<td>&lt;.01</td>
<td>0.26</td>
</tr>
<tr>
<td>Successive</td>
<td>99.0</td>
<td>12.5</td>
<td>809</td>
<td>100.5</td>
<td>14.5</td>
<td>1,174</td>
<td>5.1</td>
<td>.02</td>
<td>-0.11</td>
</tr>
<tr>
<td>Full Scale</td>
<td>100.9</td>
<td>12.9</td>
<td>809</td>
<td>100.5</td>
<td>14.8</td>
<td>1,174</td>
<td>2.3</td>
<td>.13</td>
<td>0.03</td>
</tr>
</tbody>
</table>

**Note:** CAS = Cognitive Assessment System, PASS = Planning, Attention, Simultaneous, and Successive. U.S. sample Ns vary due to designations for d-ratios are as follows: T = small (.2), S = small (.2), M = medium (.5), and L = large (.8). For all F values the dfs a for Speech Rate (1, 1219) and Sentence Completion (1, 62).
Why Measure Basic Psych Processes?

- Measures of basic psychological processes in these measures assess abilities **without requiring knowledge**
  - Vocabulary
  - Arithmetic
  - Similarities
  - Comprehension
  - Information

- The knowledge requirement in traditional IQ tests distorts the measurement of ability
“(3) ADDITIONAL REQUIREMENTS.—Each local educational agency shall ensure that—
“(A) assessments and other evaluation materials used to assess a child under this section—
“(i) are selected and administered so as not to be discriminatory on a racial or cultural basis;
“(ii) are provided and administered in the language and form most likely to yield accurate information on what the child knows and can do academically, developmentally, and functionally, unless it is not feasible to so provide or administer;
“(iii) are used for purposes for which the assessments or measures are valid and reliable;
“(iv) are administered by trained and knowledgeable personnel; and
“(v) are administered in accordance with any instructions provided by the producer of such assessments;
“(B) the child is assessed in all areas of suspected disability;
“(C) assessment tools and strategies that provide relevant information that directly assists persons in determining the educational needs of the child and the
SLD vs ADHD Profiles and correlation with achievement

Do Students with SLD Have a Pattern of Cognitive Strengths and Weaknesses?

This is essential for intervention planning
Test Profile and SLD
1. We need to know if intelligence tests yield distinctive profiles

2. Subtest profile analysis is UNSUPPORTED so use scale profiles instead
Profiles for SLD (reading decoding)
Profiles for students with ADHD

ADHD

WISC-V
WISC-IV
WJ-III
KABC-II
CAS

ADHD

Verbal Comp
Visual Spatial
Fluid Reas
Working Mem
Processing Spd
Verbal Comprehension
Perceptual Reasoning
Working Memory
Processing Speed
Comprehension-Knowledge
Long-Term Retrieval
Visual-Spatial Thinking
Auditory Processing
Fluid Reasoning
Processing Speed
Short-Term Memory
Sequential/Gsm
Simultaneous/Gv
Learning/Glr
Planning/Gf
Knowledge/Gc
Planning
Simultaneous
Attention
Successive
### Profiles for SLD (reading decoding) & ADHD

<table>
<thead>
<tr>
<th>Test</th>
<th>SLD</th>
<th>ADHD</th>
</tr>
</thead>
<tbody>
<tr>
<td>WISC-V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WISC-IV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WJ-III</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KABC-II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Tests**
- WISC-V
- WISC-IV
- WJ-III
- KABC-II
- CAS

**Subtests**
- Verbal Comprehension
- Fluid Reasoning
- Working Memory
- Processing Speed
- Perceptual Reasoning
- Working Memory
- Processing Speed
- Comprehension-Knowledge
- Long-Term Retrieval
- Visual-Spatial Thinking
- Auditory Processing
- Fluid Reasoning
- Processing Speed
- Short-Term Memory
- Sequential/Gsm
- Simultaneous/Gv
- Learning/Gl
- Planning/Gf
- Knowledge/Gc
- Planning
- Simultaneous
- Attention
- Successive
PASS Profiles and Educational Placement

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.

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

Leesa V. Huang¹, Achilles N. Bardos², and Rik Carl D’Amato³

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 profiles from a sample of students with LD (N = 367) were found. The majority of the LD profiles were unique compared with profiles obtained from the general education sample. The implications of this study substantiate the usefulness of profile analysis on composite scores as a critical element in LD determination.
“this study suggests that the CAS...yields information that contributes to the differential diagnosis of students suspected of having a learning disability in writing”
Canivez & Gaboury (2010)

“the present study demonstrated the potential of the CAS to correctly identify students who demonstrated behaviors consistent with ADHD diagnosis.”
glc@eiu.edu
University Students With Poor Reading Comprehension: The Hidden Cognitive Processing Deficit

George K. Georgiou, PhD and J. P. Das, PhD

Abstract
The present study aimed to examine the nature of the working memory and general cognitive ability deficits experienced by university students with a specific reading comprehension deficit. A total of 32 university students with poor reading comprehension but average word-reading skills and 60 age-matched controls with no comprehension difficulties participated in the study. The participants were assessed on three verbal working memory tasks that varied in terms of their processing demands and on the Das–Naglieri Cognitive Assessment System, which was used to operationalize intelligence. The results indicated first that the differences between poor and skilled comprehenders on working memory were amplified as the processing demands of the tasks increased. In addition, although poor comprehenders as a group had average intelligence, they experienced significant difficulties in simultaneous and successive processing. Considering that working memory and general cognitive ability are highly correlated processes, these findings suggest that the observed differences between poor and skilled comprehenders are likely a result of a deficient information processing system.
SLD vs ADHD Profiles

- There needs to be evidence that intelligence tests which are widely used in school psychology yield specific profiles at the scale (theoretical) level.
  - Without such evidence their utility to identify a ‘disorder in one or more of the basic psychological processes’ is limited
  - Subtest profile analysis is not advised
- The next important validity issue is correlation to achievement –
  - Do scores on the cognitive measure relate to academic achievement test scores?
IQ Correlations with Achievement?

- IQ scores correlate about .5 to .55 with achievement Intelligence (Brody, 1992)
- But traditional tests have achievement in them
- Naglieri (1999) summarized the correlations between several tests and achievement
  - The median correlation between each test’s overall score and all achievement variables was obtained
Ability & Achievement (Naglieri, 1999)

### Tests with knowledge

<table>
<thead>
<tr>
<th></th>
<th>WISC-III</th>
<th>DAS</th>
<th>WJ-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSIQ</td>
<td>.590</td>
<td>.600</td>
<td>.625</td>
</tr>
<tr>
<td>GCA</td>
<td>.590</td>
<td>.600</td>
<td>.625</td>
</tr>
<tr>
<td>Cog</td>
<td>.590</td>
<td>.600</td>
<td>.625</td>
</tr>
<tr>
<td>MPC</td>
<td>.590</td>
<td>.600</td>
<td>.625</td>
</tr>
<tr>
<td>FS</td>
<td>.590</td>
<td>.600</td>
<td>.625</td>
</tr>
</tbody>
</table>

### Tests with Little knowledge

<table>
<thead>
<tr>
<th></th>
<th>K-ABC</th>
<th>CAS</th>
<th>MPC</th>
<th>FS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median r</td>
<td>.630</td>
<td>.700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>2,636</td>
<td>1,600</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

WISC-3: WIAT Manual Table C.1 ages 6-16; WJ-R Technical Manual; CAS Interpretive Handbook; K-ABC Interpretative Manual; DAS Handbook. Increase = \((r_{1}^{2} - r_{2}^{2})/ r_{1}^{2}\) where \(r_{1}^{2}\) = WISC-3 WIAT correlation

Conclusion: YOU DON’T need Verbal and Quantitative to correlate with achievement
Next, a summary of ability test correlations with achievement EXCLUDING the scales that clearly require knowledge.

The average correlations of the SCALES with achievement and those without achievement were obtained to avoid criterion contamination...
Correlations with Achievement

- Average correlations between IQ Scales with total achievement scores
- The strength of measuring *basic psychological processes* as PASS is clear

Note: All correlations are reported in the ability tests’ manuals. Values per scale were averaged within each ability test using Fisher z transformations.

<table>
<thead>
<tr>
<th>Correlations Between Ability and Achievement Test Scores</th>
<th>Average Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Scales</td>
</tr>
<tr>
<td>WISC-V Verbal Comprehension</td>
<td>.74</td>
</tr>
<tr>
<td>WIAT-III Visual Spatial</td>
<td>.46</td>
</tr>
<tr>
<td>N = 201</td>
<td></td>
</tr>
<tr>
<td>WJ-IV COG Comprehension Knowledge</td>
<td>.50</td>
</tr>
<tr>
<td>WJ-IV ACH Fluid Reasoning</td>
<td>.71</td>
</tr>
<tr>
<td>N = 825</td>
<td></td>
</tr>
<tr>
<td>WJ-III ACH Sequential/Gsm</td>
<td>.43</td>
</tr>
<tr>
<td>N = 167</td>
<td></td>
</tr>
<tr>
<td>KABC</td>
<td></td>
</tr>
<tr>
<td>CAS Planning</td>
<td>.57</td>
</tr>
<tr>
<td>WJ-III ACH Simultaneous</td>
<td>.67</td>
</tr>
<tr>
<td>N=1,600</td>
<td></td>
</tr>
</tbody>
</table>
| Note: WJ-IV Scales Comp-Know= Vocabulary and General Information; Fluid Reasoning = Number Series and Concept Formation; Auditory Processing = Phonological processing.
Implications

• Non-discriminatory data suggest that traditional IQ tests yield larger race and ethnic differences than tests of basic psychological processing.
  • Conclusion: KABC2 and CAS2

• Validity data suggests show not all tests yield profiles that differentiate SLD and ADHD, evidence needed for determining strengths and weaknesses suggests.
  • Conclusion: CAS2 yields different profiles
  • And CAS correlates the highest with achievement.
Time to Think and Talk

- Reactions?
- Which results were most surprising?
- Do the results match your experiences in the field?
- Do you still think vocabulary is a good way to measure IQ?
- Your thoughts...
Presentation Outline

- From achievement ability discrepancy to a pattern of strengths and weaknesses
- The Discrepancy/Consistency model
- Which tests to use to define a “basic psychological process”

A neurocognitive theory will be suggested
- complex decision making (frontal lobes – Planning)
- focus and resistance to distractions (brain stem - Attention)
- visual/verbal spatial ability (Occipital/Parietal - Simultaneous)
- visual/verbal sequencing (Temporal area - Successive)

- Illustrative Case studies
  - How Discrepancy/Consistency yields more accurate eligibility determination
  - How Discrepancy/Consistency leads to intervention planning.
How did we identify ‘basic psychological processes’?

- We should use knowledge from cognitive and neuropsychology to construct a model to test.
- A well tested model can evolve into a THEORY of ‘basic psychological processes’.
- We should not assign new labels to traditional IQ subtests.
- We should recognize the limitations of developing a theory from factor analysis – “a research program dominated by factor analyses of test intercorrelations is incapable of producing an explanatory theory of human intelligence” (Lohman & Ippel, 1993, p. 41).
The term ‘basic psychological processes’ is a modern term for ability (or intelligence) when traditional verbal tests that are confounded by knowledge (e.g., Information, Similarities, Arithmetic, Vocabulary) are excluded.

‘basic psychological processes’ provide us the means to function and acquire knowledge and skills.

- Skills, like reading decoding, phonological coding, or math calculation, are *not* examples of a cognitive process.
  - Skill = knowledge that is well learned and therefore can be performed with little thinking.

**Defining basic psychological process**
Cognition or Knowledge?

- What does the student have to **know** to complete a task?
  - This is dependent on *instruction*
- How does the student have to **think** to complete a task?
  - This is dependent on the *brain* – ‘*basic psychological processes*’
- We must assess ability and achievement separately
Basic Psychological Processes

Connecting IDEA with practice
Brain, Cognition, & Intelligence

- The brain is the seat of abilities called PASS
- These basic psychological processes are the foundation of learning (Naglieri & Otero, 2011)

PASS & Basic Psychological Processes

• **Planning** = THINKING ABOUT HOW YOU DO WHAT YOU DECIDE TO DO
• **Attention** = BEING ALERT AND RESIST DISTRACTIONS
• **Simultaneous** = GETTING THE BIG PICTURE
• **Successive** = FOLLOWING A SEQUENCE

**PASS theory** is a modern way to measure neurocognitive abilities related to brain function
What is a Basic Psychological Process?

- A specific cognitive process provides a unique kind of function
- A variety of cognitive processes is needed to meet the many demands of our complex environment
- A variety of cognitive processes gives us away of achieving the same goal using different types of or different combinations of processes (this is important for intervention planning).
A Neurocognitive approach to understanding learning and learning problems
PASS: A neurocognitive approach

Three Functional Units described by A. R. Luria

- Planning: The “How To”, cognitive control, use of processes and knowledge, intentionality
- Attention: Focused cognitive activity and resistance to distraction
- Simultaneous & Successive Processing: Two forms of processing information
PASS Theory

- **Planning** is a basic psychological process we use to determine, select, and apply efficient solutions to problems
  - problem solving
  - developing plans and using strategies
  - impulse control and self-control
  - control of processing
  - retrieval of knowledge
CAS2: Rating Scale Planning

Directions for Items 1–10. These questions ask how well the child or adolescent decides how to do things to achieve a goal. They also ask how well a child or adolescent thinks before acting and avoids impulsivity. Please rate how well the child or adolescent creates plans and strategies to solve problems.

During the past month, how often did the child or adolescent . . .

<table>
<thead>
<tr>
<th>Item</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. produce a well-written sentence or a story?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. evaluate his or her own actions?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. produce several ways to solve a problem?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. have many ideas about how to do things?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. have a good idea about how to complete a task?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. solve a problem with a new solution when the old one did not work?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. use information from many sources when doing work?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. effectively solve new problems?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. have well-described goals?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. consider new ways to finish a task?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

___ + ___ + ___ + ___ + ___ = Planning Raw Score
Planned Codes

- Child fills in the codes in the empty boxes
- Children are encouraged to think of a good way to complete the page
Page 2
What is a good plan to complete this page?
Note orientation
Math Strategies

Note to the Teacher: When we teach children skills by helping them use strategies and plans for learning, we are teaching both knowledge and processing. Both are important.
PASS Theory: Planning

Planning

• Evaluate a task
• Select or develop a strategy to approach a task
• Monitor progress during the task
• Develop new strategies when necessary

Examples of classroom problems related to Planning
• Using the same strategy even if it is not effective
• Struggling with how to complete tasks
• Not monitoring progress during a task
• Misinterpretation of what is read

Attention is a basic psychological process we use to selectively attend to some stimuli and ignores others

- focused cognitive activity
- selective attention
- resistance to distraction

**RED**

**BLUE**
CAS2: Rating Scale Attention

Directions for Items 21–30. These questions ask how well the child or adolescent pays attention and resists distractions. The questions also ask about how well someone attends to one thing at a time. Please rate how well the child or adolescent pays attention.

During the past month, how often did the child or adolescent...

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. work well in a noisy area?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22. stay with one task long enough to complete it?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. not allow the actions or conversations of others to interrupt his or her work?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24. stay on task easily?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25. concentrate on a task until it was done?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26. listen carefully?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27. work without getting distracted?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28. have a good attention span?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>29. listen to instructions or directions without getting off task?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>30. pay attention in class?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

\[\text{Attention Raw Score} = \text{sum of ratings}\]
CAS2 Expressive Attention

- The child says the color not the word
- Score is time and number correct

<table>
<thead>
<tr>
<th>RED</th>
<th>BLUE</th>
<th>GREEN</th>
<th>YELLOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>YELLOW</td>
<td>GREEN</td>
<td>RED</td>
<td>BLUE</td>
</tr>
<tr>
<td>RED</td>
<td>YELLOW</td>
<td>YELLOW</td>
<td>GREEN</td>
</tr>
<tr>
<td>BLUE</td>
<td>GREEN</td>
<td>RED</td>
<td>BLUE</td>
</tr>
<tr>
<td>GREEN</td>
<td>YELLOW</td>
<td>RED</td>
<td>YELLOW</td>
</tr>
</tbody>
</table>
Number Detection

- Items 1 - 4 have 180 numbers on each page
- Each child is given two pages
- Targets appear at the top of the page
- Score for targets found and false detections
Attention

This sheet has a strong Attention demands because of the similarity of the options.


![Clock Image]

12. Trent began studying at 5:00 P.M. and finished 1 hour and 22 minutes later. What time did he finish?
   A 6:22 A.M.  B 5:22 P.M.  C 6:10 P.M.  D 6:22 P.M.

13. Maura began basketball practice at 3:00 P.M. and finished 50 minutes later. What time did she finish?
   A 3:50 P.M.  B 3:05 A.M.  C 4:05 P.M.  D 4:50 A.M.

14. Lance fished from 6:00 A.M. to 9:45 A.M. How long did he fish?
   A 3 hours  B 3 hours and 15 minutes  C 3 hours and 45 minutes  D 4 hours and 45 minutes

Use the calendar for \( \text{i0} - \text{i9} \)
PASS Theory: Attention

Attention

• Focus on one thing and ignore others
• Resist distractions in the learning environment

Examples of classroom problems related to Attention
• Trouble focusing on what is important
• Difficulty resisting distractions
• Difficulty working on the same task for very long
• Unable to see all the details
• Providing incomplete or partially wrong answers

PASS Theory

- **Simultaneous** is a basic psychological process which we use to integrate stimuli into groups
  - Stimuli are seen as a whole
  - Each piece must be related to the others
  - Content is not relevant
CAS2: Rating Scale Simultaneous

Directions for Items 11–20. These questions ask how well the child or adolescent sees how things go together. They also ask about working with diagrams and understanding how ideas fit together. The questions involve seeing the whole without getting lost in the parts. Please rate how well the child or adolescent visualizes things as a whole.

During the past month, how often did the child or adolescent . . .

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Barely</th>
<th>Sometimes</th>
<th>Frequency</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

\[\text{Simultaneous Raw Score} = \text{___} + \text{___} + \text{___} + \text{___} + \text{___}\]
CAS2 Matrices

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>1</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>2</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>3</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>4</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>5</td>
<td>〇</td>
<td>〇</td>
</tr>
</tbody>
</table>
Which picture shows a boy behind a girl?
PASS Theory: Simultaneous

Simultaneous Processing
- Relate separate pieces of information into a group
- See how parts related to whole
- Recognize patterns

Examples of classroom problems related to Simultaneous Processing
- Difficulty comprehending text
- Difficulty with math word problems
- Trouble recognizing sight words quickly
- Trouble with spatial tasks
- Often miss the overall idea
Numbers from 1 to 100

Simultaneous processing is used in this worksheet because it helps the child see the patterns in the math.
Modern 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
  - Stimuli are not inter-related

The child answers a question about a statement read by the examiner such as:
**The red greened the blue with a yellow. Who got greened?**
### CAS2: Rating Scale Successive

**Directions for Items 31–40.** These questions ask how well the child or adolescent remembers things in order. The questions ask about working with numbers, words, or ideas in a series. The questions also ask about doing things in a certain order. Please rate how well the child or adolescent works with things in a specific order.

During the past month, how often did the child or adolescent...

<table>
<thead>
<tr>
<th>Item</th>
<th>Rating Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>31. recall a phone number after hearing it?</td>
<td>Never 1 2 3 4</td>
</tr>
<tr>
<td>32. remember a list of words?</td>
<td>Never 1 2 3 4</td>
</tr>
<tr>
<td>33. sound out hard words?</td>
<td>Never 1 2 3 4</td>
</tr>
<tr>
<td>34. correctly repeat long, new words?</td>
<td>Never 1 2 3 4</td>
</tr>
<tr>
<td>35. remember how to spell long words after seeing them once?</td>
<td>Never 1 2 3 4</td>
</tr>
<tr>
<td>36. imitate a long sequence of sounds?</td>
<td>Never 1 2 3 4</td>
</tr>
<tr>
<td>37. recall a summary of ideas word for word?</td>
<td>Never 1 2 3 4</td>
</tr>
<tr>
<td>38. repeat long words easily?</td>
<td>Never 1 2 3 4</td>
</tr>
<tr>
<td>39. repeat sentences easily, even if unsure of their meaning?</td>
<td>Never 1 2 3 4</td>
</tr>
<tr>
<td>40. follow three to four directions given in order?</td>
<td>Never 1 2 3 4</td>
</tr>
</tbody>
</table>

---

**Successive Raw Score**

---

Jack A. Naglieri, Ph.D.  jnaglier@gmu.edu
**Word Series, Sentence Repetition (Ages 5-7) or Sentence Questions (Ages 8-17)**

- **Word Series**
  - Child repeats high imagery single syllable words presented at 1 per second

- **Sentence Repetition**
  - Child repeats sentences exactly as stated by the examiner such as:
    - The red greened the blue with a yellow.

- **Sentence Questions**
  - Child answers a question about a statement made by the examiner such as:
    - The red greened the blue with a yellow. Who got greened?
CAS2

- Visual Digit Span subtest allows for a Visual Auditory comparison

![Visual Digit Span subtest example](image1)

![Visual–Auditory Comparison table](image2)
Successive

The sequence of the sounds is emphasized in this work sheet - this requires successive processing.
Learning Math Facts

\[
8 + 9 = 17
\]

\[
8 + 9 = 17
\]

\[
8 + 9 = 17
\]
PASS Theory: Successive

Successive Processing

- Use information in a specific order
- Follow instructions presented in sequence

Examples of classroom problems related to Successive Processing:

- Trouble blending sounds to make words
- Difficulty remembering numbers in order
- Reading decoding problems
- Difficulty remembering math facts when they are taught using rote learning ($4 + 5 = 9$).

Relationships between PASS, knowledge and skills
Knowledge and Planning Learning Curves

- At first, basic psychological processes play a major role in learning.
- When a new task is learned and practiced it becomes a skill and execution requires retrieval and application of knowledge (Goldberg, 2009).

Role of PASS

Role of Knowledge and Skills

Over time and with experience
Time to Think and Talk

- Reactions?
- Does PASS make sense?
- Have you seen the four PASS neurocognitive abilities in the behavior of children?
- Your thoughts...
Presentation Outline

- From achievement ability discrepancy to a pattern of strengths and weaknesses
- The Discrepancy/Consistency model
- Which tests to use to define a “basic psychological process”
- A neurocognitive theory will be suggested
  - complex decision making (frontal lobes – Planning)
  - focus and resistance to distractions (brain stem - Attention)
  - visual/verbal spatial ability (Occipital/Parietal - Simultaneous)
  - visual/verbal sequencing (Temporal area - Successive)

Illustrative Case studies
- How Discrepancy/Consistency yields more accurate eligibility determination
- How Discrepancy/Consistency leads to intervention planning.
The Case of Rocky – Discrepancy Consistency Model example
From assessment to intervention
The case of Rocky

- Rocky\(^1\) is a real child with a real problem
- He lives in a large middle class school district
  - a wide variety of services are available
- In first grade Rocky was performing significantly below grade benchmarks in reading, math, and writing.
  - He received group reading instruction weekly and six months of individual reading instruction from a reading specialist
  - He made little progress and was retained

Note: This child’s name and other potentially revealing data have been changed to protect his identity.
The case of Rocky

- By the middle of his second year in first grade Rocky was having difficulty with
  - decoding, phonics, and sight word vocabulary; math problems, addition, fact families, and problem solving activities;
  - and focusing and paying attention.”
- After two years of special team meetings and special reading instruction he is now working two grade levels below his peers and is having difficulty in reading, writing, and math
- A comprehensive evaluation was conducted
- Here is a look at just the evidence of a ‘disorder in basic psychological processes’
Basic Psychological Processing Scores

- Planning: 72
- Simultaneous: 102
- Attention: 98
- Successive: 76
He has intra-individual differences in cognitive processes that underlie his academic problems.

Rocky has a “disorder in one or more of the basic psychological processes”

<table>
<thead>
<tr>
<th></th>
<th>Score</th>
<th>Diff</th>
<th>Significant</th>
<th>S/W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>72</td>
<td>-15.0</td>
<td>yes</td>
<td>Weakness</td>
</tr>
<tr>
<td>Simultaneous</td>
<td>102</td>
<td>15.0</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Attention</td>
<td>98</td>
<td>11.0</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Successive</td>
<td>76</td>
<td>-11.0</td>
<td>yes</td>
<td>Weakness</td>
</tr>
<tr>
<td>PASS mean</td>
<td>87.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Significant
Processing Strengths
(Simultaneous = 102
• Discrepancy between high and low processing scores
• Discrepancy between high processing and low achievement
• Consistency between low processing and low achievement

Academic Skills Weakness(es)

Processing Weaknesses in Planning (72) and Successive (76)

Processing Strengths (Simultaneous = 102 & Attention = 98)

Discrepancy Consistency Model for SLD

• Significant Discrepancy
• Significant Discrepancy
• Consistent Scores
The case of Rocky

- Rocky meets the definition of SLD in IDEA
  - He requires specialized intervention that takes into account his learning needs
  - Intervention should emphasize the use of strategies and plans in all content areas
  - Intervention should include ways to better work with serial information
  - Rote memory and phonics instruction are ill-advised
Intervention Resources

- Intervention resources
Interventions

- Helping Children Learn
  Intervention Handouts for
  Use in School and at Home,
  *Second Edition*
  By Jack A. Naglieri, Ph.D., & Eric B.
  Pickering, Ph.D.,
- Spanish handouts by Tulio Otero,
  Ph.D., & Mary Moreno, Ph.D.
Interventions for Rocky

Using Plans to Overcome Anxiety

Graphic Organizers for Connecting and Remembering Information

Segmenting Words for Reading/Decoding and Spelling

Chunking for Reading/Decoding

Remembering and relating information is a common part of learning and daily life. Students are encouraged to use graphic organizers to help them organize information and make sense of it.

Decoding a written word requires the person to make sense out of printed letters and words and

Reading/decoding requires the student to look at the sequence of the letters in words and understand the organization of specific sounds in order. Some students have difficulty with long sequences of letters and may benefit from instruction that helps them break the word into smaller, more manageable units, called chunks. Sometimes the order of the sounds in a word is more
The Case of Larry

Linda M. Einhorn-Marcoux, M.A.,
Examiner & Intervention Instructor

## Larry’s PASS scores

<table>
<thead>
<tr>
<th></th>
<th>Standard Score</th>
<th>Difference from Mean</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>100</td>
<td>-0.25</td>
<td></td>
</tr>
<tr>
<td>Simultaneous</td>
<td>119</td>
<td>18.75</td>
<td>Strength</td>
</tr>
<tr>
<td>Attention</td>
<td>98</td>
<td>-2.25</td>
<td></td>
</tr>
<tr>
<td>Successive</td>
<td>84</td>
<td>-16.25</td>
<td>Weakness</td>
</tr>
<tr>
<td>Mean</td>
<td>100.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: A ‘disorder in basic psychological process’ = Score is different from student’s average AND below 90
Larry

- Low achievement test scores
  - Letter Word Recognition 83
  - Written Expression 81
  - Word Attack 86
  - Decoding Fluency 81

- Meets the definition of SLD
  - “… 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.”
Discrepancy Consistency for Larry

• Discrepancy between high and low processing scores
• Discrepancy between high processing and low achievement
• Consistency between low processing and low achievement
Larry’s Pre-Post skills scores

Reilley’s Quiz Results

<table>
<thead>
<tr>
<th>Percent Correct</th>
<th>PRE</th>
<th>POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE</td>
<td>70</td>
<td>+60</td>
</tr>
<tr>
<td>POST</td>
<td>80</td>
<td>+83</td>
</tr>
<tr>
<td>PRE</td>
<td>90</td>
<td>+30</td>
</tr>
<tr>
<td>POST</td>
<td>100</td>
<td>+67</td>
</tr>
</tbody>
</table>

Graph 1

oi/oy & ou/ow: +60
i before e: +83
consonant doubling: +30
-y + word ending: +67
silent letters: +50
tion vs. sion: +50
ence vs. ance: +60
Larry’s Pre-Post skills scores

- Written Expression
- Written Language Composite
- TOWL Writing
- Word Attack
- Decoding Fluency

Pre Post

Larry's Pre-Post skills scores

- Written Expression
- Written Language Composite
- TOWL Writing
- Word Attack
- Decoding Fluency
Basic Psychological Processes and Intervention

The first time a test of ability has been shown to be relevant to instruction/intervention
A Cognitive Strategy Instruction to Improve Math Calculation for Children With ADHD and LD: A Randomized Controlled Study

Jackie S. Iseman and Jack A. Naglieri

Abstract
The authors examined the effectiveness of cognitive strategy instruction (successive) given by special education teachers to students with ADHD. The experimental group were exposed to a brief cognitive strategy instruction development and application of effective planning for mathematical computation compared to standard math instruction. Standardized tests of cognitive processes and math performance were administered pre- and postintervention, as well as at a 1 year follow-up. Large pre–post effect sizes were found for students in the experimental group. Math worksheets (0.85 and 0.26), Math Fluency (1.17 and 0.09), and Numerical Operations (1.08) scores improved over time. At 1 year follow-up, the experimental group continued to outperform the control group. Students with ADHD evidenced greater improvement in math worksheet problems (which measured the skill of generalizing learned strategies to other situations) when provided the PASS-based cognitive strategy instruction.
Design of the Study

**Experimental and Comparison Groups**

- **Experimental Group**
  - 19 worksheets with Planning Facilitation

- **Comparison Group**
  - 19 worksheets with Normal Instruction

- **7 worksheets with Normal Instruction**
Classroom Worksheets Pre-Post

Raw Scores for Worksheets

Cognition (Planning scores) predicted response to intervention

Reminder
< .2 = no effect
.2 - .5 = small
.6 - .8 = medium
>.8 = large
WJ Math Fluency

Raw Scores for WJ Math Fluency

Baseline: 75.5 79.4
Intervention: 86.1 60.9
ES = 0.1 1.3

Cognition (Planning scores) predicted response to intervention

Reminder
< .2 = no effect
.2 - .5 = small
.6 - .8 = medium
> .8 = large

jnaglieri@gmail.com www.jacknaglieri.com
**WIAT Numerical Operations**

![Bar chart showing raw scores for WIAT under Normal Instruction and Planning Facilitation with effect sizes (ES = -0.2 and ES = 0.4).]

**Cognition (Planning scores) predicted response to intervention**

Reminder:

- < .2 = no effect
- .2 - .5 = small
- .6 - .8 = medium
- > .8 = large
At 1-year follow-up, 27 of the students were retested on the WJ-III ACH Math Fluency subtest as part of the school’s typical yearly evaluation of students. This group included 14 students from the comparison group and 13 students from the experimental group. The results indicated that the improvement of students in the experimental group ($M = 16.08$, $SD = 19$, $d = 0.85$) was significantly greater than the improvement of students in the comparison group ($M = 3.21$, $SD = 18.21$, $d = 0.09$).
Iseman (2005)

- Baseline Intervention means by PASS profile
- Different response to the same intervention

Cognition (Planning scores) predicted response to intervention
PASS Comprehensive System

**GOAL:** Create a set of tools to measure PASS Theory for use across multiple settings and multiple tiers
PASS Comprehensive System

**CAS2**
(12 subtests)

**CAS2: Brief** (4 subtests)

**CAS2: Rating Scale**

Examiner’s Manual

Examiner’s Manual

Examiner’s Manual
PASS Comprehensive System
(Naglieri, Das, & Goldstein, 2014)

CAS2 Rating Scale
(4 subtests)
- Total Score
- Planning
- Simultaneous
- Attention
- Successive

CAS2 Brief
(4 subtests)
- Total Score
- Planning
- Simultaneous
- Attention
- Successive

CAS2 Core
(8 subtests)
- Full Scale
- Planning
- Simultaneous
- Attention
- Successive

CAS2 Extended
(12 subtests)
- Full Scale
- Planning
- Simultaneous
- Attention
- Successive
- Supplemental Scales
  - Executive Function
  - Working Memory
  - Verbal / Nonverbal
  - Visual / Auditory

Examiner’s Manual
PASS Comprehensive System

- At Tier 1 CAS2: Rating Scale can be completed by a teacher and depending upon those results...
- At Tier 2 the CAS2: Brief scale could be given to inform instruction and for screening
- At Tier 3 the CAS2: Extended Battery could be given for full evaluation of his neurocognitive abilities
- This PASS Comprehensive System provides three ways to learn about a student’s learning strengths and weaknesses
PASS Comprehensive System

**Tier 1**
- Universal Screening With CAS2-Rating Scale
  - Any PASS CAS2-RS score < 90 ?
    - NO: Any CAS2-RS score > 109 ?
      - NO: Typical Instruction
      - YES: Use PASS strength when teaching
    - YES: Select PASS methods that address weakness and go to Tier 2 progress monitoring

**Tier 2**
- Ongoing Progress Monitoring in academic area(s) of need
  - Is the student making good progress ?
    - NO: Maintain instructional methods based on PASS
      - Option 1:
        - Increase frequency & intensity of supports as indicated
        - Test with CAS2 Brief Sale to further evaluate PASS processing status
      - Option 2:
        - Go to Tier 3
    - YES: Maintain instructional methods based on PASS

**Tier 3**
- High frequency & intense supports are indicated
  - Is the student making good progress ?
    - NO: A comprehensive assessment of the student is warranted. Administer the CAS2 as part of the evaluation as well as other appropriate measures
    - YES: Maintain instructional methods based on PASS
CAS2 (Ages 5-18 yrs.)
CAS2 Development Goals

- **CAS2**
  - New norms
  - Strengthen reliability of the scales by modifying subtest formats
  - Improve factor structure
  - Add/delete items
  - Add a visual Successive subtest
  - Add new scales beyond PASS
  - Retain Administration format of
    - Examiner demonstrates,
    - Child does a sample
    - Directions for remaining items is given
    - And opportunity to Provide Help is given
The examiner can explain the demands of the task in any manner deemed appropriate and in any language.

**Item Set 1**

Expose Item Set 1 and say,

Look at this page. There are many boxes for you to fill in (point to the portion of the page with the empty boxes, but do not point in a sweeping motion to the rows or columns). Fill in as many of these as you can, as fast as you can, using these answers (point to the coded boxes, and pause for 3-5 seconds to allow the examinee to look at the page). You can do it any way you want. Let's see how many you can do.

Ready? (Provide a brief explanation if necessary.)

Begin. Start timing. Allow 60 seconds (1:00 minute). Record the time to completion and strategy use.

If the examinee stops or spends more than 1 or 2 seconds erasing, immediately say, **Keep going**.

If the examinee is still working after the time limit expires, say, **Stop**. Record the time in seconds. Note strategy use.
CAS2

- Same 8 (40 minutes) or 12 (60 minutes) subtest versions
- PASS and Full Scales provided (100 & 15) subtests (10 and 3)
CAS2 Scale and Subtest Structure

Full Scale CAS2

Planning
- Planned Codes
- Planned Connections
- Planned Number Matching

Attention
- Expressive Attention
- Number Detection
- Receptive Attention

Simultaneous
- Matrices
- Verbal-Spatial Relations
- Figure Memory

Successive
- Word Series
- Sentence Rep / Sentence Quest
- Visual Digit Span

Extended CAS2 Battery
- Core Battery
CAS2

- All subtests modified
- Planning subtests have more items
- Speech Rate deleted
- New: Visual Digit Span subtest
CAS2

- Supplementary Scales: Executive Function, Working Memory, Verbal, Nonverbal
- Added: A Visual and Auditory comparison
CAS2 Planning & Simultaneous

- Planned Number Matching
  - Variation on the original version
- Planned Codes
  - Variation on the original version
- Planned Connections
  - Additional items
- Matrices
  - More items added
- Verbal-Spatial Relations
  - More items added
- Figure Memory
  - More items added
CAS2 Attention & Successive

- Expressive Attention
  - No in color
- Number Detection
  - New format
- Receptive Attention
  - New format
- Word Series
- Sentence Repetition
  - Ages 5-7
- Sentence Questions
  - Ages 8-18
- Visual Digit Span
  - New subtest
CAS2 Online Scoring
and Report Writing
Enter data at the subtest level or enter subtest raw scores

Online program converts raw scores to standard scores, percentiles, etc. for all scales.

A narrative report with graphs and scores is provided
CAS2 Online Score & Report

- As values are entered the program completes the record form
- Supplemental scales are automatically computed
  - Executive Function
  - Working Memory
  - Verbal
  - Nonverbal
Narrative report can be obtained in Word or PDF

FULL SCALE

Jack earned a Cognitive Assessment System, Second Edition (CAS2) Full Scale score of 105, which is within the Average classification and is a percentile rank of 63. This means that his performance is equal to or greater than that of 63% of children his age in the standardization group. There is a 90% probability that Jack’s true Full Scale score falls within the range of 101 to 109. The CAS2 Full Scale score is made up of separate scales called Planning, Attention, Simultaneous, and Successive cognitive processing. Because there was significant variation among the PASS scales, the Full Scale will sometimes be higher and other times lower than the four scales in this test. The Attention Scale was found to be a significant cognitive strength. This means that Jack’s Attention score was a strength both in relation to his average PASS score and when compared to his peers. This cognitive strength has important implications for instructional and educational programming.

PASS and Full Scale Scores

- Planning: 102
- Simultaneous: 106
- Attention: 112
- Successive: 97
- Full Scale: 105
FULL SCALE

Jack earned a Cognitive Assessment System, Second Edition (CAS2) Full Scale score of 105, which is within the Average classification and is a percentile rank of 63. This means that his performance is equal to or greater than that of 63% of children his age in the standardization group. There is a 90% probability that Jack’s true Full Scale score falls within the range of 101 to 109. The CAS2 Full Scale score is made up of separate scales called Planning, Attention, Simultaneous, and Successive cognitive processing. Because there was significant variation among the PASS scales, the Full Scale will sometimes be higher and other times lower than the four scales in this test. The Attention Scale was found to be a significant cognitive strength. This means that Jack’s Attention score was a strength both in relation to his average PASS score and when compared to his peers. This cognitive strength has important implications for instructional and educational programming.
CAS2 Online Score & Report

- Narrative report includes additional scales

Visual-Auditory Comparison
Jack’s scores on the subtests in the successive processing scale that involved visual (Visual Digit Span) or auditory (Word Series) presentation of information were compared to determine if the difference in the modality of the task may have had relevance. There was a significant difference between the two subtests that measured successive processing when the information was given using an auditory (Word Series) or visual (Visual Digit Span) presentation. Jack’s score of 5 on the visual subtest falls within the Poor classification and is significantly lower than his score of 10 on the auditory subtest which falls within the Average classification. This information may have educational and therapeutic implications, and further exploration may be warranted.
CAS2 Online Score & Report

Online program includes PASS handouts from Helping Children Learn (2nd Edition) in English and Spanish.
CAS2: Brief for ages 4-18 years
CAS2: Brief

- Give in 20 minutes
- Good for reevaluations
- Yields PASS and Total standard scores (Mn 100, SD 15)
- All items are different from CAS2
  - Planned Codes
  - Simultaneous Matrices
  - Expressive Attention
- New Subtest
  - Successive Digits (forward only)
**CAS2: Brief Scale**

- Planned Codes is used for Planning ability
- Eight items using numbers not letters as in CAS2 and different orientation of the pages
CAS2: Brief Simultaneous Matrices

Simultaneous Matrices

Administration:
Age-based entry points; apply ceiling (ceiling of 4; basal of 2, if needed)

Materials:
CAS2: Brief Stimulus Book (pp. 1–90); #2 pencils

Objective:
Examinees should select the option that best completes the matrix.

Entry Points and Basals: If an examinee age 12–18 fails the first item, administer previous items in reverse order until two consecutive correct answers have been obtained (basal). Record the response in the appropriate column, and then score the response (1 = correct, 0 = incorrect) for each item.

Discontinue Rule: Discontinue subtest if examinee receives four consecutive incorrect responses.

Directions for All Examinees:
Show example in the CAS2: Brief Stimulus Book (p. 1), and say, Look at this page. There is a piece missing here (point to the question mark). Which one of these (point to the five options in a sweeping motion) goes here? (Point to the question mark.) If the response is correct, say, Yes, that’s the right one because it’s all yellow. If incorrect, point to Option 3 and say, This is the right one because it’s all yellow. (If necessary, provide a brief explanation.) Continue with directions for the appropriate age group.

Directions for Examinees Ages 4–11:
Show item 1 and say, Look at this page. There is a piece missing here. (Point to the piece missing here.) Which one of these (point to the five options in a sweeping motion) goes here? (Point to the question mark.) If the response is correct, say, Yes, that’s the right one because it’s all yellow. If incorrect, point to Option 3 and say, This is the right one because it’s all yellow. (If necessary, provide a brief explanation.) Continue with directions for the appropriate age group.

Directions for the Remaining Items:
For each item, say as needed. There is a piece missing here (point to the question mark). Which one of these (point to the options in a sweeping motion) goes here? (Point to the question mark.) When the question is no longer necessary, say, Now do this one. (Provide no additional help.) If the examinee does not respond after about 60 seconds, encourage him or her to choose one of the options. If the examinee still does not respond, say, Let’s try the next one. (Show the next item.)
CAS2: Brief Scale

- Expressive Attention (Stroop) used
- Big/Little animals (ages 4-7 years)
- Color Words (ages 8-18)
CAS2: Brief Planned Codes & Successive Digits

- Planned Codes has 8 items using numbers not letters and has different patterns
- Successive Digits uses numbers (not words)

Directions for Reported Strategies:
After all item sets have been completed, with Item Set 6 still showing, say, Tell me how you did these. Indicate the pages in the Student Response Booklet just completed by the examinee. If necessary, say, How did you complete the pages? You may briefly clarify the question, provided that you give no examples. Record the examinee’s reported strategies in the “Reported” column of the Strategy Checklist, as applied to each item set.

<table>
<thead>
<tr>
<th>Item Set</th>
<th>Time Limit</th>
<th>Time in Seconds</th>
<th>Accuracy Score (Number Correct)</th>
<th>Ratio Score (see pages 9-11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>60’ (100)</td>
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<td>Example B</td>
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<tr>
<td>2.</td>
<td>60’ (100)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>60’ (100)</td>
<td></td>
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<tr>
<td>Example C</td>
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<tr>
<td>4.</td>
<td>60’ (100)</td>
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<tr>
<td>Example D</td>
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<tr>
<td>5.</td>
<td>60’ (100)</td>
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<tr>
<td>6.</td>
<td>60’ (100)</td>
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</tbody>
</table>

Raw Score (sum of ratio scores) =

Strategy Checklist

<table>
<thead>
<tr>
<th>Observed</th>
<th>Reported</th>
<th>Description of Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Coded left to right, top to bottom</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Said codes to self out loud</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Coded one letter at a time (e.g., did As, then Bs)</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Coded neatly and slowly</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Used a pattern found in a previous item</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Looked for the pattern in the item</td>
<td></td>
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<tr>
<td>7.</td>
<td>Looked at codes already completed, rather than using the key</td>
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</tbody>
</table>

Other:
Observed
Reported
CAS2: Rating Scale

Structure and features
CAS2 Rating Scales (Ages 4-18 yrs.)

- The CAS2: Rating measures behaviors associated with PASS constructs
- Normed on a nationally representative sample of 1,383 students rated by teachers
CAS2 Rating Scales

- The CAS2: Rating form contains 40 items
- 10 items for each PASS scale
- PASS and Total scales are set to have a mean of 100 and standard deviation of 15
CAS2 Rating Scales

- The rater is given a description of what each scale is intended to measure.
- This informs teachers about PASS

Directions for Items 1–10. These questions ask how well the child or adolescent decides how to do things to achieve a goal. They also ask how well a child or adolescent thinks before acting and avoids impulsivity. Please rate how well the child or adolescent creates plans and strategies to solve problems.

Directions for Items 11–20. These questions ask how well the child or adolescent sees how things go together. They also ask about working with diagrams and understanding how ideas fit together. The questions involve seeing the whole without getting lost in the parts. Please rate how well the child or adolescent visualizes things as a whole.

Directions for Items 21–30. These questions ask how well the child or adolescent pays attention and resists distractions. The questions also ask about how well someone attends to one thing at a time. Please rate how well the child or adolescent pays attention.

Directions for Items 31–40. These questions ask how well the child or adolescent remembers things in order. The questions ask about working with numbers, words, or ideas in a series. The questions also ask about doing things in a certain order. Please rate how well the child or adolescent works with things in a specific order.
CAS2 Rating Scales

- The CAS2: Rating Scale scores can be used as part of a larger comprehensive evaluation or for instructional planning.
# PASS: Across the Three Measures

<table>
<thead>
<tr>
<th>Planning</th>
<th>CAS2 Rating Scale</th>
<th>CAS2</th>
<th>CAS2 Brief</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>thinks before acting, creates plans, uses strategies to achieve a goal.</td>
<td>Planned Codes</td>
<td>Planned Codes</td>
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<td></td>
<td></td>
<td>Planned Connections</td>
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<td></td>
<td></td>
<td>Planned Number Matching</td>
<td></td>
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<tr>
<td>Attention</td>
<td>can focus attention to one thing at at time and resists distractions.</td>
<td>Expressive Attention</td>
<td>Expressive Attention</td>
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<td></td>
<td></td>
<td>Number Detection</td>
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<td></td>
<td></td>
<td>Receptive Attention</td>
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<tr>
<td>Simultaneous</td>
<td>understands how parts combine to make a whole and see the big picture.</td>
<td>Matrices</td>
<td>Simultaneous Matrices</td>
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<tr>
<td></td>
<td></td>
<td>Verbal-Spatial Relations</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Figure Memory</td>
<td></td>
</tr>
<tr>
<td>Successive</td>
<td>works with numbers, words or ideas that are arranged in a specific series.</td>
<td>Word series</td>
<td>Successive Digits</td>
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<tr>
<td></td>
<td></td>
<td>Sentence Repetition/Questions</td>
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<td></td>
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<td>Visual Digit Span</td>
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</tbody>
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SLD and Basic Psychological Processes

- The IDEA definition of SLD is
  - “... 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.”

- **Measuring basic psychological processes is essential** to address the SLD definition

- School psychologists should choose wisely when selecting a measure of basic psychological processes