Executive Skills: Strategies for Success

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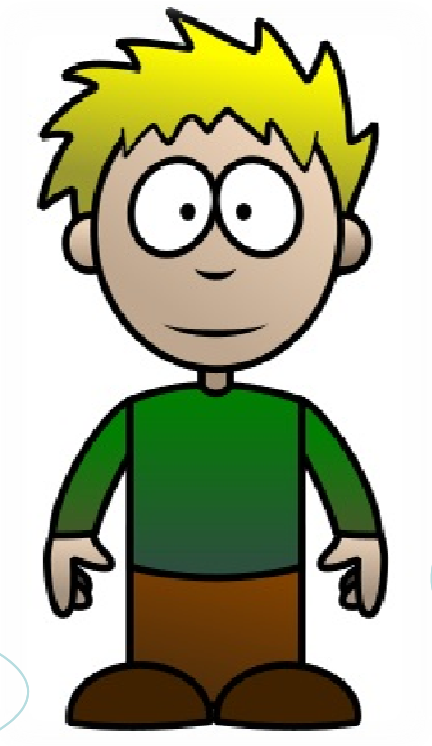
Do you know this child?

He doesn't try.

He is not prepared for class.

He couldn't find his way out of a paper bag.



He can't get his work done.

He has no self control.

He loses everything.

He makes off the wall comments.

He annoys his friends.

He never follows directions.

He doesn't turn in his work.

He's lazy!

I think he's
Developmentally Delayed.

I think he has a
Learning Disability!

I think he has ADHD!

I think he's a great kid.
But, believe me he's a
challenge in the classroom!

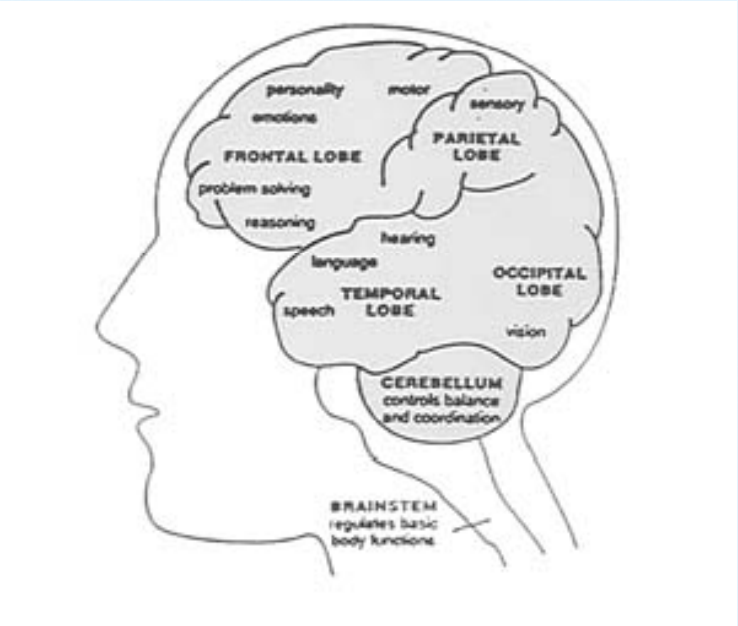
I think he's on
the Spectrum.

Current brain research says this student has Executive Skills Deficits.

What are Executive Skills?

- From the Neurosciences Literature
- The brain-based skills required to execute or perform tasks.

(Dawson & Guare)



People use Executive Skills:

- to analyze situations
- formulate and act on a plan
- adjust actions as required to accomplish a task

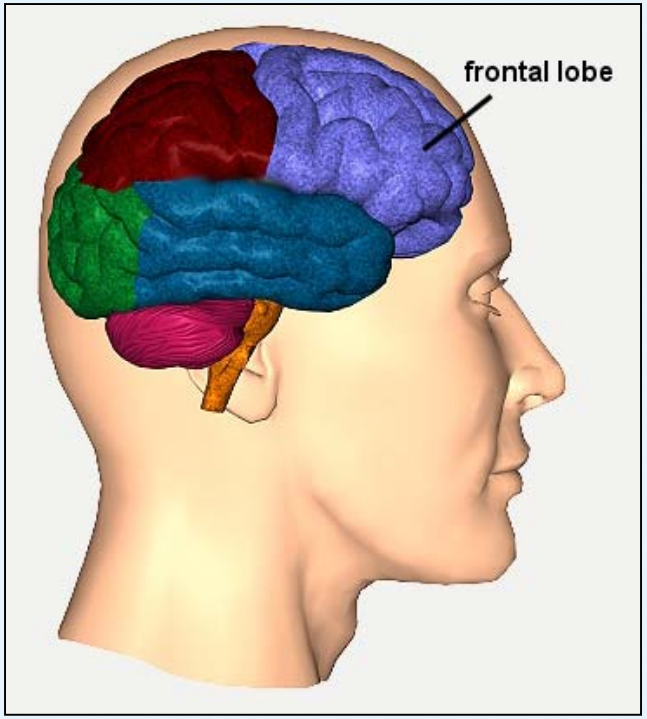
Horowitz, 2007

To get from Point A.....Point B, without falling apart.

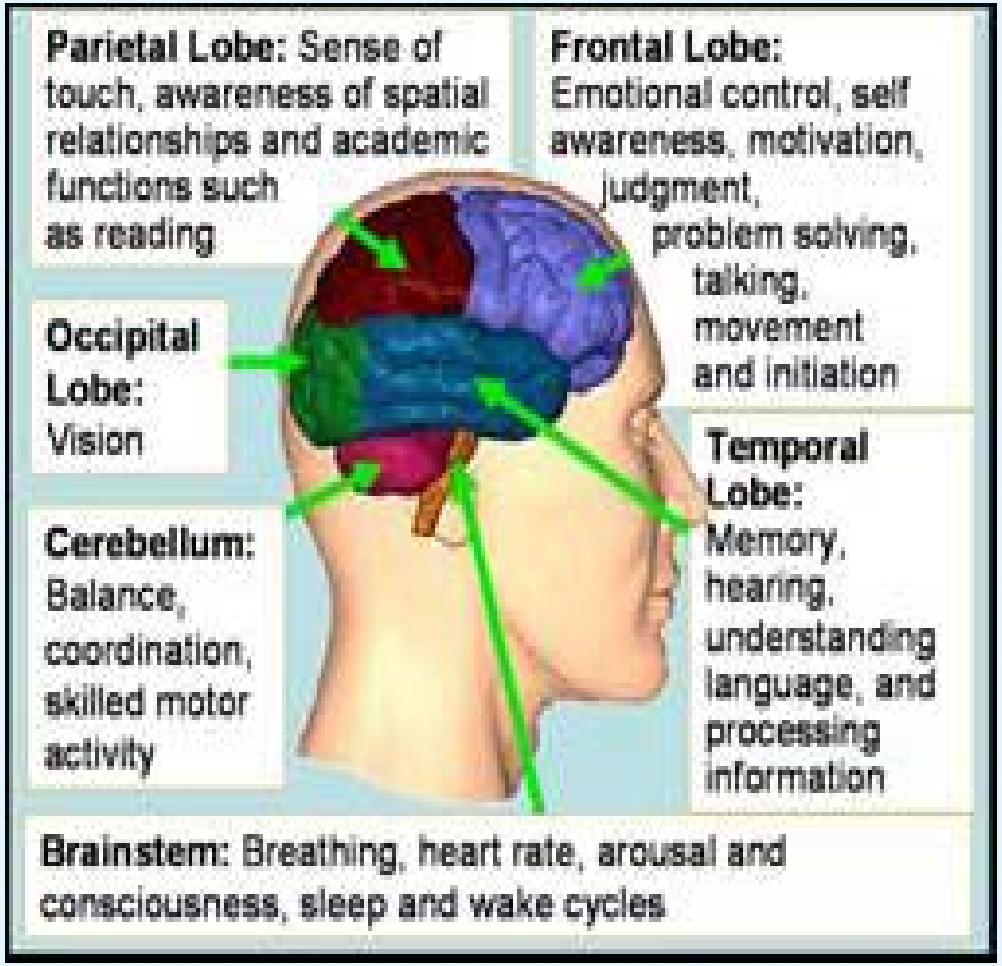
Executive Skills are like a conductor for a mighty orchestra.

Executive skills are localized in prefrontal structures of the frontal lobe.

(Pennington and Orzonoff, 1996)



The Prefrontal Cortex sends out information to:

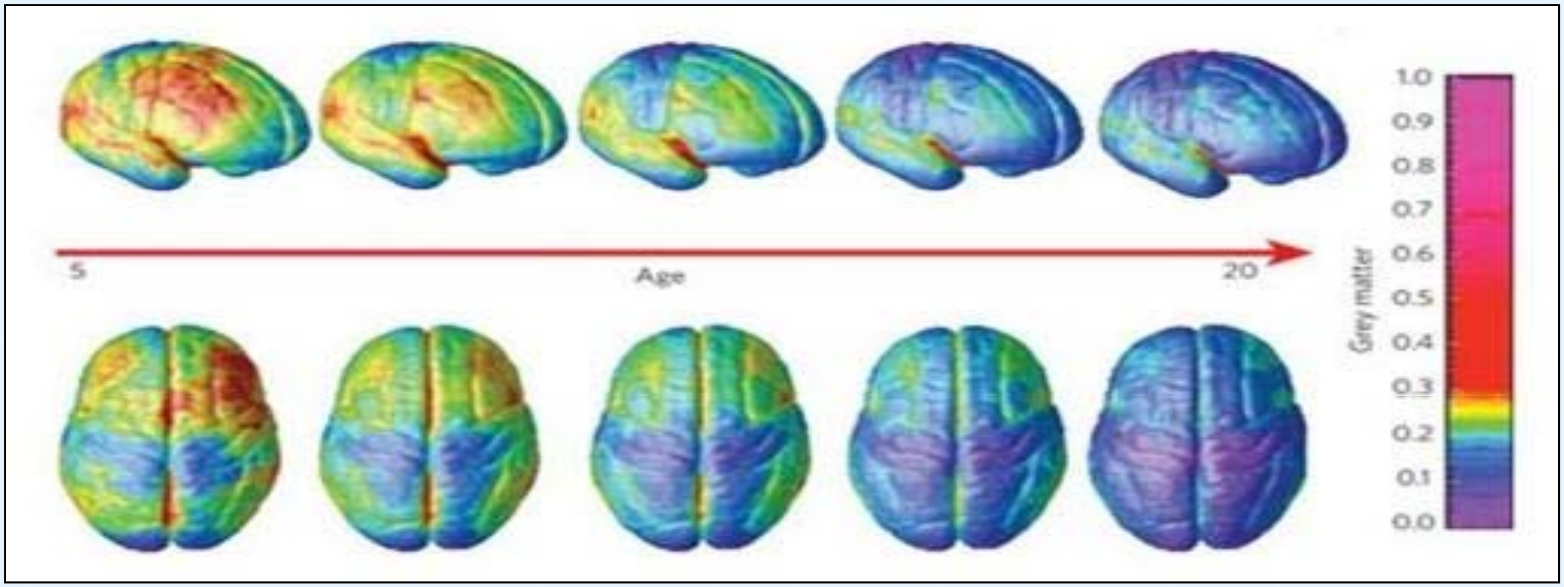


Functions of the Prefrontal Cortex

- **Integration and association (Highest order)**
- Flexible behavior
- **Using past experiences to plan and modify behavior**
- Making decisions based on reward
- **Selecting and regulating appropriate responses and behaviors**
- Mediating affect and emotion
- **Incorporating past experiences and sensory input with internal impulses and emotions**
- Initiating, selecting and organizing relevant behaviors
- **Storing and managing verbal and visual working memory**
- Sustaining attention
- **Providing temporal memory and organization**
- Accessing episodic long-term memory
- **Making inferences and decisions**
- Evaluating outcomes and new learning by association while engaged in task or behavior

So…are executive function skills fully developed at birth?

The Development of the Frontal Lobe



- Begins before birth and continues until early adulthood.

- Growth spurts occur between:
  5-7 years
  9-12 years
  in adolescence.

Why is it important for educators to understand Executive Functioning?

- Explains behaviors in terms of brain function
- Explains behaviors with a developmental framework

Frontal lobe functioning impacts all that we do.

Executive skills involve both thinking and doing:

Thinking (Cognition)	Doing (Behavior)
Working Memory	Response inhibition
Planning/prioritizing	Emotional Control
Organization	Sustained Attention
Time Management	Task Initiation
Metacognition	Goal-directed Persistence
	Flexibility

Dawson & Guare

Working Memory

The ability to hold information in mind while performing complex tasks.

- Drawing on past learning or experience to apply to the situation at hand
- Projecting/predicting what might happen in the future.
- Following directions
- Remembering assignments
- Remembering what has just been read
- Memorizing information

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Planning/Prioritizing

The ability to create a roadmap to reach a goal or to complete a task.

- Making decisions about what's important to focus on and what's not
- Developing a timeline
- Sequencing steps needed to complete a task or reach a goal.

Dawson & Guare

Organization

The ability to design and maintain systems for keeping track of information or materials.

- Involves keeping up with materials
- Keeping work area and book bag neat
- Keeping work organized

Dawson & Guare

Time Management

The capacity to estimate how much time one has, how to it, and how to stay within time limits and deadlines.

- Making decisions about what's important to focus on and what's not
- Estimating how long it will take to finish
- Sequencing steps needed to complete a task or reach a goal
- Following through on a study plan
- Sticking with a timeline

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Metacognition

The ability to stand back and take a bird's-eye view of oneself in a situation.

- Observing how one problem solves
- Keeping focused on the goal
- Tolerating corrective criticism
- Self monitoring, self evaluation skills
- Choosing a topic
- Knowing what to study
- Understanding the material
- Proofreading
- Checking your work

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Response Inhibition

The capacity to think before you act.

- Resisting the urge to say or do something
- Controlling impulsive behavior
- Thinking before acting

Dawson & Guare

Emotional Control

The ability to manage emotions in order to achieve goals, complete tasks or control and direct behaviors.

- Using coping strategies to control behavior
- Anticipating situations that might be upsetting
- Planning for emotional situations

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Sustained Attention

The capacity to attend to a situation or task in spite of distractibility, fatigue, or boredom.

- Involves completing assignments, such as seatwork
- Not being easily distracted, regardless of content
- Not being overwhelmed by length or complexity of assignments

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Task Initiation

The ability to begin a task without undue procrastination, in a timely fashion.

- Involves getting started with work
- Following multiple steps in a project
- Knowing where to begin (or how)
- Turning in assignments on time

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Goal Directed Persistence

The capacity or drive to follow through to the completion of a goal and not be put off by other demands or competing interests.

- Involves sticking with a project no matter what
- Not giving up
- Finishing projects by the deadline

Dawson & Guare

Flexibility

The ability to revise plans in the face of obstacles, setbacks, new information or mistakes.

- Involves adapting to change
- Framing problems in solutions
- Controlling feelings when things are not the way they should be
- Sticking with a task when problems arise

Dawson & Guare

Who has needs in the areas of Executive Functioning?

Autism and Executive Functions

Impaired executive function components associated with autism:

1. Inability to engage in goal-directed behavior
2. Inability to adjust behavior to meet environmental demands
3. Inability to perform multiple tasks simultaneously
4. Inability to spontaneously adapt to changes in task requirements
5. Inability to demonstrate flexible attention
6. Difficulty with task planning
7. Preservative errors in task execution

Asperger's and Executive Functions

Impaired executive function components associated with Asperger's:

1. Rigid thinking with focus on detail
2. Poor recognition and understanding of nonverbal cues
3. Poor inhibition for verbalization
4. Difficulty generalizing rote learning
5. Poor motor planning/general disorganization
6. Poor problem solving and reasoning
7. Difficulty adapting to change
8. Poor self regulation
9. Impaired social interaction

ADHD and Executive Functions

Impaired executive function components associated with ADHD:

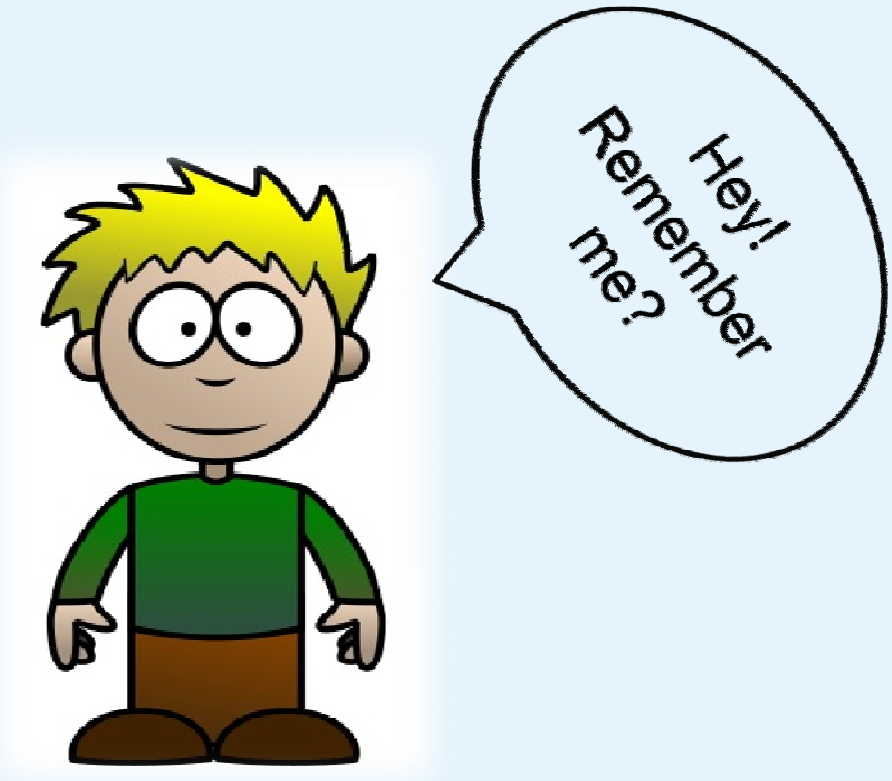
1. Failure to attend to details/careless mistakes
2. Difficulty sustaining attention
3. Inability to follow through on instructions/completing tasks
4. Difficulty organizing tasks
5. Easily distracted
6. Forgetful
7. Impulsive in verbal and motor responses
8. Poor self regulation of social behavior

Learning Disabilities and Executive Functions

Impaired executive function components associated with LD:

1. Difficulty with organization of materials and projects
2. Difficulty planning and completing tasks
3. Trouble sequencing and communicating details
4. Difficulty turning in assignments, even when they are completed.
5. Difficulties initiating and generating ideas independently
6. Difficulty retaining information while doing something with it.

Question: So, a student walks into the classroom and appears to be having deficits in Executive skills functioning.
What do you do?



Answer: Determine executive skill strengths and weaknesses through formal and authentic testing.

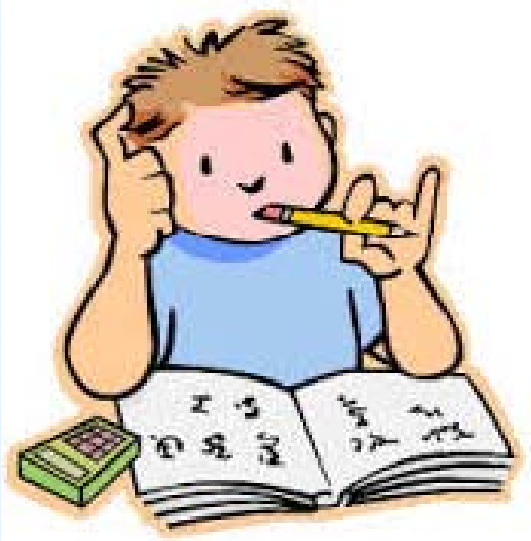
Assessing Executive Functions

Standardized Tests for Executive Functioning

- Comprehensive Executive Function Inventory (CEFI)
- Test of Everyday Attention for Children (TEA-Ch)
- Woodcock-Johnson III Test of Cognitive Abilities (Analysis-Synthesis, Concept Formation, Numbers Reversed subtests)

Behavioral Rating Scales for Executive Functioning

- Behavior Rating Inventory of Executive Function-Preschool (BRIEF-P)
- Behavior Rating Inventory of Executive Function (BRIEF)
- Behavior Rating Inventory of Executive Function-Self Report (BRIEF-SR)
- Informal Assessment of Executive Function Skills



So… Now What?

Strategy Based Remediation

Content	Process
The What • Curriculum • Specialized programs	**The How** • Strategies

Dawson and Guare's Ten Principles for Improving Executive Function

1. **Teach deficit skills**
2. Take developmental level into account
3. **Move from the external to the internal**
4. External includes changes to the environment, the task and interaction
5. **Use the child's fight for control-Include the student in plans**
6. Modify tasks to match effort capacity
7. **Use incentives to augment instruction**
8. Provide just enough support for success
9. **Keep supports in place until mastery**
10. Stop supports, supervision, and incentives gradually

Success Map Technique

11. Teach students to use the “Success Map” technique which explicitly teaches:
   - Awareness and Naming (the Behavior Strategy)
   - Planning (Determining a plan of action)
   - Visualization (Successful completion)

Executive Skills STRATEGIES

Believing In Achieving

I WON'T DO IT
I CAN'T DO IT
I WANT TO DO IT
HOW DO I DO IT ?
I'LL TRY TO DO IT
I CAN DO IT
I WILL DO IT

Believing In Achieving

One at a time!

Strategy Framework

Behavior	Modification/Accommodation	Strategy
Identify the Target Behavior (include student)	Determine related classroom and/or home modifications or accommodations	Determine direct strategy to be taught and plan for teaching it.

Plan for monitoring and reinforcement:

Modifications/Accommodations

- Changing the environment to adjust for executive skills limitations.
- Providing supports, controls, schedules
- Moving towards independence from the beginning

Modifications/Accommodations

Changing the Physical or Social Environment

- Type teacher to whom a student is assigned
- Seat in classroom
- Number of students in room
- Design of classroom

Changing the Nature of the Task

- Shorter assignments
- Multiple choice
- Choice in activities
- Copies of notes
- Assignments broken down
- Scoring rubrics

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Modifications/Accommodations

Changing the Ways Cues are Provided

- Verbal reminders
- Visual cues
- Schedules
- Lists

Changing the Way Adults Interact with Students

- Level of supervision, support, cueing
- Modeling the active use of executive skills
- Talk through and coach the use of executive skills.

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Motivating students and reinforcing use of Executive Skills

- Try motivating, rather than imposing penalties (Talk to kids in terms of what they can do, not what they are doing)
- Help students learn to self talk to motivate use of executive skills
- Determine rewards and consequences that are understandable, manageable, and meaningful
- Write a behavior contract
- Have a system to fade reinforcement at the onset

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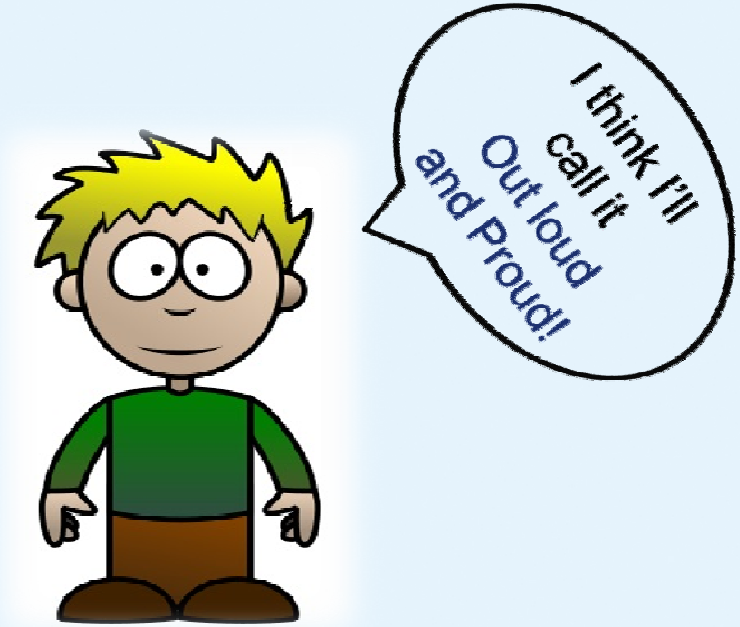
Success Map for Teaching Strategies

Being Deliberate

Name the Strategy

Include the student…he will be the one using it.

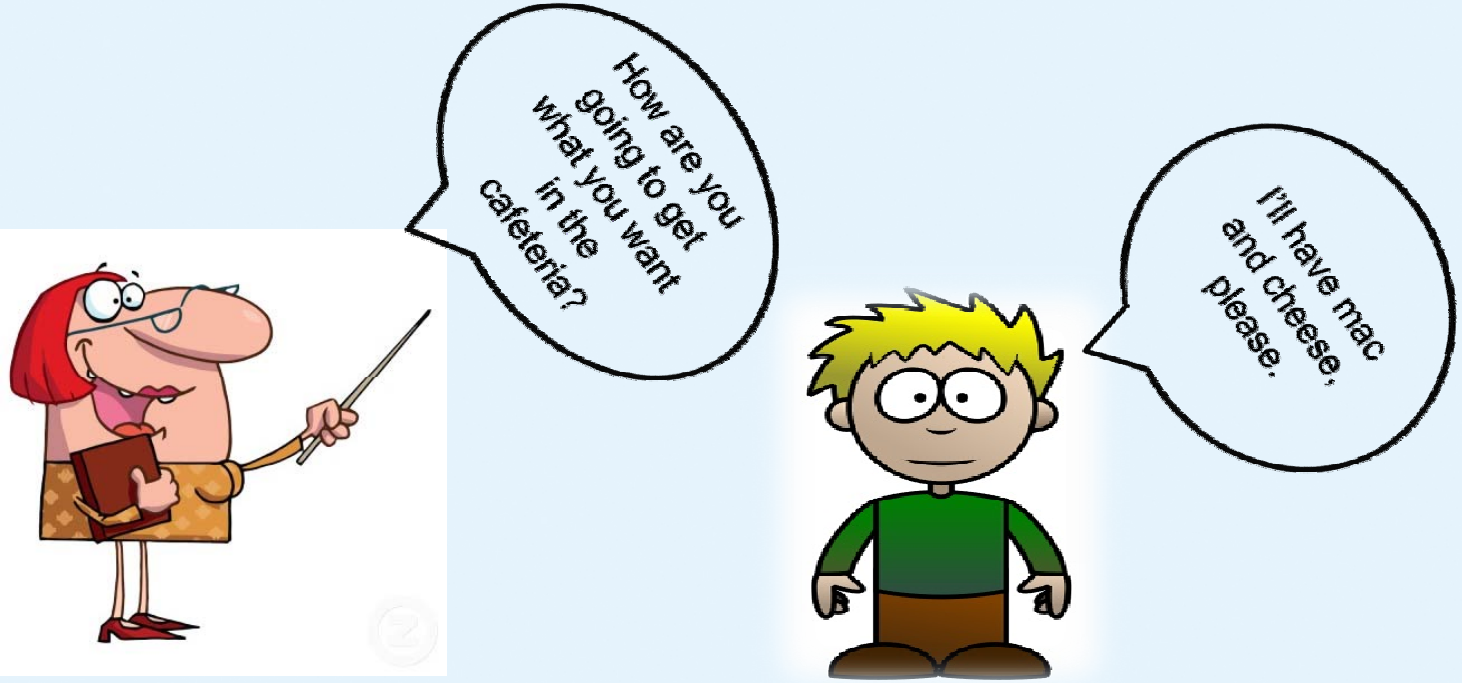


Success Map for Teaching Strategies

Being Deliberate

Make the strategy come alive.

Use social stories, role plays, pictures, books, modeling.

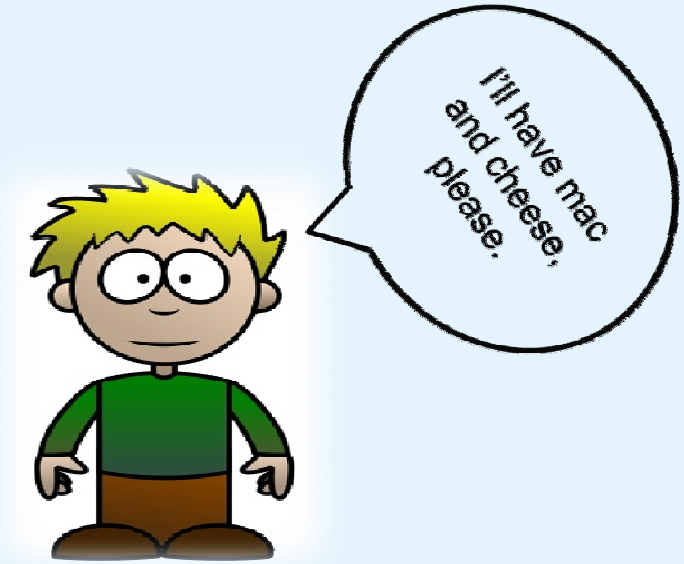


Success Map for Teaching Strategies

Being Deliberate

Give opportunities to practice the strategy.

In one-on-one and small group, have student practice using the strategy.
Reinforce successful use.

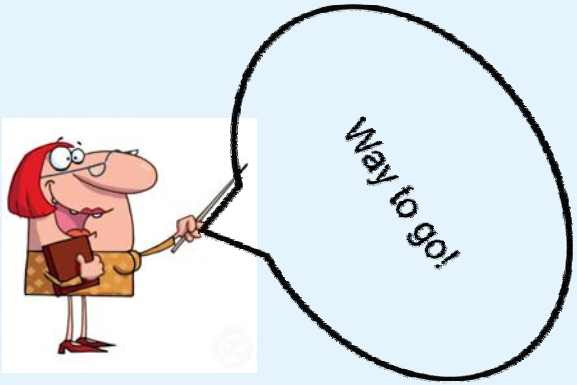


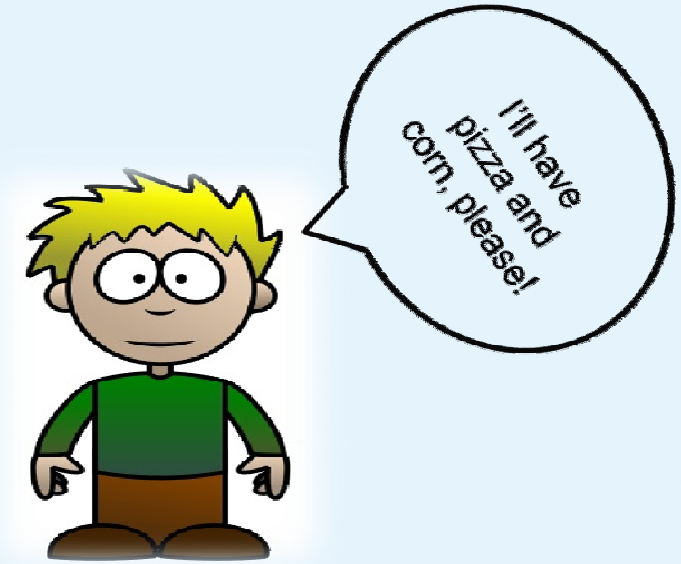
Success Map for Teaching Strategies

Being Deliberate

Fade support.

As the student begins to use the strategy, fade support and reinforcement.



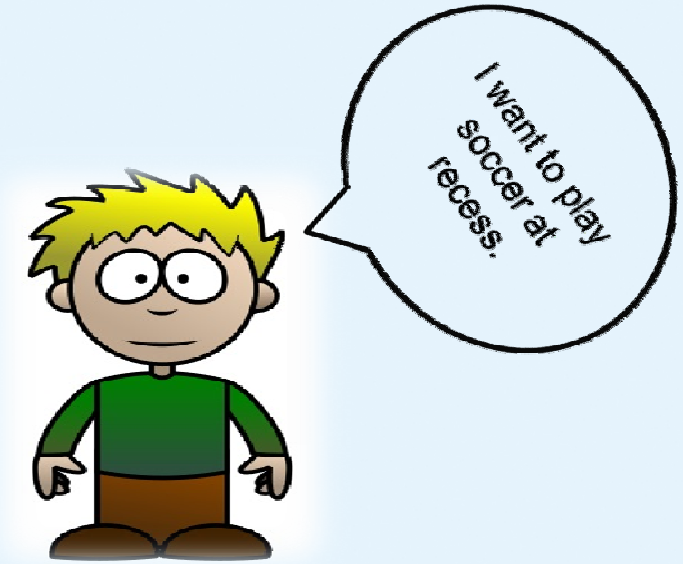


Success Map for Teaching Strategies

Being Deliberate

Monitor.

Monitor the use of the strategy and reinforce, as planned.



IEP Goals/Objective Operatives

Use the Common Core Standards as a guide to goal setting.

- To verbalize
- To visualize
- To answer questions
- To ask questions
- To sequence
- To predict
- To explain
- To plan
- To complete a task
- To define
- To recall
- To categorize
- To list
- To set goals

Improving Executive Skills

The Bottom Line

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National Center for Learning Disabilities www.ncld.org

All Kinds of Minds www.allkindsofminds.org

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How CHC links School Psychologists with Speech Language Pathologists

(or how to collaborate besides using a staple)

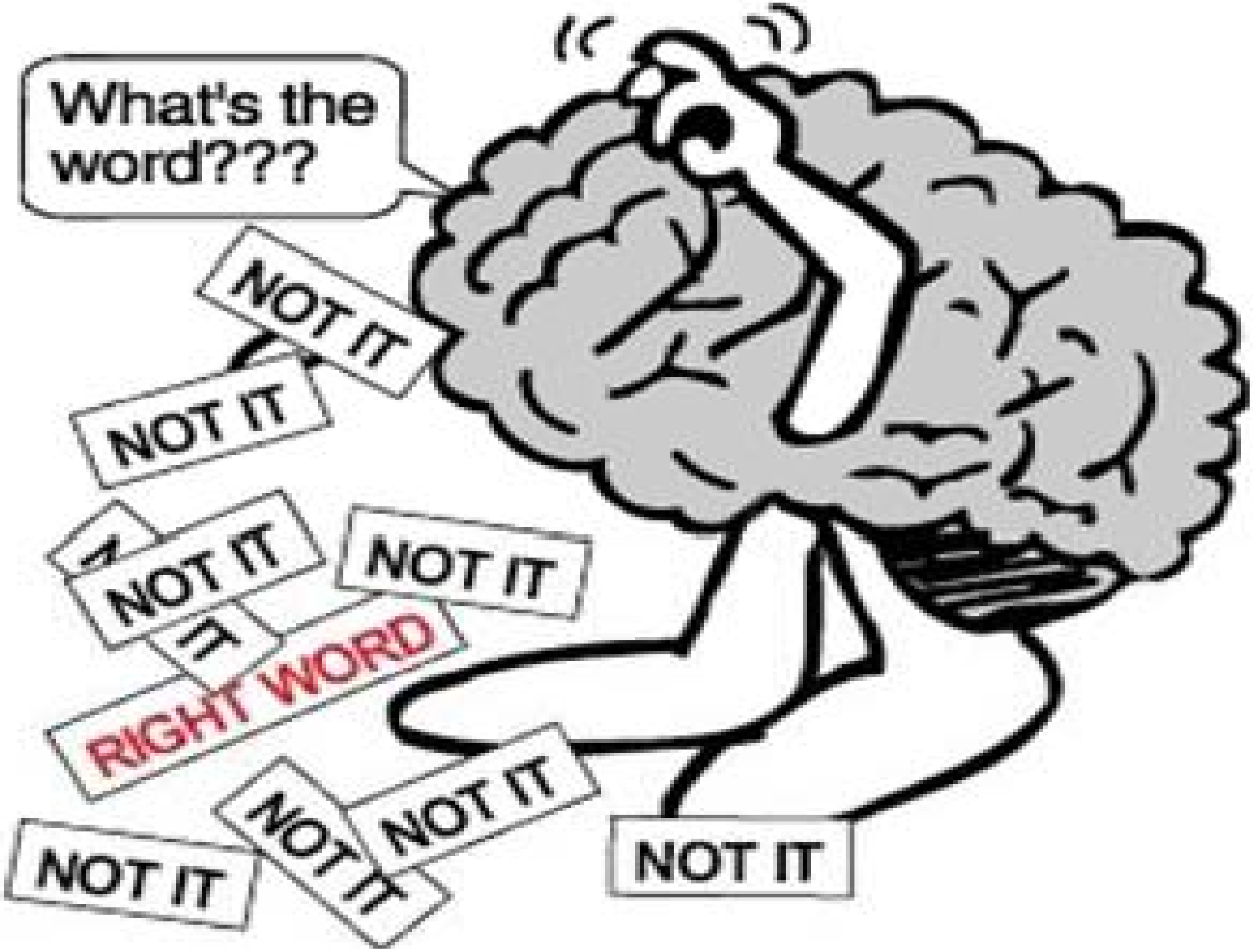
Andrew Shanock, Ph.D., NCSP

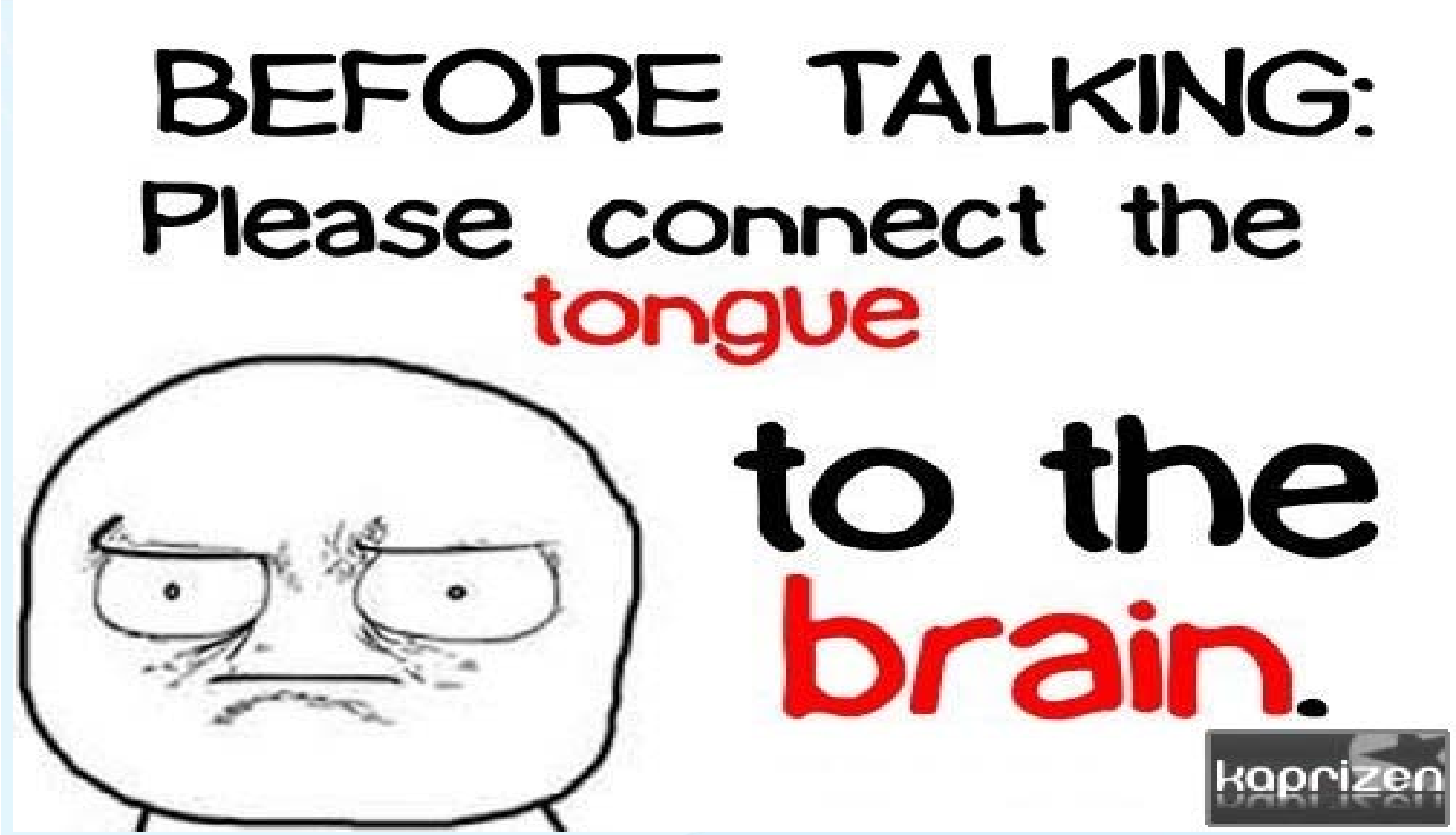
College of Saint Rose, Albany NY

You can find this presentation at

http://www.strose.edu/academics/schoolofeducation/school_psychology/article5560

Google – **Shanock Saint Rose**


What's the word???
NOT IT
NOT IT
NOT IT
NOT IT
NOT IT
RIGHT WORD
NOT IT
NOT IT
NOT IT
NOT IT


BEFORE TALKING:
Please connect the
tongue
to the
brain.
kaprizen

Goals

- Provide a contemporary, best practice framework for assessment in a true collaborative way
- Define CHC XBA and CHC factors
- End the practice of practice effects.
- Open communication between SLP and SP
- How to write a comprehensive eval

What are we doing?

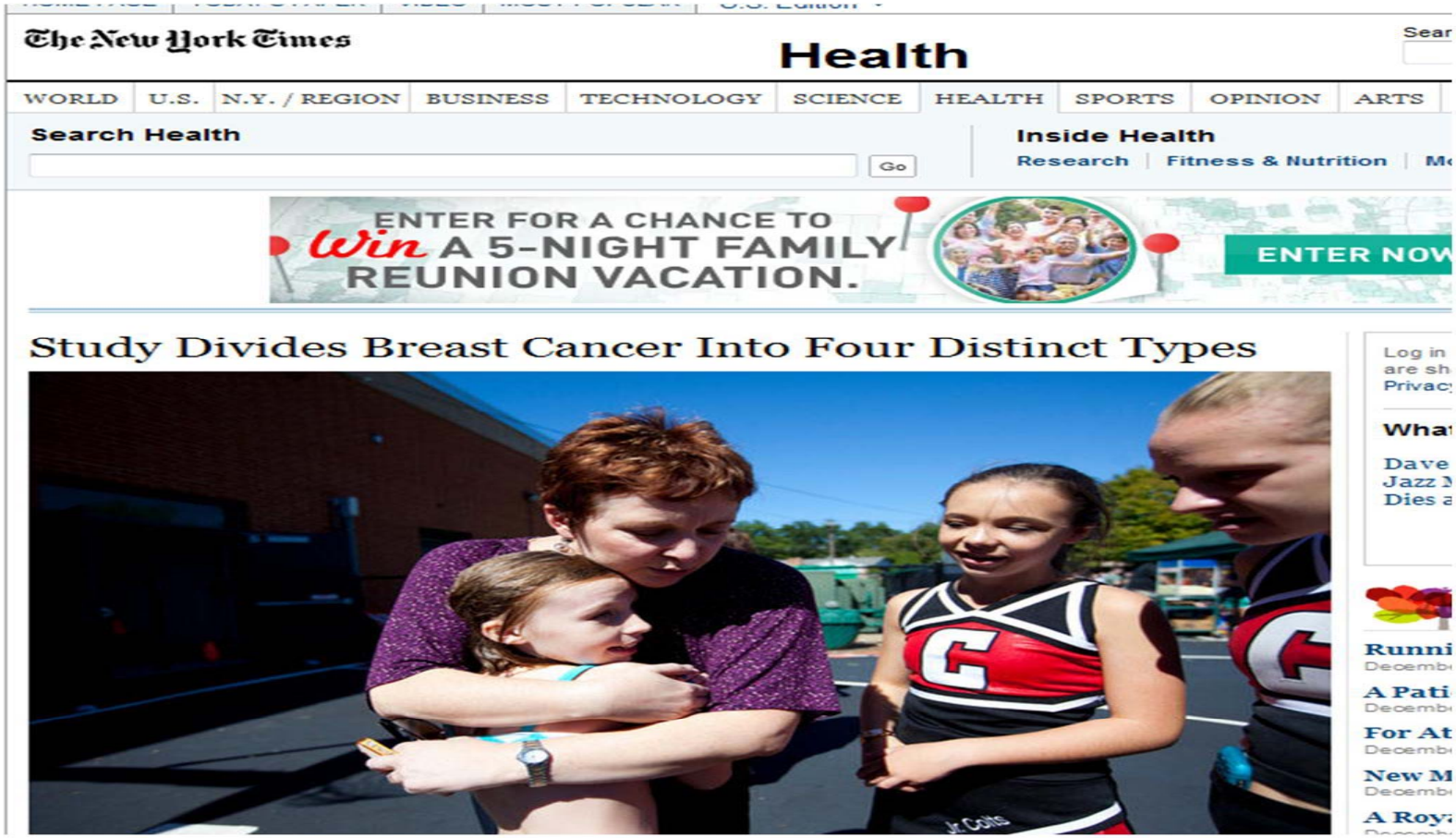
After you've done a thing the same way for two years, look it over carefully. After five years, look at it with suspicion. And after ten years, throw it away and start all over.

(Perlman, 1958)

What are we doing?

THE PRACTICE OF TODAY IS THE MALPRACTICE OF TOMORROW

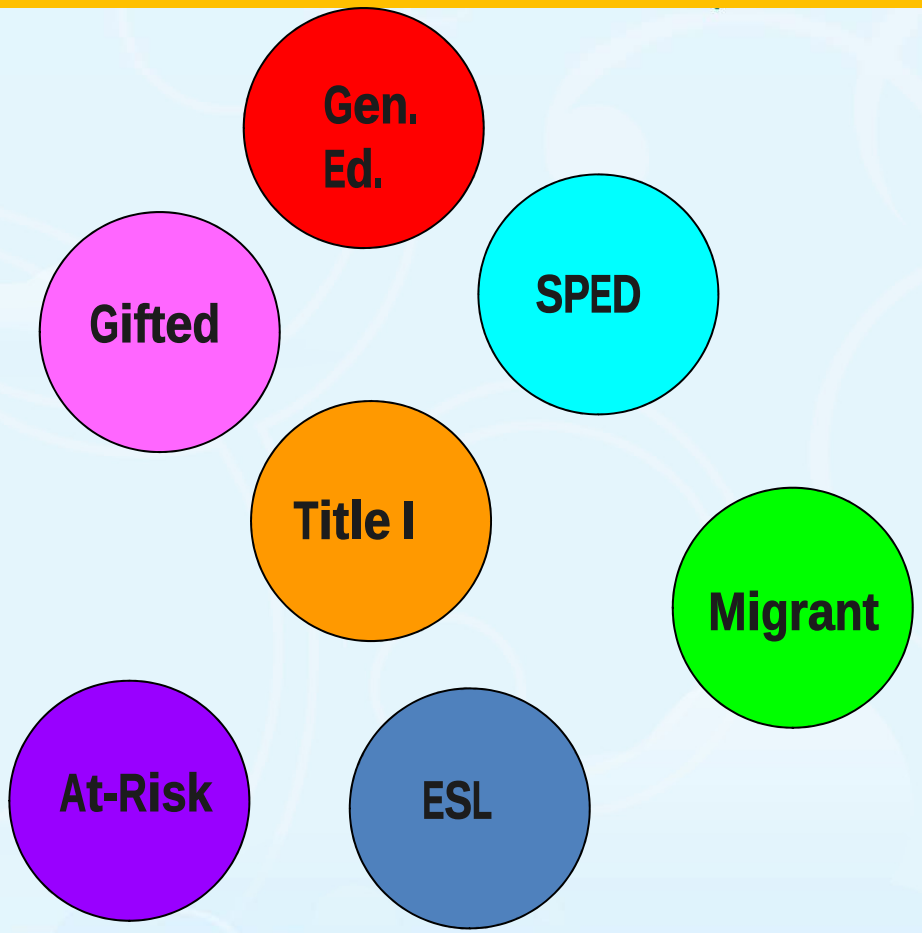
(Reynolds, 2009)



From here, doctors and researchers are hoping clinical trials and dozens of separate drug studies will help to develop new breakthroughs in treatment from the findings. Dr. Elizabeth Stark, a breast cancer patient and biochemist at Pfizer, says she knows it will take time, but she's hopeful the research will lead to a cure. "In 10 years, it will be different," she said. "I know I will be here in 10 years."

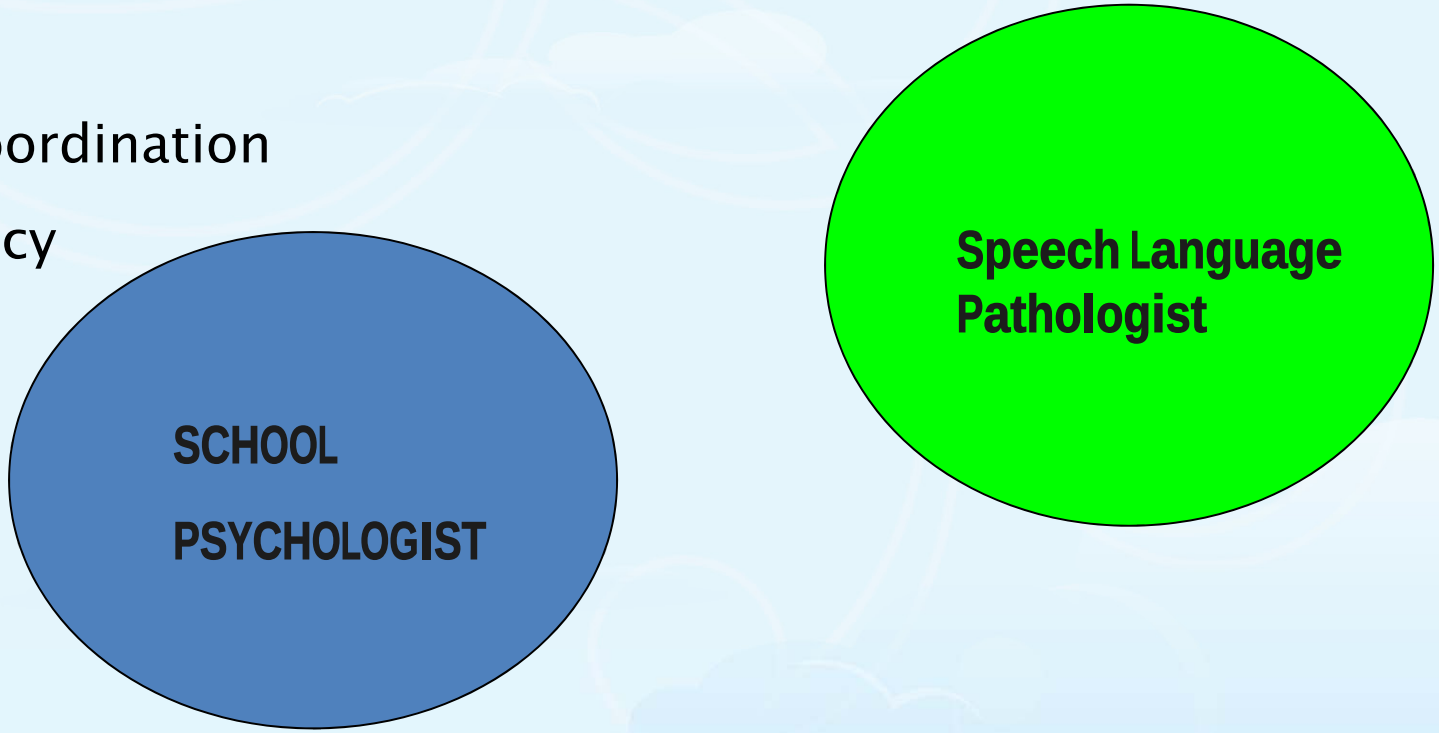
The American Educational System Structure

- Turfdom
- Conflicting Programs
- Lack of coordination
- bureaucracy for sake of bureaucracy
- Student grouping not instructionally based
- Rigidity, rules
- Redundancy



School Psychologist and Speech Language Pathologists

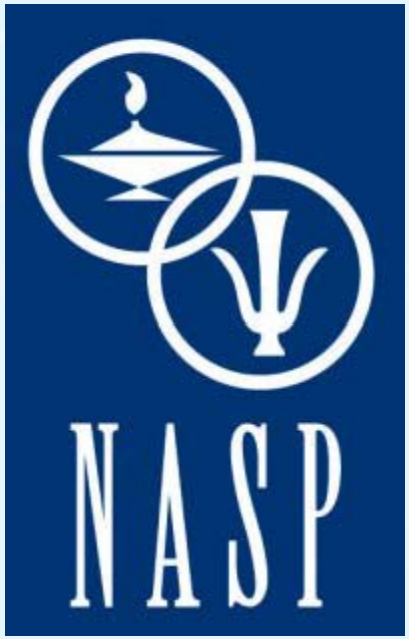
- Turfdom
- Lack of coordination
- Redundancy



Shared office, separate lives

- For many initial evaluations, the school psychologist and the speech language pathologist are asked to do an assessment
- The assessments often happen in isolation of one another
- Little to no discussion about what abilities are to be tapped
- Every kid, no matter what the issue, gets the same battery of tests
- The SP and SLP share results at CSE as separate voices rather than one.

- SLP's and SP's will do the same tests without knowing it
- We report on the same issues without reading each others report
- Expect parents and teachers to consolidate our findings
- Reports are filled with numbers and not information
- Multiple reports connected by a staple.



NASP

ASHA

Tell us we are to work together

NASP President's Message

"I would hope that the goal here is to ***expand*** the methods of assessment available to the practitioner and not to limit them. It seems possible that these two very valuable approaches can be utilized along a ***continuum*** of collecting information about a child that would culminate in a very clear and ***comprehensive*** evaluation that would be of value to all."

Huff, L. (2005, February). President's Message. *NASP Communique,* 33, 2-3.

5.29.08 – Flanagan Webinar; Pearson Education, Inc.

ASHA Guidelines for Assessment and Evaluation

- Assessment should be based on **multiple sources** of information to obtain a comprehensive picture of the child's functioning. (Division of Early Childhood, 2007)

- No single measure can provide sufficient information; therefore, **assessment data should reflect multiple perspectives** (ASHA, 2000)

- In addition to the use of various tools, assessment practices should **include consultation with team members**. (ASHA, 2005, 2008b)

ASHA Guidelines for Assessment and Evaluation

- Emphasize the importance of professionals working as a team for assessment and service provision (DEC, 2007)

- **Assessment should provide information to inform program planning and intervention decisions**.
  - go beyond the determination of eligibility for services to include the gathering of information that will be useful in making decisions for effective intervention planning. (ASHA, 2005)

I love me some IEP meetings!

- Big fan of fanning!
- IEPs are so Individualized
- Go Team!
- Parent Friendly
- Data based decisions, all day every day

Traditional System Issues

- Little emphasis on early intervention and prevention
  - False Positives and False Negatives
- IQ-Achievement Discrepancy – BAD
  - (Identifying CHC Abilities, using consistency GOOD!)
- IEP's did not implement scientifically based instruction
  - Start program in September, find out if effective in May
- Overrepresentation of cultural/linguistic minorities Special Ed
- Retention and Social Promotion
- More concern about being in compliance than child's educational success – THE FORGOTTEN GOAL
- Within Student vs. Within System
  - Darn those lazy kids.

BREAKING NEWS

RIGHT

THE EARLIER THE

INTERVENTION

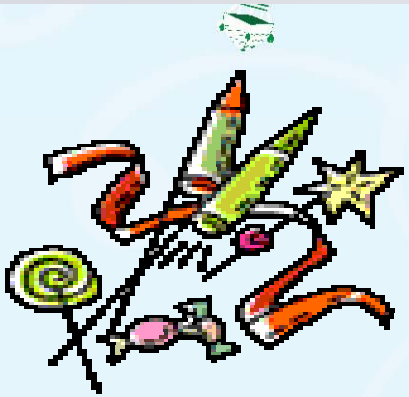
THE LOWER THE RISK

OF ACADEMIC DIFFICULTY

IN THE FUTURE

Traditional Systems Issue

THIRD GRADE REFERRAL



CASE 1:

THIRD GRADER

READING DIFFICULTY

WISC

WIAT

TOLD

CASE 2:

FIFTH GRADER

WRITING DIFFICULTY

WISC

WIAT

TOLD

CASE 3:

FIRST GRADER

MATH DIFFICULTY

WISC

WIAT

TOLD

IDEIA

What are some of the details of the Federal Law?

IQ achievement discrepancy no longer required

"(6) SPECIFIC LEARNING DISABILITIES.—

"(A) IN GENERAL.—Notwithstandi section 607(b), when determining whether a child ha 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

tion is unnecessary.

"(b) EVALUATION PROCEDURES.—

"(1) NOTICE.—The local educational agency shall provide notice to the [illegible] ld with a disability, in accordance with subsecti[illegible] 4), and (c) of section 615, that describes any [illegible] ocedures such agency proposes to conduct.

"(2) CONI[illegible] ATION.—In conducting the evaluation, the local e[illegible]cational 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.

"use a variety of assessment tools"

"not use any single procedure"

"assess cognitive factors"

"(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;

non discriminatory assessments

valid and reliable assessment

Definition of SLD remains the same

"(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.

New York's Response

X. USE OF RTI IN THE DETERMINATION OF A LEARNING DISABILITY

CRITERIA FOR DETERMINING LEARNING DISABILITY (LD)

NYS has established criteria for the CSE to use when determining if a student has a learning disability.

These criteria include consideration of data and instructional information obtained through an RtI process which provides important information to determine if a student needs to be referred for an individual evaluation to determine if the student has a learning disability. Effective on and after July 1, 2012, a school district must have an RtI process in place as it may no longer use the severe discrepancy between achievement and intellectual ability to determine that a student in kindergarten through grade four has a learning disability in the area of reading.

In making a determination of eligibility for special education, the CSE must determine that underachievement of the student is not due to lack of appropriate instruction in reading (including the five essential components), mathematics or limited English proficiency. The data from RtI can help to document that the reason for a student's poor performance or underachievement is not due to lack of appropriate instruction or limited English proficency. Along with other individual evaluation information, RtI data can yield important descriptive information about how children learn and why they may be having difficulties.

When determining if a student has a learning disability, the data from multiple sources indicates that the student, when provided appropriate instruction:

1. does not adequately achieve grade level standards in the areas of reading and/or mathematics;

   <u>and</u>

2. (a) is not making sufficient progress toward meeting those standards when provided with appropriate instruction consistent with an RtI model;

   <u>or</u>

   (b) exhibits a pattern of strengths and weaknesses in performance and/or achievement relative to age or grade level standards as found relevant by the CSE;

   <u>and</u>

3. has learning difficulties that are not primarily the result of a visual, hearing or motor disability; mental retardation; emotional disturbance; cultural factors; environmental or economic disadvantage; or limited English proficiency.

When determining if a student has a learning disability, the data from multiple sources indicates that the student, when provided appropriate instruction:

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<u>or</u>

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<u>and</u>

3. has learning difficulties that are not primarily the result of a visual, hearing or motor disability; mental retardation; emotional disturbance; cultural factors; environmental or economic disadvantage; or limited English proficiency.

Replacing 'or' with 'and'

The CNYSEA-NYASP SLD Panel endorse that to identify a learning disability, the child must fail to respond to interventions AND show a pattern of cognitive/academic strengths and weaknesses (PSW) that is consistent with research indicating a neurological processing deficit.

It was unanimous

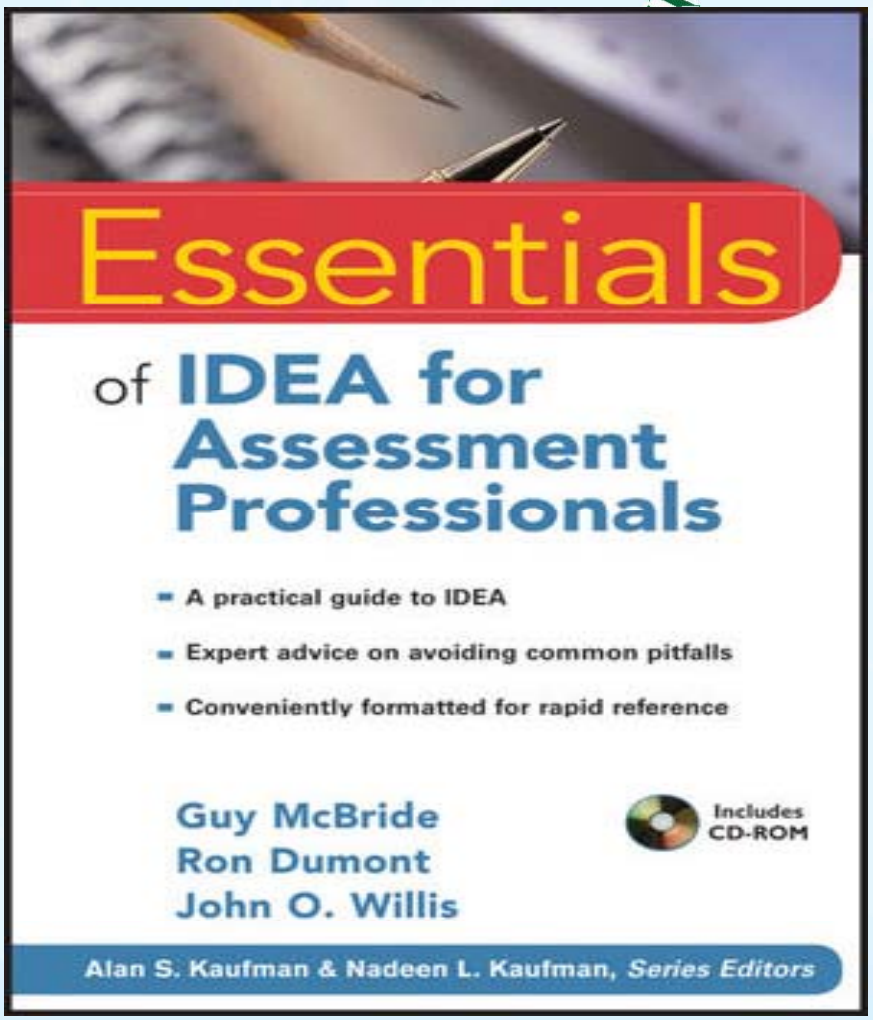
Not every student who struggles in school is disabled nor does every student who fails the state test due to learning problems has a SLD

SLD identification should NEVER be for the convenience of adults nor as the only way for a child to receive 'extra' help they need.

Further, we strongly advise AGAINST the use of severe discrepancy criteria due to the many legal, historical, statistical, and ethical issues.

Yes, Virginia, there is a Severe Discrepancy Clause, but is it Too Much Ado About Something?

Ron Dumont, Fairleigh Dickinson University; John Willis, Rivier College, and Guy McBride, Burke County Public Schools, NC.



Methods for Determining Severe Discrepancy

- **Deviation from Grade/Age Level**
  - **TOLD 4** – "AE statistical properties are inadequate and their results are misleading. Nevertheless, AE are mandated by many Ed. Agencies. ***FOR THIS REASON ALONE, WE PROVIDE THEM (RELUCTANTLY)"***
- **Standard Deviation from the Mean**
- **Standard Score Comparison**
- **Regression Formula**

Learning Disabilities Association of America

- Maintain the SLD definition and strengthen statutory requirement in SLD identification procedures;
- Neither ability-achievement discrepancy nor RTI is sufficient for SLD identification;
- To meet SLD statutory and regulatory requirements, a "third method" approach that requires evaluation of psychological processing strengths and deficits, and associated achievement deficits with this pattern, makes the most empirical and clinical sense;
- An RTI model should be attempted prior to comprehensive evaluation unless severity requires an immediate evaluation; and increasing intervention intensity will not meet the individual intervention needs of children with SLD; and
- Assessment of cognitive and neuropsychological processes should be used not only for identification, but for intervention purposes as well, and these assessment-intervention relationships need further empirical investigation.

Select **one** of the following:

☐ The child does not make sufficient progress to meet age or State-approved grade-level standards in one or more of the areas identified above when using a progress based on the child's response to scientific, research-based instruction. Give specific examples to show evidence of insufficient progress.

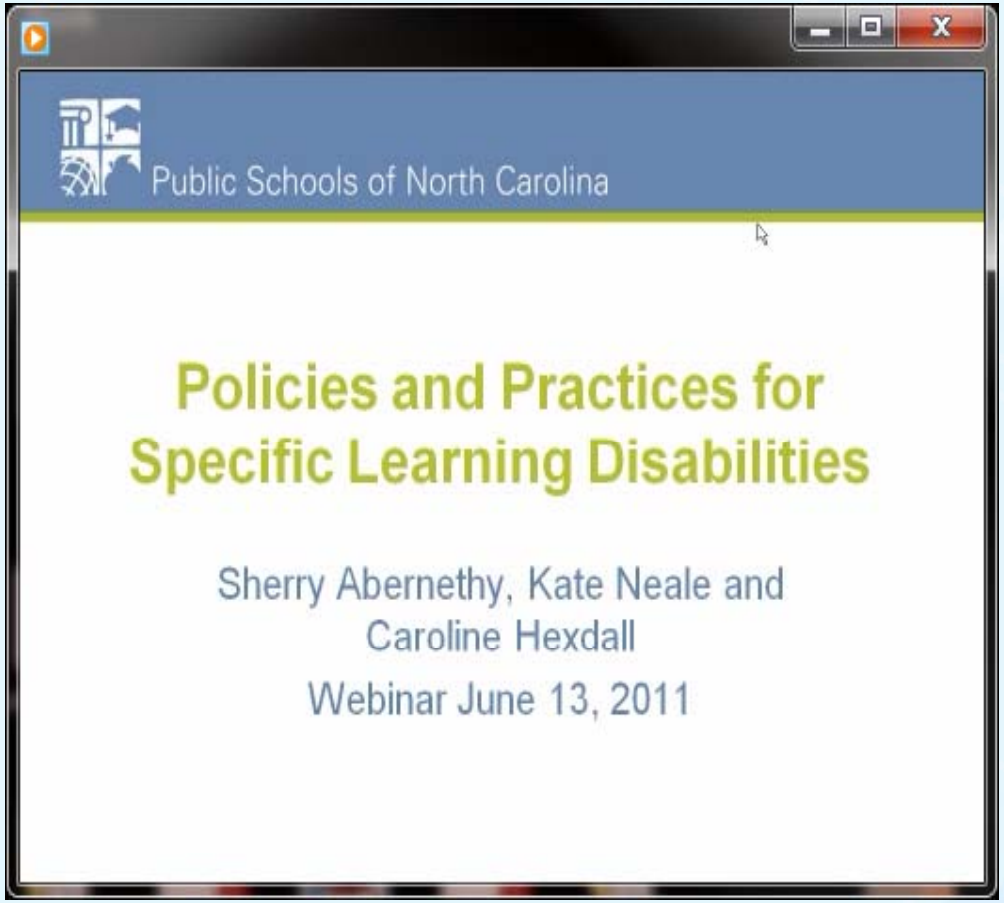
OR

☐ The child exhibits a pattern of strengths and weaknesses in performance, achievement, or both, relative to age, State-approved grade-level standards or intellectual development, that is determined by the group to be relevant to the identification of a specific learning disability, using appropriate assessments. Describe the pattern. Show evidence of progress monitoring data, a 15-point discrepancy, or an alternative to the discrepancy analysis.

OR

☐ Not Applicable (not eligible)

DEC-3



"Don't let the numbers, whether it be a discrepancy or lack of a discrepancy dictate placement and eligibility determination, solely. Certainly, it has to be there but should not be driving the decision solely." 19:24 mark

ALRIGHT ALREADY!

TALK ABOUT CHC!

IQ – Not so smart

- Language impacts g, and g impacts language
- What is it made of?
- Does it mean anything in relation to intervention?
- IQ can no longer mean Wechsler FSIQ
- It's the parts that will identify the strengths and weaknesses that impact upon learning

#1 Misconception about Global Scores and Eligibility Determination

Eligibility can be determined without a ***Theory*** and ***Research*** to Guide Practice

The Cattell-Horn-Carroll (CHC) Cross-Battery Approach

- Definition:
  - The CHC Cross-Battery Approach is a time-efficient method of assessment that allows practitioners to measure validly a wider range (or a more in-depth but selected range) of cognitive abilities than that represented by any one battery in a manner consistent with contemporary psychometric theory and research on the structure of intelligence.

CHC model v2.0 – Part 1 (Schneider & McGrew, 2012)

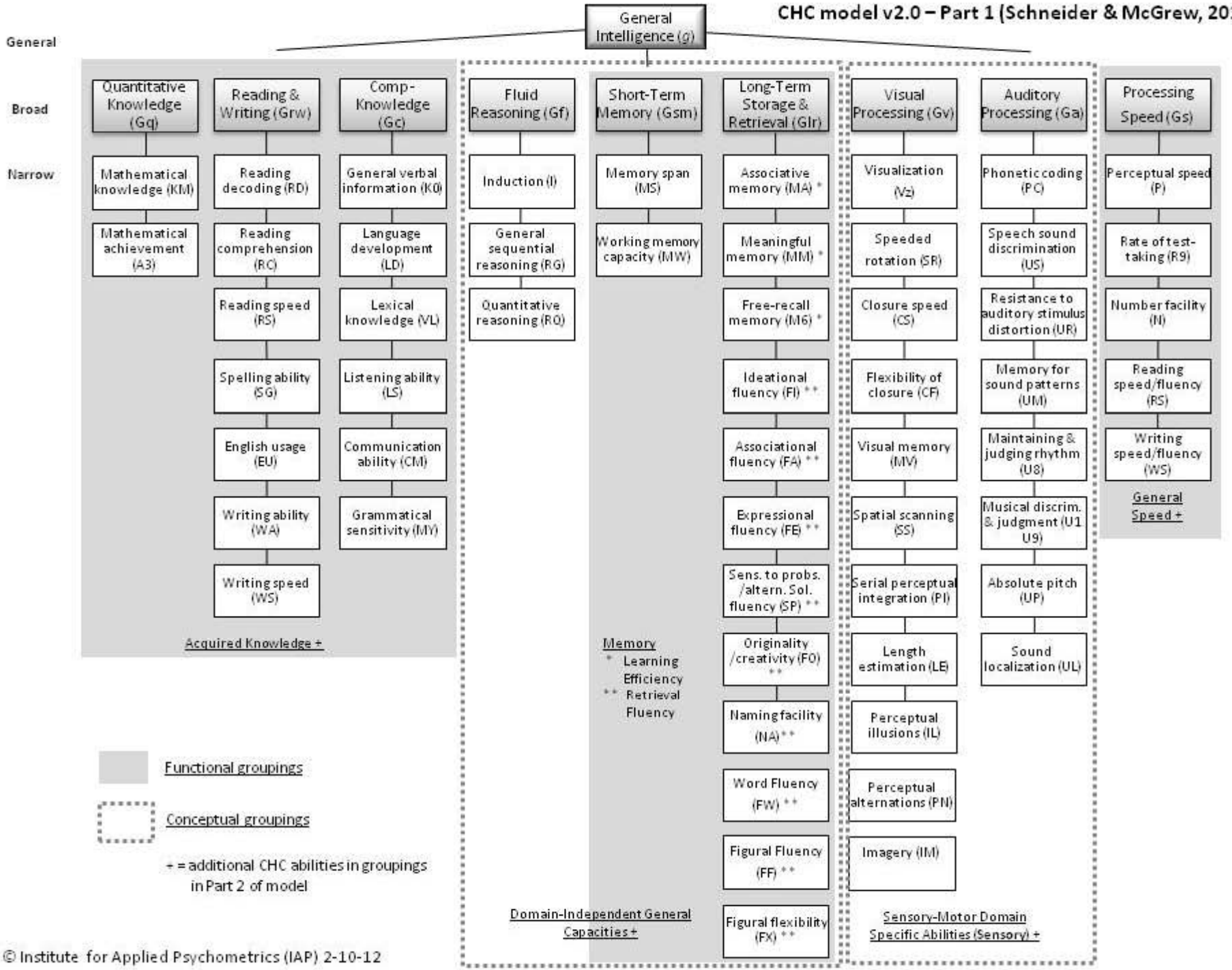


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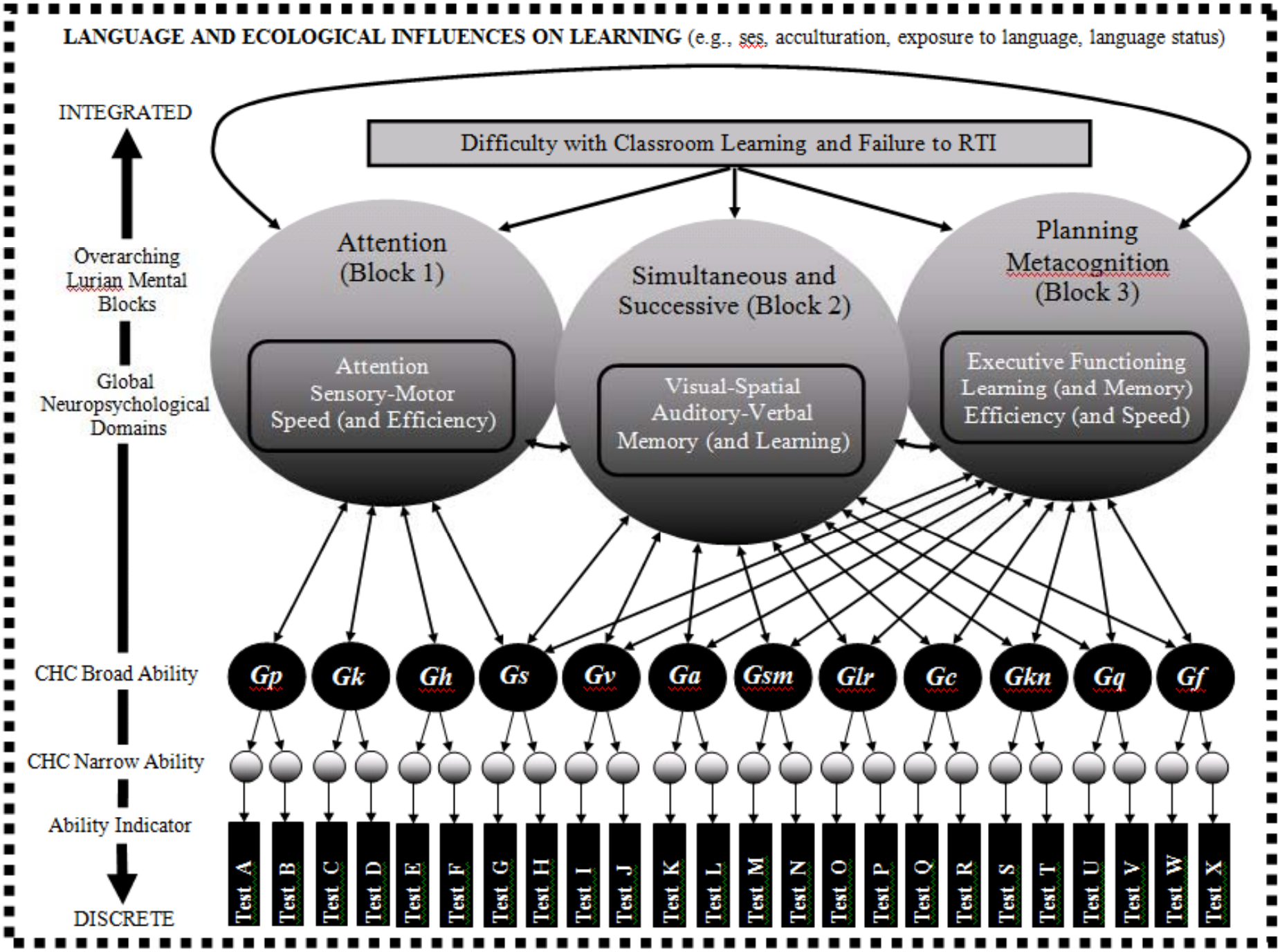
Figure 6.3 An Integrative Framework Based on psychometric, neuropsychological, and Lurian perspectives (Flanagan et al., 2010).

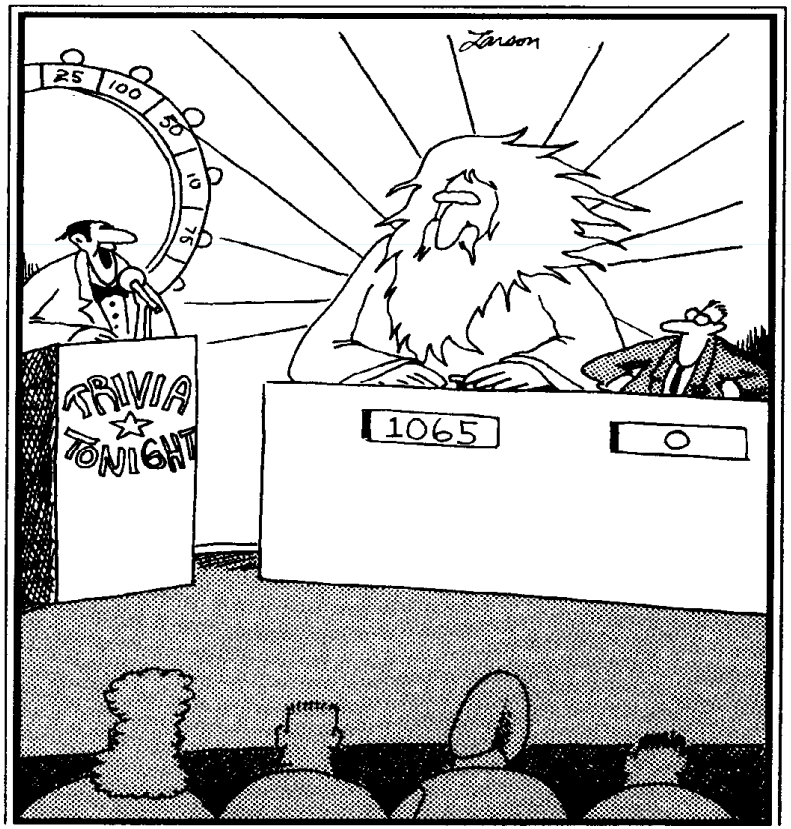


One Battery Does Not Fit All

- Given that no individual battery contains sufficient indicators of all of the major CHC abilities, a cross battery approach has been developed to bridge the gap between theory and practice.

- Do more than simply choose another battery and give the whole darn thing. Be specific.

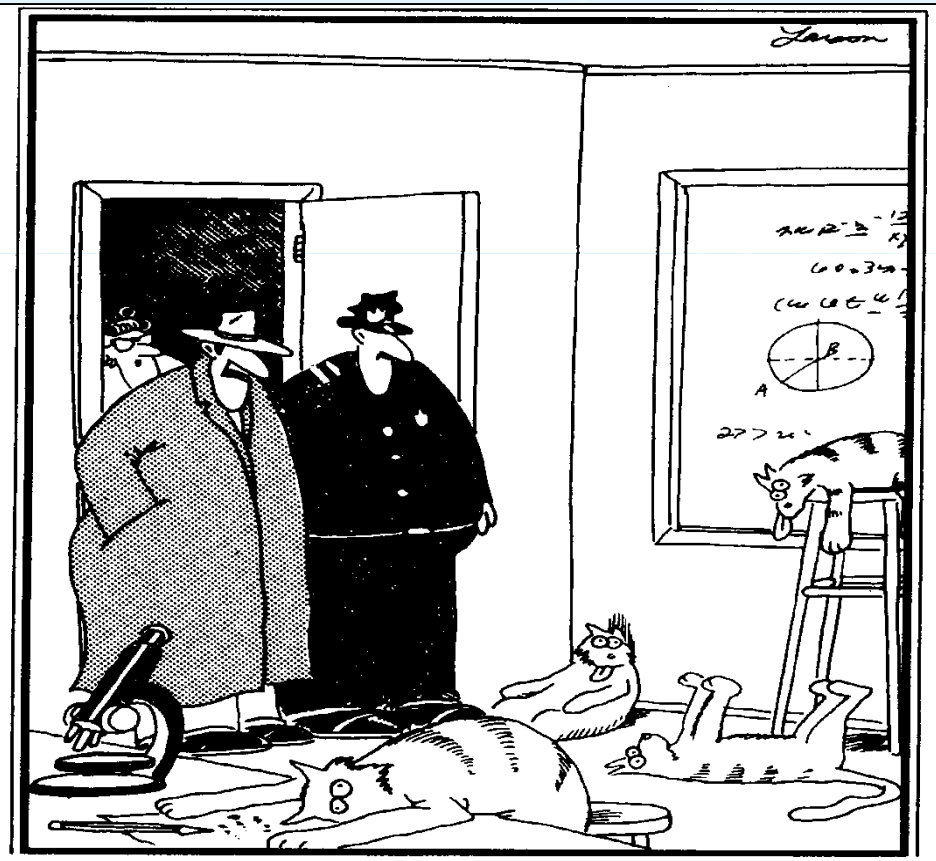
Gc
Comprehension-Knowledge



"Yes! That's right! The answer *is* 'Wisconsin!' Another 50 points for God, and … uh-oh, looks like Norman, our current champion, hasn't even scored yet."

- The breadth and depth of knowledge of a culture
- The ability to communicate one's knowledge (especially verbally)
- The ability to reason using previously learned knowledge or procedures
- Originally described as "crystallized intelligence"
- "Jeopardy" players have waaaay too much Gc.
- Includes Listening Skills and Oral Communication.

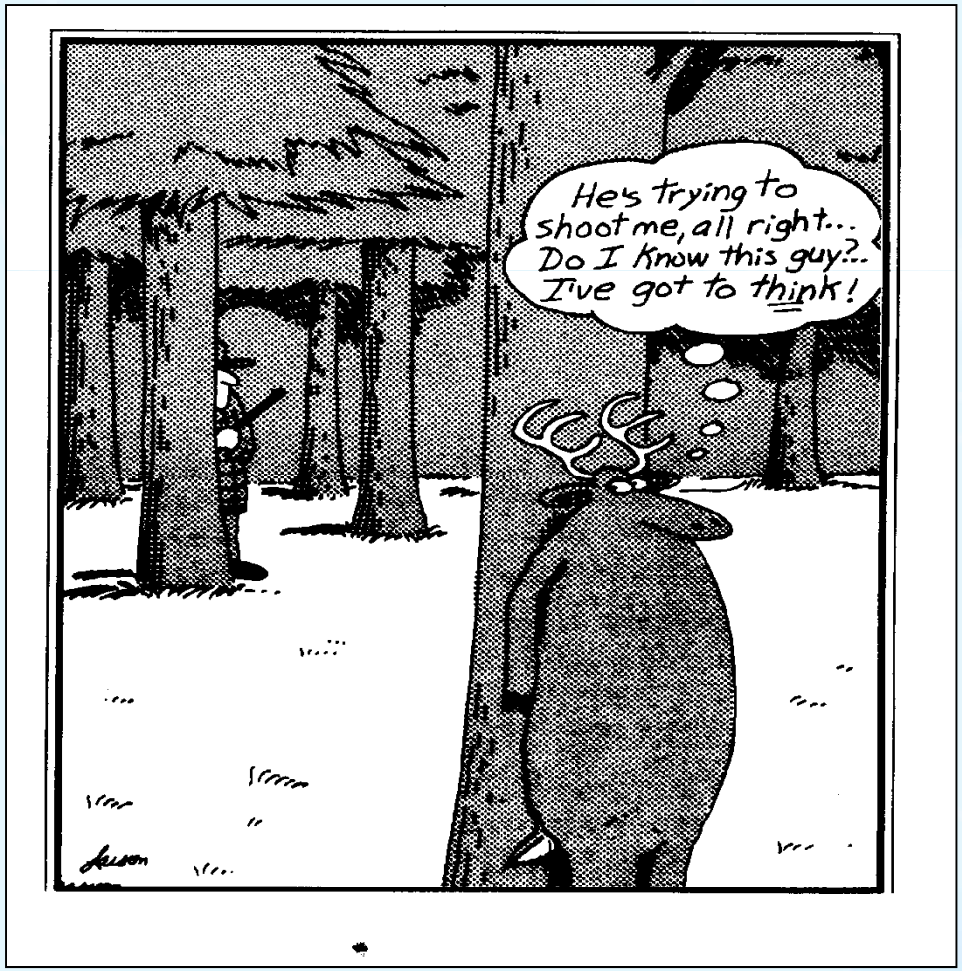
Gf
Fluid Reasoning



"Notice all the computations, theoretical scribblings, and lab equipment, Norm. . . . Yes, curiosity killed these cats."

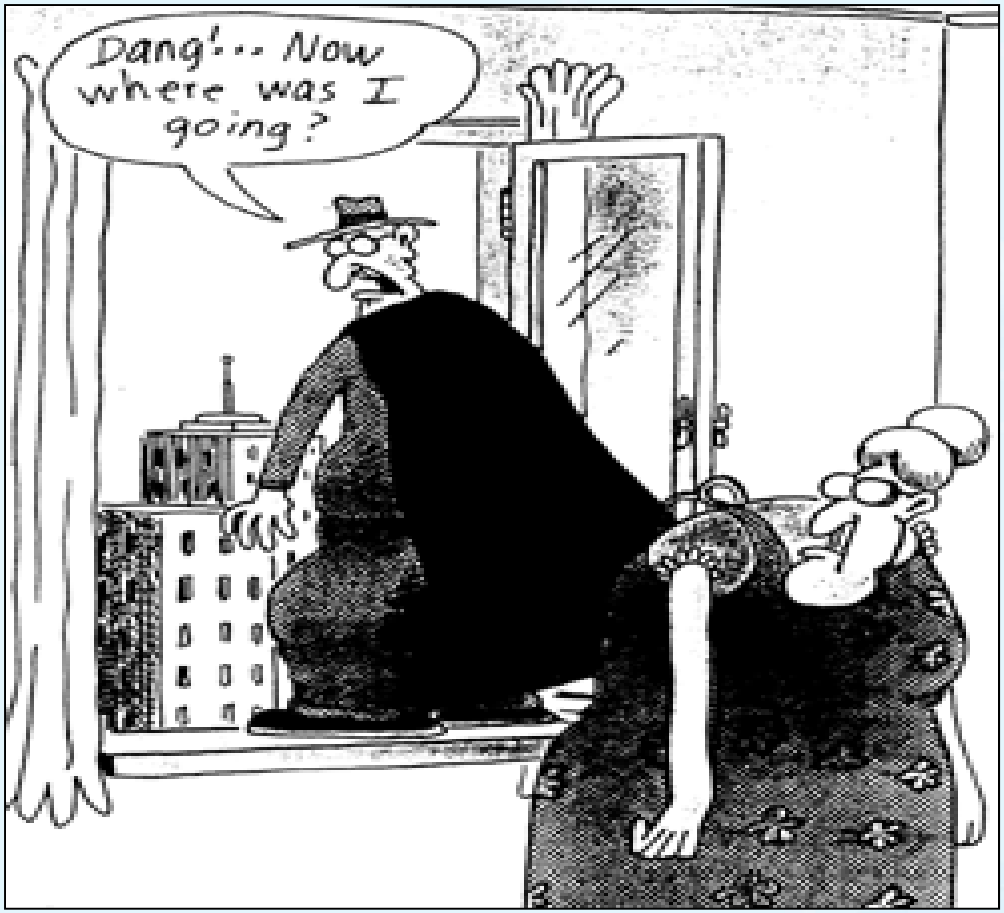
- Novel reasoning and problem solving that depend minimally on learning and acculturation
- Ability to reason, form concepts, and solve problems that often include novel information or procedures
- Induction & deduction are hallmarks of *Gf*
- Impacts math reasoning, reading comprehension, higher level thinking
- The first few times you do Soduku, you are using your Fluid Reasoning. After you learn the trick, it becomes crystallized knowledge (Gc)

Glr
Long-term (Storage &) Retrieval



- Ability to store information and fluently retrieve it later
- Ability to retrieve from file cabinet
- Not to be confused with acquired stores of knowledge (*Gc*)
- There has to be an intervening event. Can mean retrieving information learned several seconds earlier.
- Not long term memory
- Includes Rapid Naming, Meaningful Memory, Associative memory
- All contestants on Jeopardy have good Gc, but those who are more effective at retrieving the info do better.

Gsm
Short-term Memory



- Ability to apprehend and hold information in immediate awareness and then use it within a few seconds
- 7 chunks of information (+ /– 3)
- Working Memory and Memory Span
- Working Memory is key in most academic areas.

Gv
Visual-Spatial Thinking

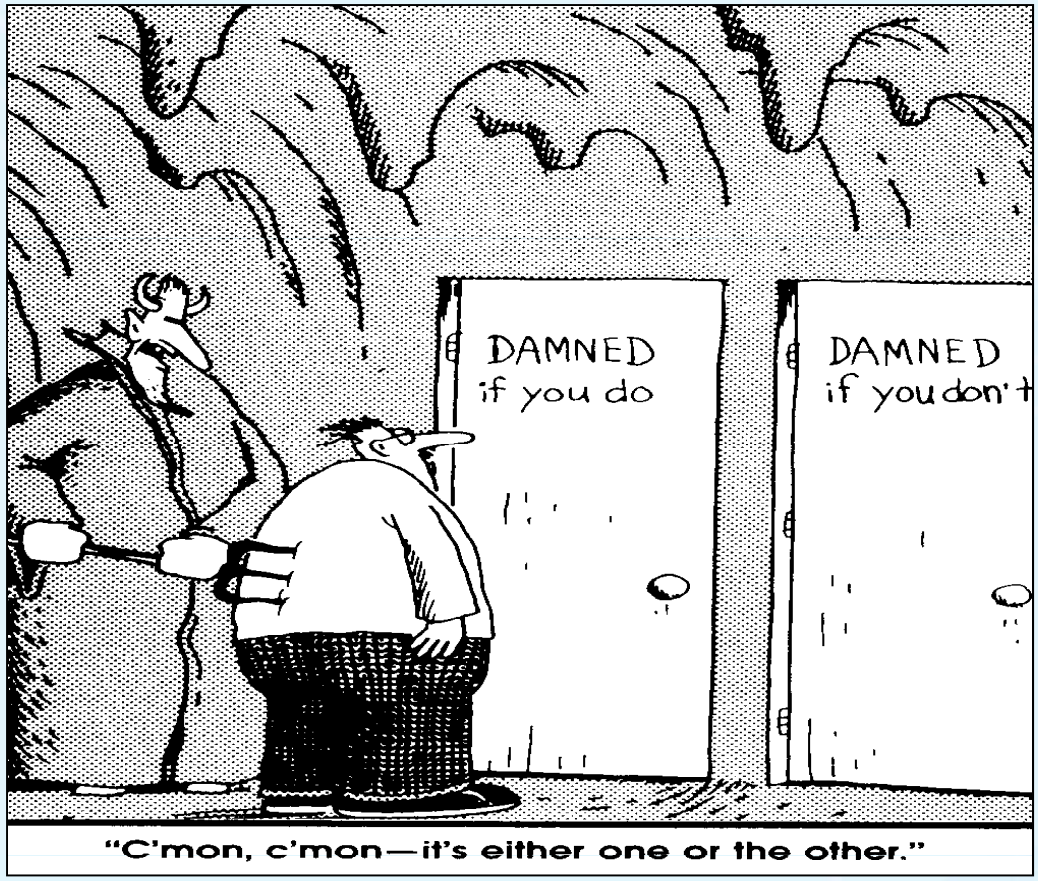
- Ability to perceive, analyze, synthesize and think with visual patterns
- Ability to store and recall visual representations
- Fluent thinking with stimuli that are visual in the "mind's eye"
- Not to be confused with a "visual learner" or how well does someone see. Can be visually impaired and still have good Gv

Ga
Auditory Processing

"No. I said release the *hounds* ... the ***hounds!***"

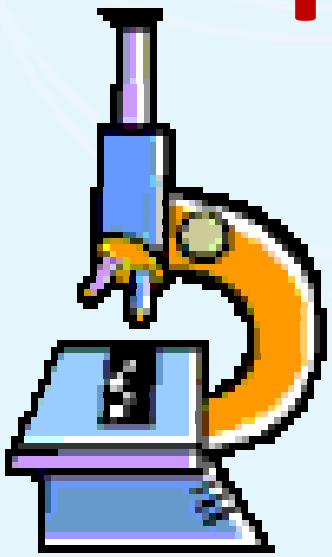
- Ability to analyze, synthesize, & discriminate auditory stimuli
- Ability to perceive and discriminate speech sounds that may be presented under distorted conditions
- Not to be confused with an "auditory learner" or how well someone hears. Can be hearing impaired and still have good Ga
- Includes Phonemic Awareness

Gs
Processing Speed



- Ability to perform automatic cognitive tasks, particularly when measured under pressure to maintain focused attention
- Attentive speediness
- Usually measured by tasks that require rapid cognitive processing but little thinking
- Card sorting, game of Perfection

Cross Battery is THEORY/RESEARCH focused



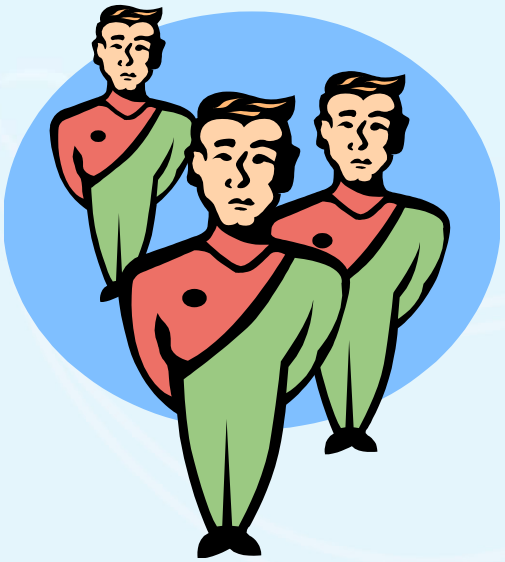
NOT KIT FOCUSED

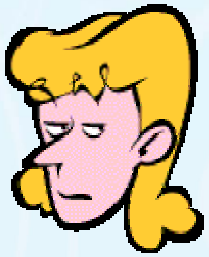
LET'S WORK TOGETHER

- SLPs measure many of the same abilities SPs do
  - e.g.. Short Term Memory - Digits forward
  - Makes sense as the Broad Abilities impact learning
  - Don't repeat testing

- Share different expertise and perspective on data.
  - Accuracy of diagnosis
  - Accuracy of intervention/intervention development

- Reduce number of subtests administered
  - Based on referral
  - Based on research
- Report Writing
  - No more staple – Comprehensive Report
  - Combine results and perspectives
  - Parents don't have to mix and match
- Feedback or IEP meetings
  - Stop saying the same thing in different languages





WHAT ARE WE DUPLICATING

WJ-III
Short-Term Memory (Gsm)

Numbers Reversed

I am going to say some numbers. Then you say them backward. For example, if I say "3…4" you would say "4…3."

11. 1…6…3…9

19. 4…7…3…9…5…2

Number Memory Reversed (TAPS)

Number Repetition-Backward (CELF)

Memory for Words

…Now you will hear the words from this recording. After you hear the double beep, say the word or words back to me in the same order.

7. sleep…little…a

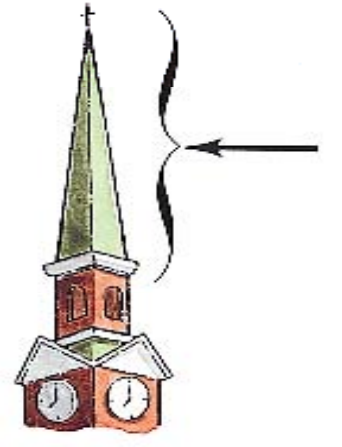
Word Memory (TAPS)

Background Knowledge (Gc)

Verbal Comprehension- 1A Picture Vocabulary (23 items)

What is this?

What is this part of the structure called?



Expressive Vocabulary (CELF)

Verbal Comprehension- 1B Synonyms and 1C Antonyms

1B Synonyms
(15 items)

1C Antonyms (18 items)

Long-Term Retrieval (Glr)

Retrieval Fluency

I want you to name different things that you can eat or drink. You will have one minute to name as many as you can. When I say, "Begin," say the words as fast as you can. Begin.

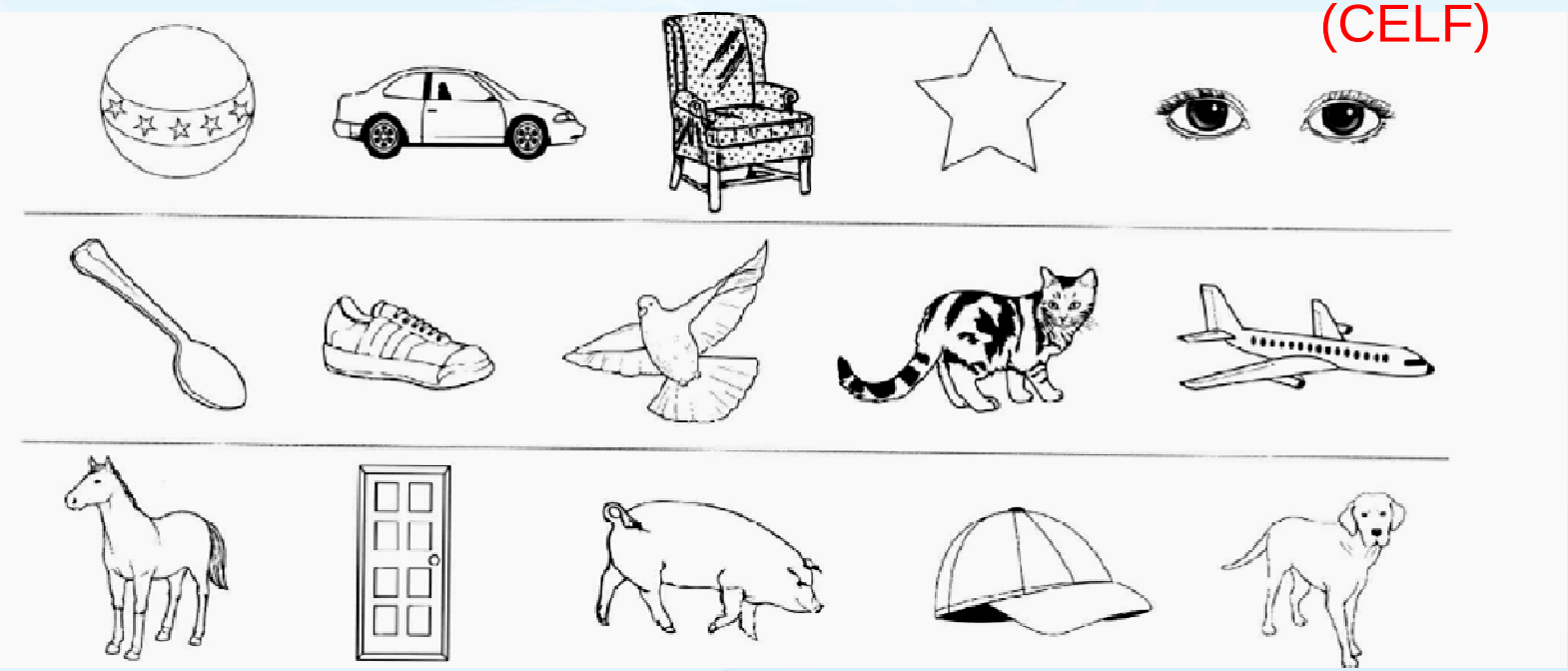
Word Associations
(CELF)

Long-Term Retrieval (Glr)

Rapid Picture Naming - Items 1-15

•Examinee is required to quickly name pictured objects in rows of five within a two minute time limit.

Rapid Automatic Naming (CELF)



Auditory Processing (Ga)

Sound Blending

Now you are going to hear some more words. After the two beeps tell me what each word is.

(e.g. f - oo - d)

Phonological Awareness-Blending (CELF)

Incomplete Words

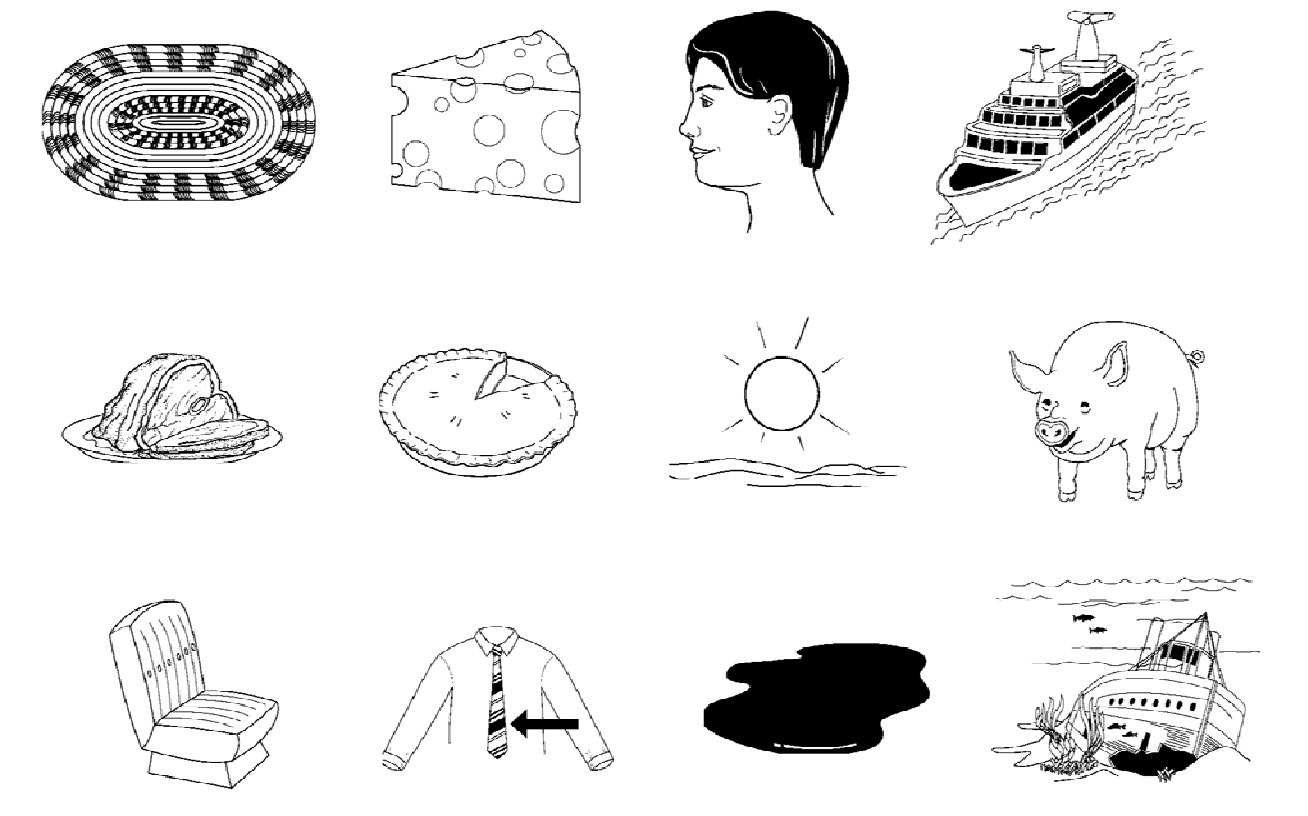
Phono.Blending (TAPS)

Now you will hear some words from this audio recording. After each word, you will hear two beeps. Then tell me the word that the person is trying to say.

(e.g. s_eech)

Auditory Processing (Ga)

Auditory Attention



WJ-III ACH
Oral Language Cluster

Oral Comprehension (Gc)

Listen Comp or Background Knowledge

Story Recall (Glr)

Listening or Long Term Retrieval

Understanding Directions (Gsm)

Listening Comp or Working Memory

Picture Vocabulary (Gc)

– Expressive Vocabulary (CELF)

WJ-III Ach

Phoneme/Grapheme Knowledge

Word Attack

Spelling of Sounds

Sound Awareness

Examinee is asked to complete four measures of phonological awareness (rhyming, deletion, substitution, and reversal).

INDEX	SUBTESTS	CHC
FULL SCALE IQ (FSIQ)	Verbal Comprehension Index VCI	Similarities (Gc)
		Vocabulary (Gc)
		Comprehension (Gc)
		Word Reasoning (Gc)
		Information (Gc)
	Perceptual Reasoning Index PRI	Block Design (Gv)
		Picture Concepts (Gf)
		Matrices (Gf)
		Picture Completion (Gv)
	Working Memory Index WMI	Letter Number Sequencing (Gsm)
		Digit Span (Gsm)
		Arithmetic (Gq)
	Processing Speed Index PSI	Coding (Gs)
		Symbol Search (Gs)
		Cancellation (Gs)

VCI

- A measure of verbal concept formation, verbal reasoning, and knowledge acquired from one's environment.

- Vocabulary (Gc-VL)- Define a word read aloud by the examiner

Word Definitions (CELF) Oral Vocab (TOLD)

- Similarities (Gc-VL)- Perceive a common element between two words

Word Classes (CELF) Relational Vocab (TOLD)

- *Word Reasoning (Gc-VL)*

- Comprehension (Gc-KO)

- *Information (Gc-KO)*

WIAT-III
Listening Comprehension

- Two testlets make up whole Standard Score
  - **Receptive Vocabulary (Gc)**: Identify picture corresponding to a spoken word

Picture Vocab (TOLD)

  - **Oral Discourse Comprehension (Glr)**: Listen to narrative & answer question

Understanding Spoken Paragraphs (CELF)

Auditory Comprehension (TAPS)

Oral Expression

- Measures listening comprehension at the level of the word, sentence and discourse.
- Three testlets make up whole Standard Score
  - **Expressive Vocabulary**: Provide a definition
  - **Oral Word Fluency**: Name words in a specific category

    Word Associations (CELF)
  - **Sentence Repetition**: Repeat a sentence verbatim

Recalling Sentences (CELF) Sentence Memory (TAPS)

NOW LETS LOOK AT SOME SPEECH LANGUAGE TESTS

I RECOGNIZE SOME OF THE SUBTESTS

Test of Language Development-

Primary & Intermediate Versions: Fourth Edition (TOLD-P:4)

Semantic Subtests

"…study of the meaning of language; relationship between language and thought."

(P/I) Picture Vocabulary (Gc-VL)

(P/I) Relational Vocabulary (Gc-LD)

(P) Oral Vocabulary (Gc-VL)

(I) Multiple Meanings (Gc-VL/LD)

Syntactic/Grammar Subtests

"…the structure of the language (order and organization among words that determine the relationships between sound patterns and meaning through the formation of sentences).

(P) Syntactic Understanding (Gc LS)
(P) Sentence Imitation (Gsm MS)
(I) Sentence Combining (Gc LD; Gsm MW)
(I) Morphological Completion (Gc MY)
(I) Morphological Comprehension (Gc MY)
(I) Word Ordering (Gc LD)

Phonological Subtests

"…the sound system of language (most important component is phonemics, the study of significant speech sounds)."

(P) Word Discrimination (Ga US/U3)

(P) Phonemic Analysis (Ga PC:A)

(P) Word Articulation (Ga PC:S)

Redundancy

WJ-III/WESCHLER	TOLD-P:4	Time to Administer
Picture Vocabulary	Picture Vocabulary	10 min.
Oral Comprehension	Syntactic Understanding	10 min.
Sentence Repetition	Sentence Imitation	5 min.
Auditory Attention	Word Discrimination	10 min.
Sound Awareness	Phonemic Analysis	10 min.
Sound Blending	Word Articulation	5 min.
	Relational Vocabulary	
	Morphological Completion	

Test of Auditory Processing Skills – 3rd Edition (TAPS-3)

- Assess the auditory skills necessary for the development, use, & understanding of language
- **Ability to comprehend auditory information**

Three Major Indices

I. Basic Phonemic Skills (3 subtests)
   - Assessment of basic phonological abilities

II. Auditory Memory (4 subtests)
   - Measures basic memory processes

III. Auditory Cohesion (2 subtests)
   - Higher order skills
   - What the heck is “Cohesion”???

Basic Phonemic Skills

"Provide quick assessments of very basic phonological abilities that allow one to discriminate between sounds within words, segment words into morphemes, and blend phonemes into words"

- Word Discrimination (**Ga**-US/U3)
- Phonological Segmentation (**Ga**-PC:A)
- Phonological Blending (**Ga**-PC:S)

Overall, a strong measure of **Ga**

Auditory Memory

"Measures basic memory processes, including sequencing"

- Number Memory Forward (**Gsm**-MS)
- Number Memory Reversed (**Gsm**-MW)
- Word Memory (**Gsm**-MS)
- Sentence Memory (**Gsm**-MS)

"Basic memory" is really **Gsm**, and primarily Memory Span

Auditory Cohesion

"Higher order linguistic skill that requires the student not only to understand exactly what is said, but also to be able to use inferences, deductions, and abstractions to understand the meaning of a passage"

- Auditory Comprehension (**Gc**-LS; Glr-MM)
- Auditory Reasoning (Gsm-WM; Glr-MM; Gc-K0; Gf-I)
  - Depends on the question

Not so much "reasoning"

Redundancy

WJ-III/WESCHLER	TAPS-3	Time to Administer
Sound Blending	Phonological Blending	10 min.
Auditory Attention	Word Discrimination	10 min.
Numbers Reversed	Number Memory Reversed	5 min.
Memory for Words	Word Memory	5 min.
Sound Awareness	Phonological Segmentation	10 min.
Sentence Repetition	Sentence Memory	5 min.
	Auditory Comprehension	
	Auditory Reasoning	
Digit Span	Numbers Forward	5 min.

MAJOR SPEECH LANGUAGE BATTERIES

Broad	CELF – 4	TOLD 4 Primary and Intermediate	TAPS 3
Gf	Word Classes Semantic Relationships		
Gc	Sentence Assembly (LD, MY) Expressive Vocabulary (VL) Word Classes: Exp/Rec (VL, LD, Gf-I) Word Definitions (VL) Sentence Structure (LS) Word Structure (LS) Formulated Sentences (OP) Concepts/Follow Direction (LS, Gsm-MS) Semantic Relationship(LS, Gsm-MW, Gf-I,)	Generals (LD) Picture Vocabulary (LD,VL) Sentence Combining (LD) Relational Vocabulary (LD) Oral Vocabulary (VL) Grammatical Understanding (LS, LD) Malapropisms (MY, VL) Grammatic Comprehension (MY) Grammatic Completion (MY)	Auditory Reasoning (K0, LD)
Ga	Phonological Awareness (PC:S)	Phonemic Awareness (PC:A) Word Discrimination (BR)	Phonological Blending (PC:A) Word Discrimination (BR)
Gv			
Gsm	Familiar Sequence (MS, MW) Number Repetition (MS) Recalling Sentences (MS, Gc-LD) Number Repetition Backward (MW)	Word Ordering (MW, Gc-LS) Sentence Imitation (MS)	Number memory Forward (MS) Sentence Memory (MS, Gc-LD) Word Memory (MS) Number Memory Reversed (MW)
Glr	Word Associations (MA) Rapid Automatic Naming (NA)		
Gs			

Let's go through the steps!

Presumption of Normalcy

Assessment should be driven by *presumptions of normalcy* rather than pre-conceptions of dysfunction.

STEP 1:
REASON FOR REFERRAL

- Individualize your assessment batteries.
  - Don't give WISC/WIAT/TOLD to every single kid who is referred.
- Know what cognitive/language abilities impact the specific academic concern
- Rule out exclusionary factors

Summary of Relations between CHC Abilities and Processes and Academic Achievement (Flanagan, Ortiz, Alfonso, & Mascolo, 2006) see : www.iapsych.com

CHC Ability	Reading Achievement	Math Achievement	Writing Achievement
Gf	Inductive (I) and general sequential reasoning (RG) abilities play a moderate role in reading comprehension.	**Inductive (I) and general sequential (RG) reasoning abilities are consistently very important at all ages.**	Inductive (I) and general sequential reasoning abilities is related to basic writing skills primarily during the elementary school years (e.g., 6 to 13) and consistently related to written expression at all ages.
Gc	**Language development (LD), lexical knowledge (VL), and listening ability (LS) are important at all ages. These abilities become increasingly more important with age.**	**Language development (LD), lexical knowledge (VL), and listening abilities (LS) are important at all ages. These abilities become increasingly more important with age.**	**Language development (LD), lexical knowledge (VL), and general information (K0) are important primarily after age 7. These abilities become increasingly more important with age.**
Gsm	Memory span (MS) is important especially when evaluated **within the context of working memory.**	Memory span (MS) is important especially when evaluated **within the context of working memory.**	Memory span (MS) is important to writing, especially spelling skills whereas working memory has shown relations with advanced writing skills (e.g., written expression).
Gv	Orthographic Processing	May be important primarily for higher level or advanced mathematics (e.g., geometry, calculus).	
Ga	**Phonetic coding (PC) or "phonological awareness/processing" is very important during the elementary school years.**		**Phonetic coding (PC) or "phonological awareness/processing" is very important during the elementary school years for both basic writing skills and written expression (primarily before age 11).**
Glr	**Naming facility (NA) or "rapid automatic naming" is very important during the elementary school years.** Associative memory (MA) may be somewhat important at select ages (e.g., age 6).	Naming Facility (NA); Associative Memory (MA)	Naming facility (NA) or "rapid automatic naming" has demonstrated relations with written expression, primarily the fluency aspect of writing.
Gs	**Perceptual speed (P) abilities are important during all school years, particularly the elementary school years.**	**Perceptual speed (P) abilities are important during all school years, particularly the elementary school years.**	**Perceptual speed (P) abilities are important during all school years for basic writing and related to all ages for written expression.**

Example of Hypothesized CHC Domain-Specific LD Patterns: Ages 6-8

Basic Reading Skills	Reading Comp	Basic Math Skills	Math Reasoning
Ga Auditory Processing	*Ga* Auditory Processing		
Glr Long-Term Retrieval	*Glr* Long-Term Retrieval	*Glr* Long-Term Retrieval	
Gc Crystallized Intelligence	*Gc* Crystallized Intelligence		*Gc* Crystallized Intelligence
Gs Processing Speed	*Gs* Processing Speed	*Gs* Processing Speed	*Gs* Processing Speed
Gsm Short-Term Memory	*Gsm* Short-Term Memory	*Gsm* Short-Term Memory	*Gsm* Short-Term Memory
		Gf Fluid Intelligence	*Gf* Fluid Intelligence

STEP 2:
CHOOSE A CORE BATTERY

- If you need an overall g, you have to do all the core tests. If not, then you can just do the ones that are related to the reason for referral.

- Not all cognitive batteries address the same cognitive areas. Need to know what the tests are actually measuring.

Evaluation of Cognitive Abilities

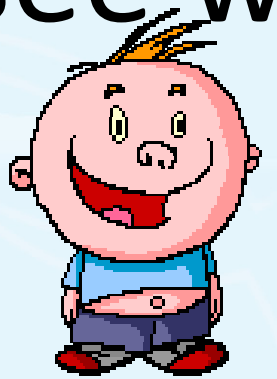
Mascolo (2004). Published in Flanagan & Kaufman (2004) *Essentials of WISC-IV Assessment*. Wiley

Broad	WISC-IV	KABC-II	WJ III COG
Gf	Picture Concepts (I) Matrix Reasoning (I) Word Reasoning (I)	Pattern Reasoning (I, Gv-Vz) Story Completion (I, RG, Gc-K0)	Concept Formation (I) Analysis Synthesis (RG)
Gc	Similarities (LD & VL), Vocabulary (VL) Comp. (K0), Picture Concepts (K0) Picture Completion (K0) Information (K0), Word Reasoning (VL)	Riddles (VL, LD, Gf-RG) Expressive Vocab. (VL) Verbal Know. (VL, K0)	Verbal Comp. (VL & LD) General Info. (K0)
Ga	--	See KTEA-II	Incomplete Words (PC:A) Sound Blend. (PC:S) Auditory Att. (US/U3, UR)
Gv	Block Design (SR) Picture Completion (CF)	Conceptual Thinking (Vz, Gf-I) Block Counting (Vz, Gq-A3) Face Recog. (MV), Triangles (SR, Vz) Rover (SS, Gf-RG, Gq-A3) Gestalt Closure (CS)	Spatial Relations (Vz & SR) Picture Recognition (MV)
Gsm	Digit Span (MS & MW) Letter-# Sequencing (MW)	Word Order (MS, WM) Number Recall (MS) Hand Mvmts. (MS, Gv-MV)	Memory for Words (MS) Numbers Rev. (MW) Auditory Work. Mem.(MW)
Glr	--	Atlantis (MA & L1) Rebus (MA) Atlantis Delayed (MA, L1) Rebus Delayed (MA, L1)	Visual Aud. Learning (MA & MM) Vis.-Aud. Delayed (MA) Retrieval Fluency (FI & FA) Rapid Pic. Nam. (NA)
Gs	Coding (R9) Symbol Search (P & R9) Cancellation (P & R9)	See KTEA-II Fluency tests	Visual Matching (P & R9) Decision Speed (R4)
Gq	Arithmetic (A3)	See KTEA-II	

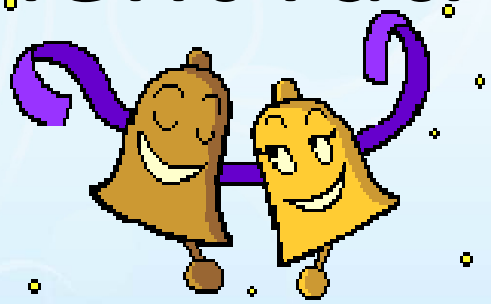
STEP 3: CHOOSE A SUPPLEMENTAL

- Identify the Absence or Underrepresentation
  - Supplement your core with subtests from another battery (Hence the title CROSS BATTERY)
- Find Supplemental tests
  - keep the number of batteries to a minimum (preferably two)
  - *Review the CHC Cross-Battery Worksheets*
- Use confidence bands to identify what has been measured

This is where SP and SLP can get together and see what should be done next.



How can we supplement rather than duplicate



STEP 4:
MAKE SCORES COMMUNICATE

- Convert Scaled Scores into Standard Scores
- If crossing batteries, find Cluster Average.
  - Need to understand Confidence Intervals
- If the Cluster score on one battery adequately measures a Broad Ability, use that score rather than averaging.

Are converting scores and Averaging them voodoo psychometrics?

CONSISTENCY

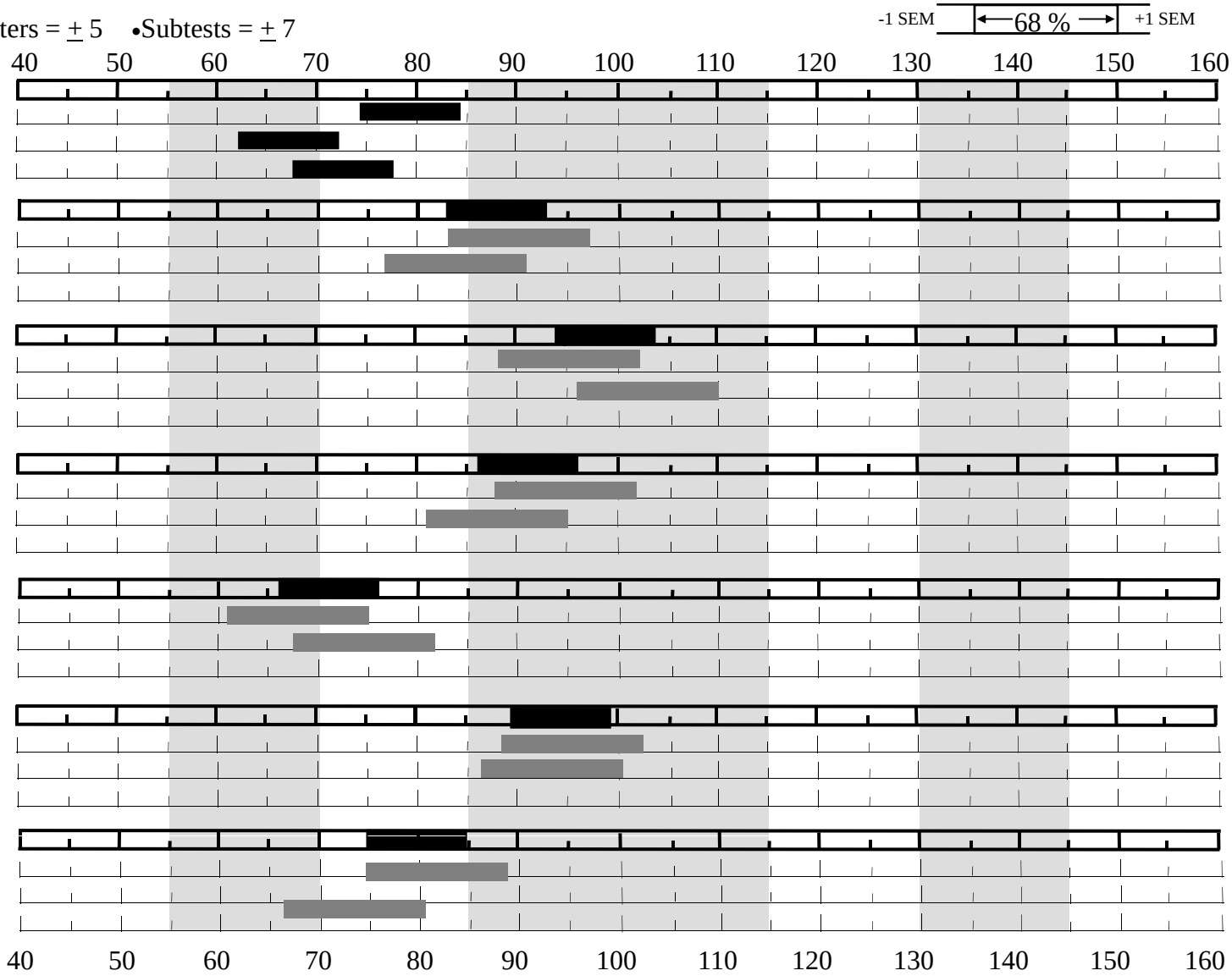
AND

DISCREPANCY

Integrated Ability Analysis (Flanagan et al., 2002)

KABC-II and KTEA-II Data

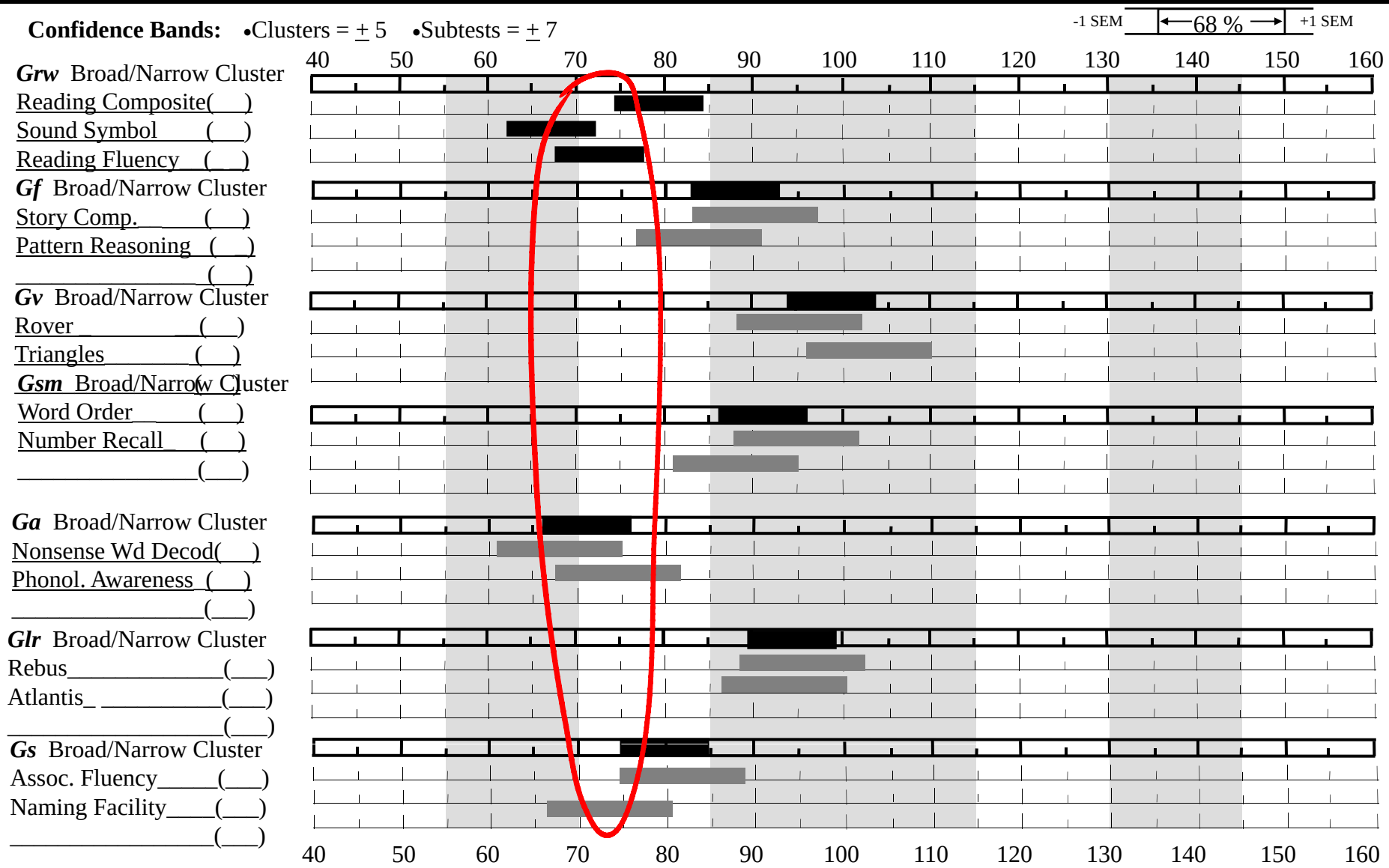
Confidence Bands: •Clusters = ± 5 •Subtests = ± 7



Integrated Ability Analysis (Flanagan et al., 2002)

KABC-II and KTEA-II Data

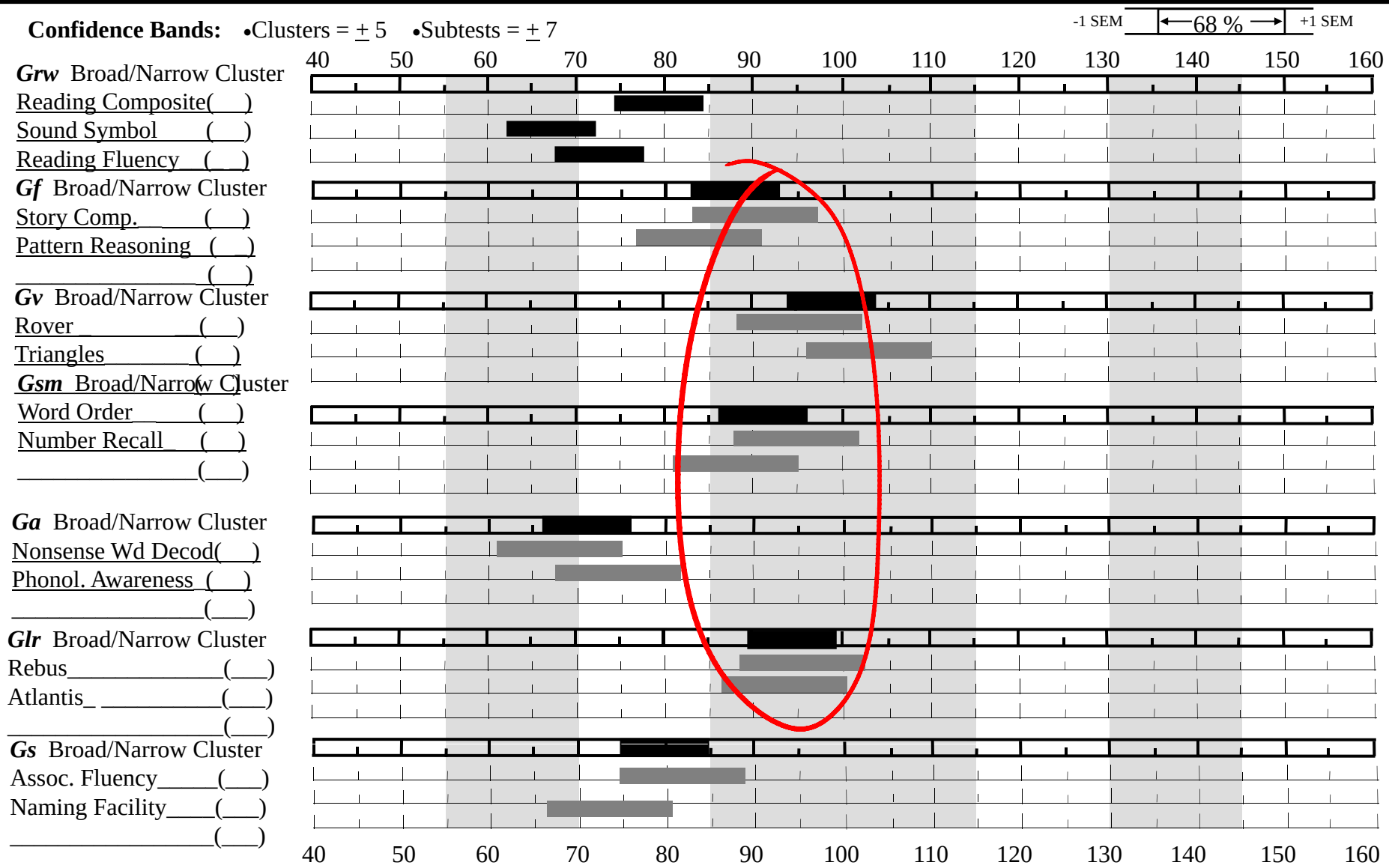
Confidence Bands: •Clusters = ± 5 •Subtests = ± 7



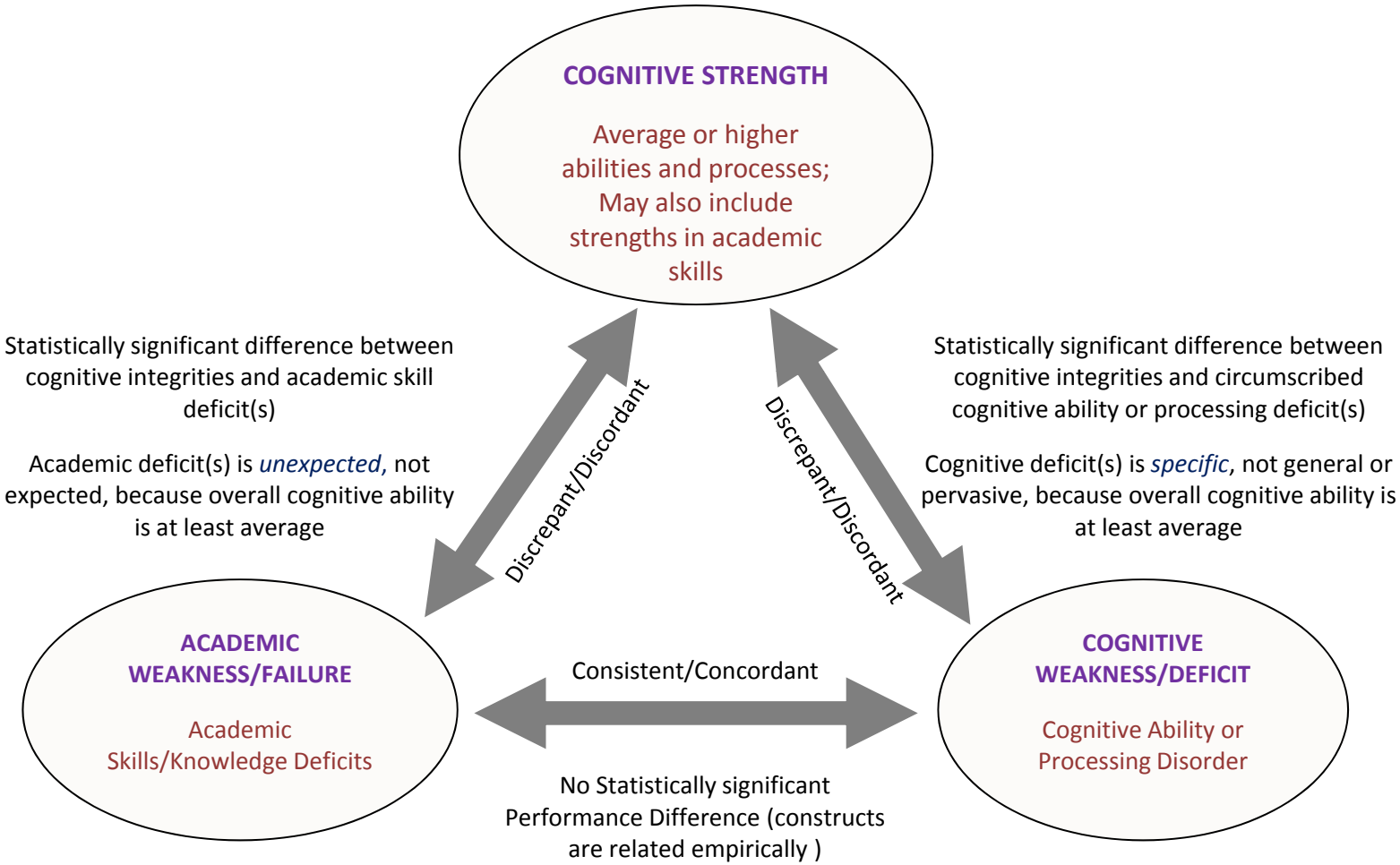
Integrated Ability Analysis (Flanagan et al., 2002)

KABC-II and KTEA-II Data

Confidence Bands: •Clusters = ± 5 •Subtests = ± 7



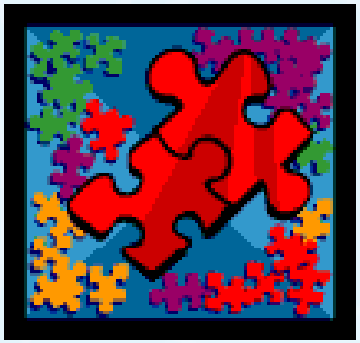
Common Components of Third Method Approaches to SLD Identification



Flanagan, Fiorello, and Ortiz (in press); Hale, Flanagan, and Naglieri (2008)

INTERPRET TOGETHER

- Combine our perspectives, knowledge, and clinical understandings to better understand the child.
- Are we talking a language deficit or a cognitive deficit or both?
  - To heck with IEP DIRECT
- It's time to be detectives.
- Follow the clues/data
- Confirmatory data should support any conclusions.



Subtypes of Reading Disability (Fiefer)

- **(1) Dysphonetic Dyslexia** – difficulty sounding out words in a phonological manner *(Ga-Phonetic Coding; Gsm-Memory Span, Working Memory)*

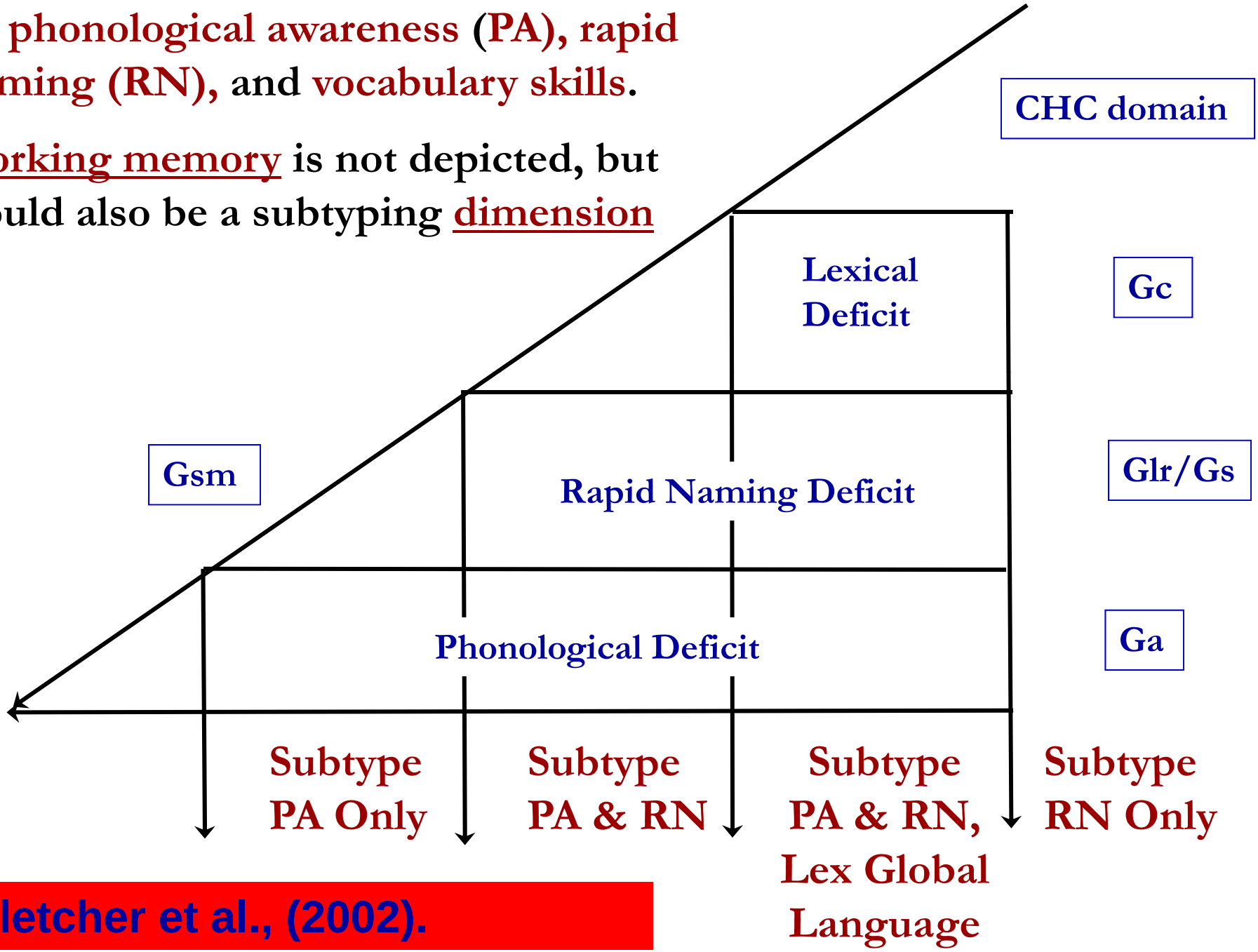
- **(2) Surface Dyslexia** – difficulty with the rapid and automatic recognition of words in print *(Glr-Naming Facility; Gv-Orthographic Processing; Gs-Perceptual Speed; Gc-Vocabulary Knowledge)*

- **(3) Mixed Dyslexia** – multiple reading deficits characterized by impaired phonological and orthographic processing skills. It is probably the most severe form of dyslexia. *(Multiple CHC abilities or processes involved; attention and executive functioning)*

- **(4) Comprehension Deficits** – the mechanical side of reading is fine but difficulty persists deriving meaning from print *(Gf-Induction, General Sequential Reasoning; Gc- Language Development; attention and executive functioning)*

Subtypes of reading disability based on phonological awareness (PA), rapid naming (RN), and vocabulary skills.

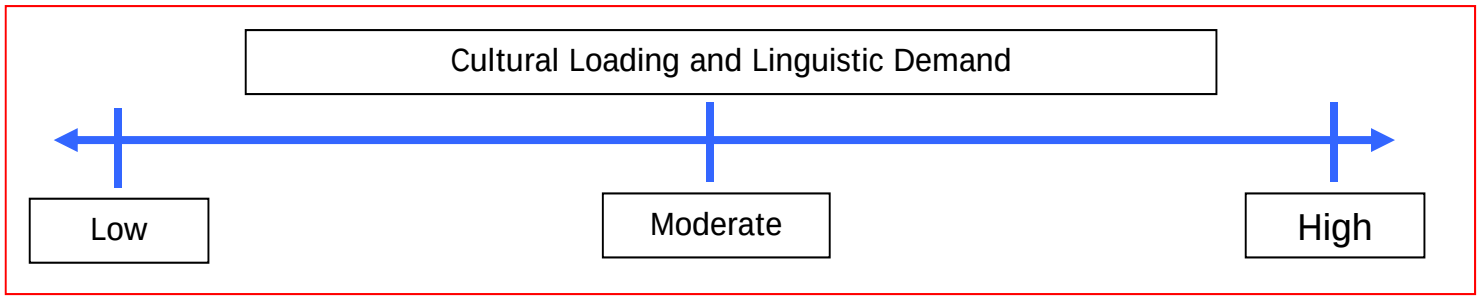
Working memory is not depicted, but would also be a subtyping dimension



Fletcher et al., (2002).

Assessment of Diverse Children: Dimensions of Standardized Tests Related to Bias

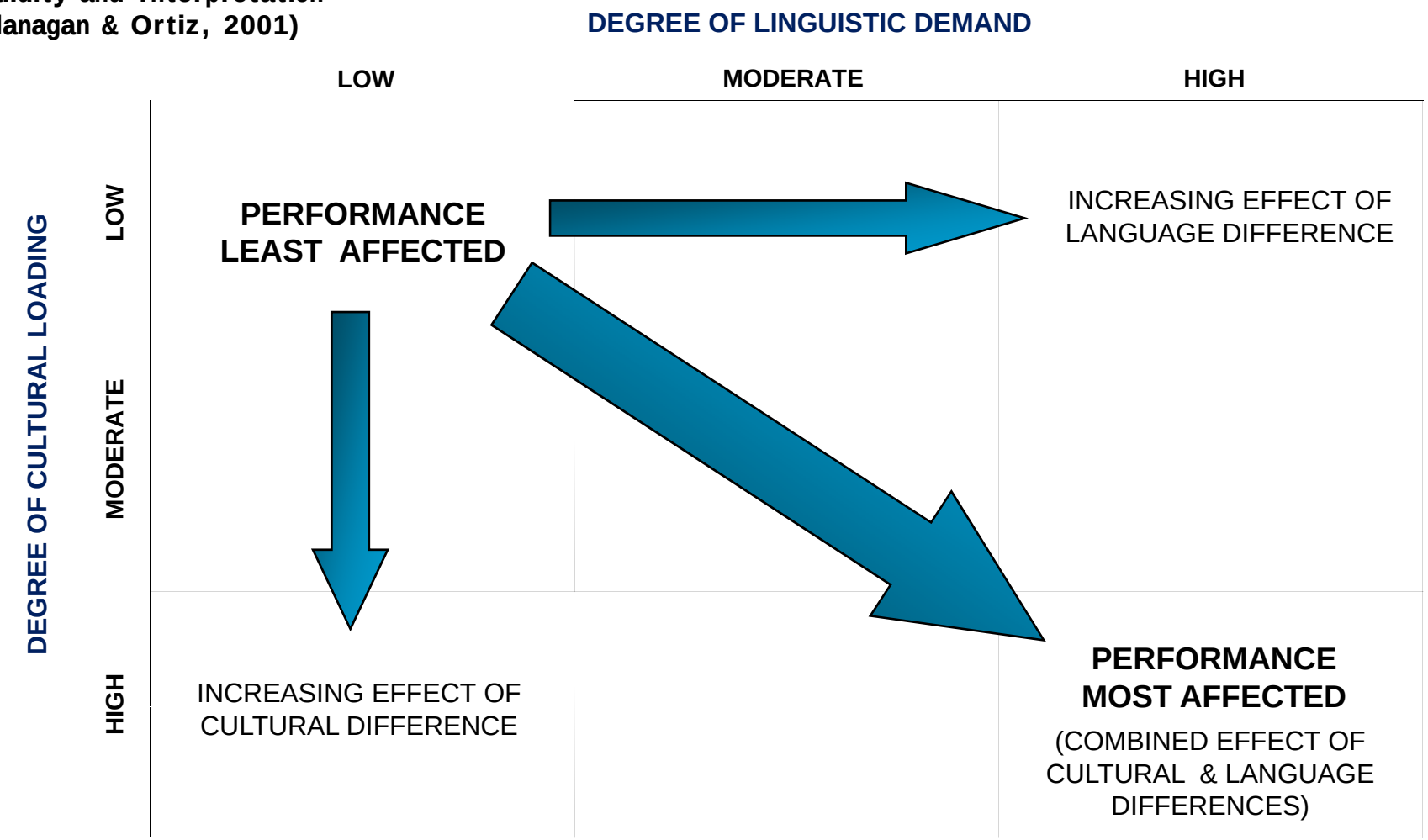
- Tests are culturally loaded:
  - the majority of tests used by psychologists were developed and normed in U.S. and inherently reflect native anthropological content as well as the culturally bound conceptualizations of the test developers themselves. Many tests require specific prior knowledge of and experience with mainstream U.S. culture
- Tests require language (communication):
  - linguistic factors affect administration, comprehension, responses, and performance on virtually all tests. Even nonverbal tests that reduce oral language requirements continue to rely on effective communication between examiner and examinee in order to measure optimal performance
- Tests vary on both dimensions:
  - Tests vary significantly with respect to the degree that they are culturally loaded as well as the degree of language required



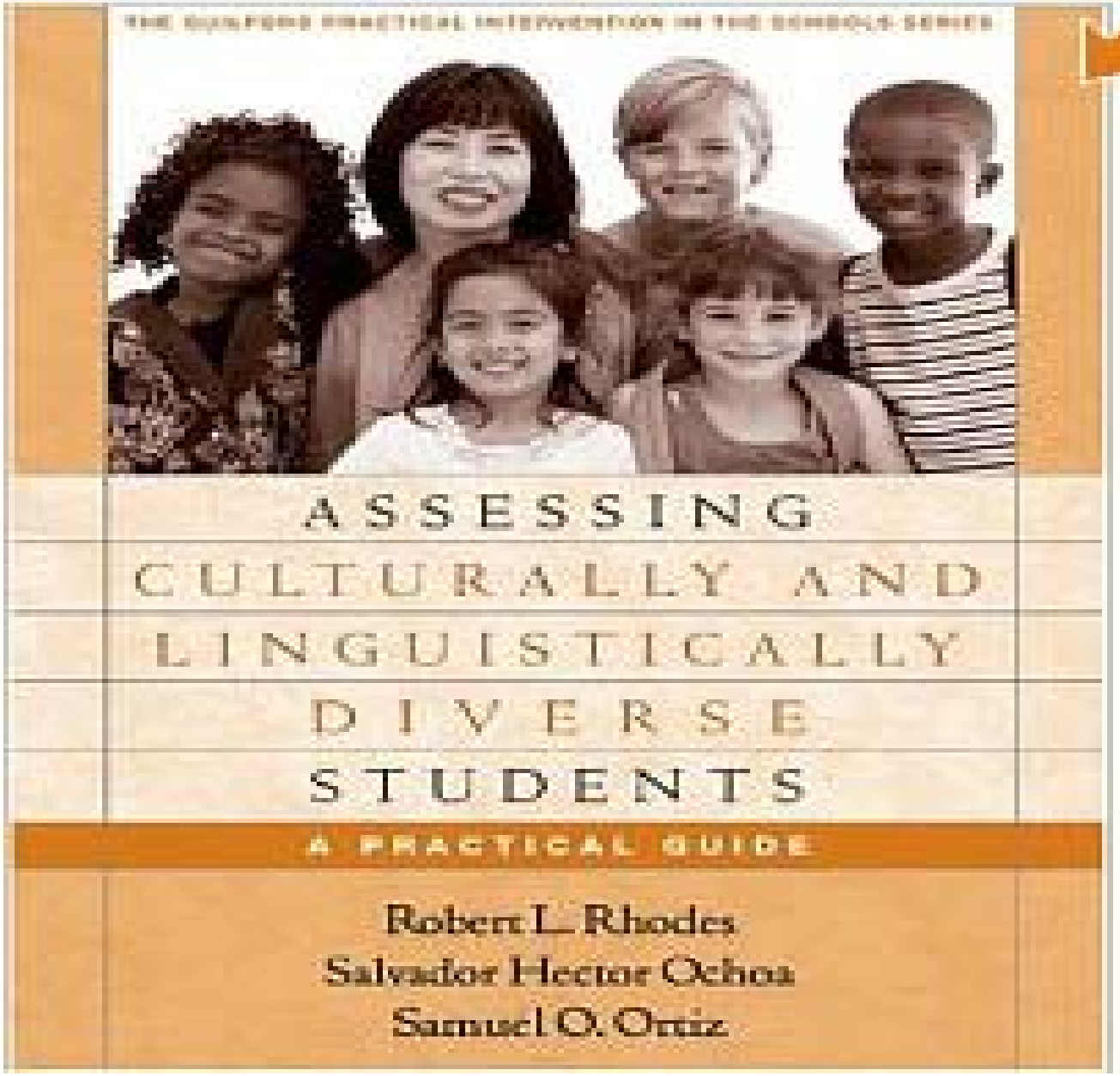
Flanagan & Ortiz (2001)

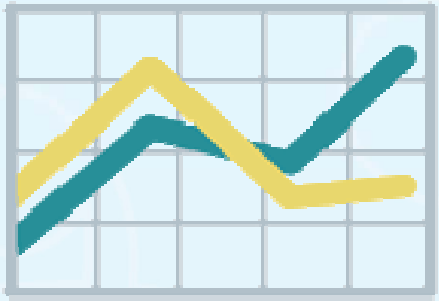
Pattern of Expected Performance of Culturally and Linguistically Diverse Children

Cultural and Linguistic Classification of Tests Addressing Bias in Test Validity and Interpretation (Flanagan & Ortiz, 2001)



Click to LOOK INSIDE!





Individual Differences Are Important

One Size Does Not Fit All

The Early Catastrophe:
The 30 Million Word Gap by Age 3

We observed the 42 children grow more like their parents in stature and activity levels, in vocabulary resources, and in language and interaction styles. Despite the considerable range in vocabulary size among the children, 86 percent to 98 percent of the words recorded in each child's vocabulary consisted of words also recorded in their parents' vocabularies. By the age of 34-36 months, the children were also talking and using numbers of different words very similar to the averages of their parents (see the table below).

Families' Language and Use Differ Across Income Groups

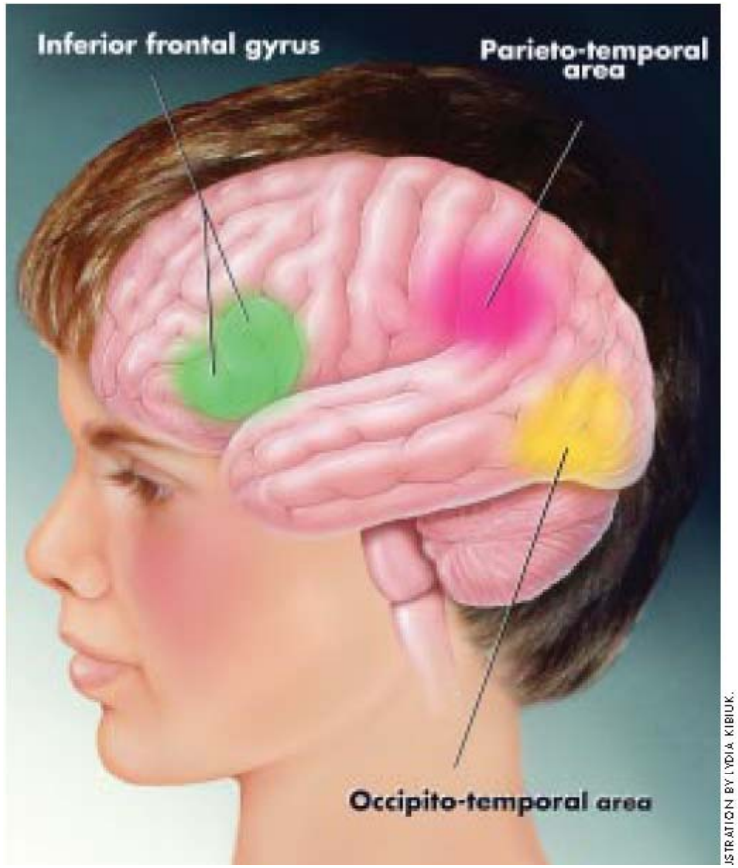
	Families					
	13 Professional		23 Working-class		6 Welfare	
Measures & Scores	Parent	Child	Parent	Child	Parent	Child
Protest score[a]	41		31		14	
Recorded vocabulary size	2,176	1,116	1,498	749	974	525
Average utterances per hour[b]	487	310	301	223	176	168
Average different words per hour	382	297	251	216	167	149

Betty Hart and Todd R. Risley

FEBRUARY 2006 brain BRIEFINGS

- SES strong predictor of reading problems
- Low SES children with PA problems have reading areas intact and use the same reading areas as controls
- More about underdeveloped connections (due to lack of experience, etc.)
- Low SES same reading systems but delayed and never really catch up (Noble & McCandliss, 2005)

Elaine Fletcher-Janzen (May, 2011). Presented at the 3rd annual assessment conference, Fordham University. New York, NY.



Scientists think, based on accumulating research, that skilled reading requires certain patterns of activity in a network of areas mostly on the left side of the brain. These brain areas include the inferior frontal gyrus, parieto-temporal area, and occipito-temporal area. Some evidence suggests that the inferior frontal gyrus brain area and the parieto-temporal brain area help a reader analyze a word, while the occipito-temporal brain area helps a reader quickly recognize known words.

Illustration by Lydia Kibiuk.

The 30 Million Word Gap

- Given a 100-hour week (14 hour waking day)
  - Avg child in professional families: **215,000** words of language experience
  - Avg child in working class families: **125,000**
  - Avg child in welfare families: **62,000**
- Given a 5,200-hour year
  - Professional families: 11.2 million words
  - Working class families: 6.5 million words
  - Welfare families: 3.2 million words
- **In 4 years of such experience, an average child in a professional family would have accumulated experience with almost 45 million words**
  - Working class: 26 million
  - Welfare: 13 million
- ***Children in professional families are exposed to over 30 million more words/language experience than children in welfare families***

Betty Hart and Todd R. Risley

Linking Assessment to Intervention

- Requires good instruments
- Well trained clinicians
- Well trained teachers and special educators
- *A mechanism in place for bringing data together to problem-solve in an attempt to offer the most effective instruction and interventions to children*

Mascolo and Flanagan (2008)

Intervention Types

Mascolo and Flanagan (2008)

- Need to differentiate between
  - Direct Interventions (remediation)
  - Accommodations
  - Compensation
  - Instructional/Curricular Modifications
- **Intervention**: any technique, product, or approach which intends to *directly* address an identified area of weakness through *remediation*
- **Accommodations**: any technique or support which intends to directly alleviate the symptomatology associated with an identified area of weakness (e.g., circumventing the impact of a processing speed weakness via extended time - - the symptom is not "*Gs* deficit" – that's the problem; the symptom is "unfinished assignments" - - when you extend time you alleviate the symptom and assignments are completed.
- **Compensation**: strategies taught to a student that he or she is expected to apply

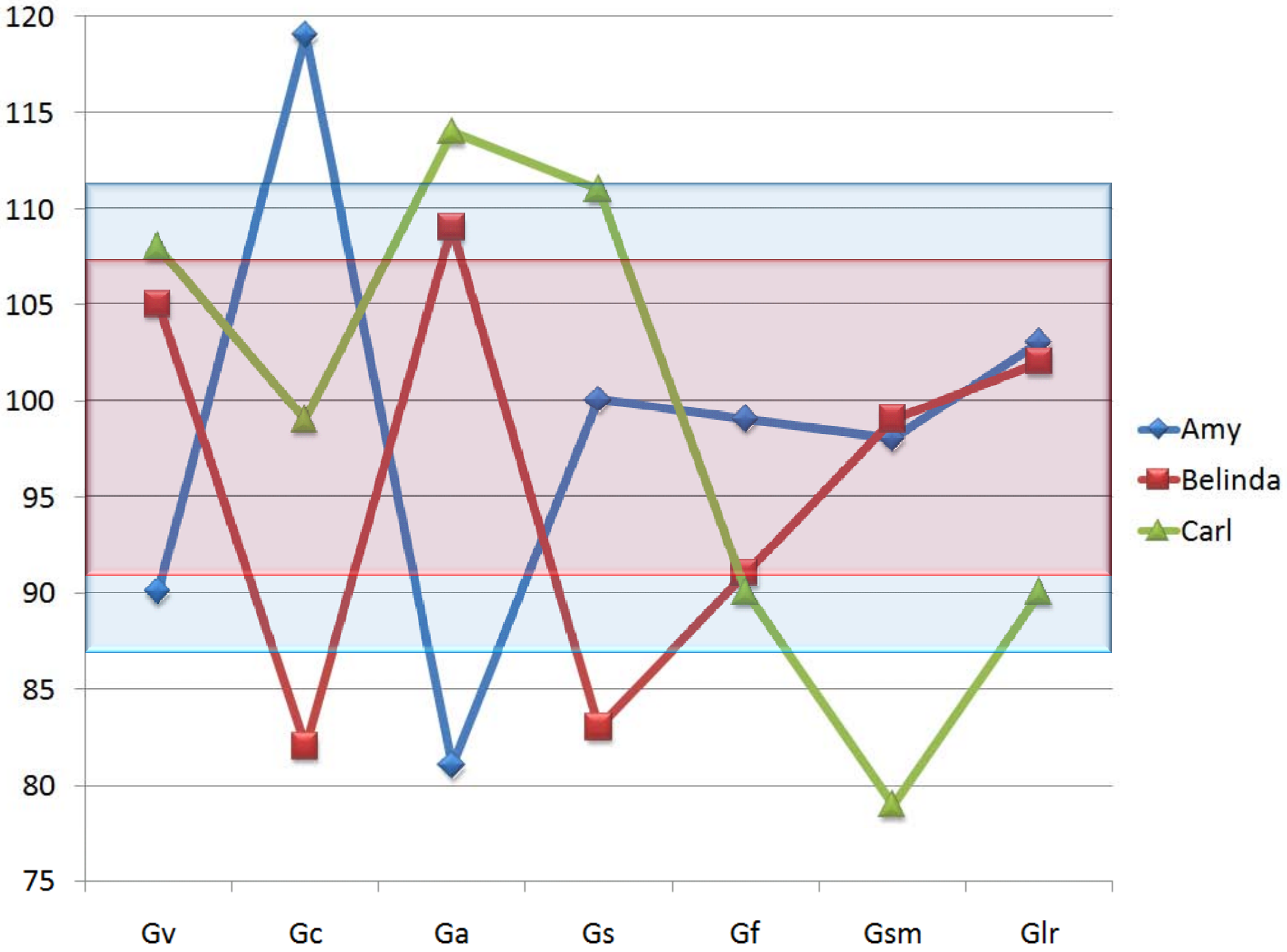
- Students
  - Amy
  - Belinda
  - Carl

- Tier I Screening
- At-risk in Reading
  - Decoding
  - Fluency
  - Comprehension
- Tier II Treatment Protocol
  - Reading Recovery

Mascolo and Flanagan (2008)

- Amy, Belinda, and Carl are making some gains in Reading Recovery
- *No appreciable change in reading performance*
- Tier II "nonresponders"
- Need for a comprehensive evaluation that includes cognitive assessment

Mascolo and Flanagan (2008)


120
115
110
105
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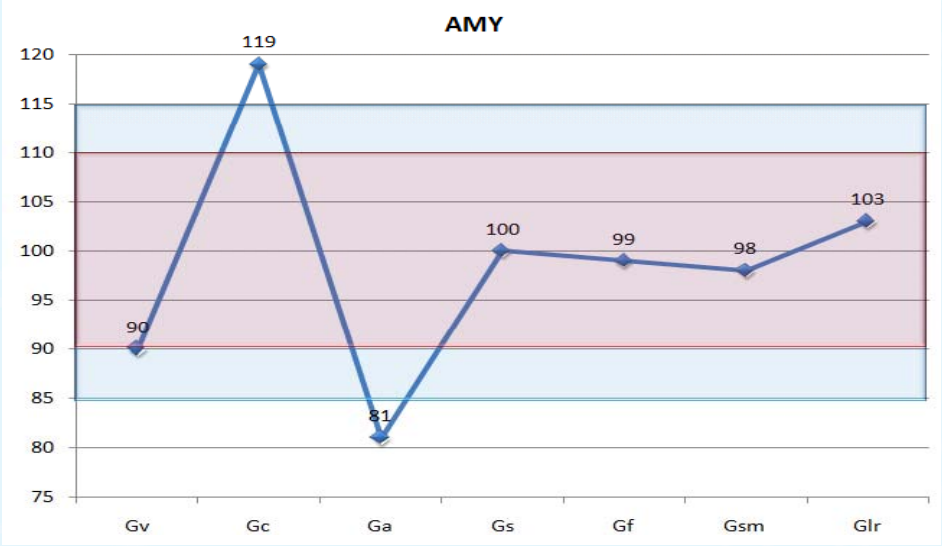
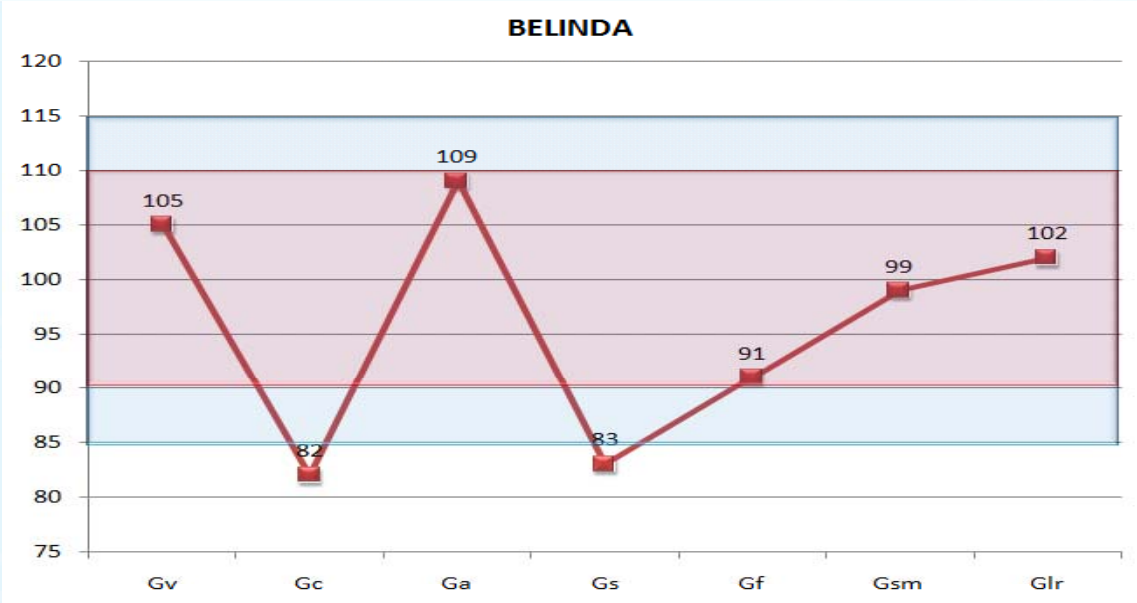
75
Gv
Gc
Ga
Gs
Gf
Gsm
Glr
Amy
Belinda
Carl



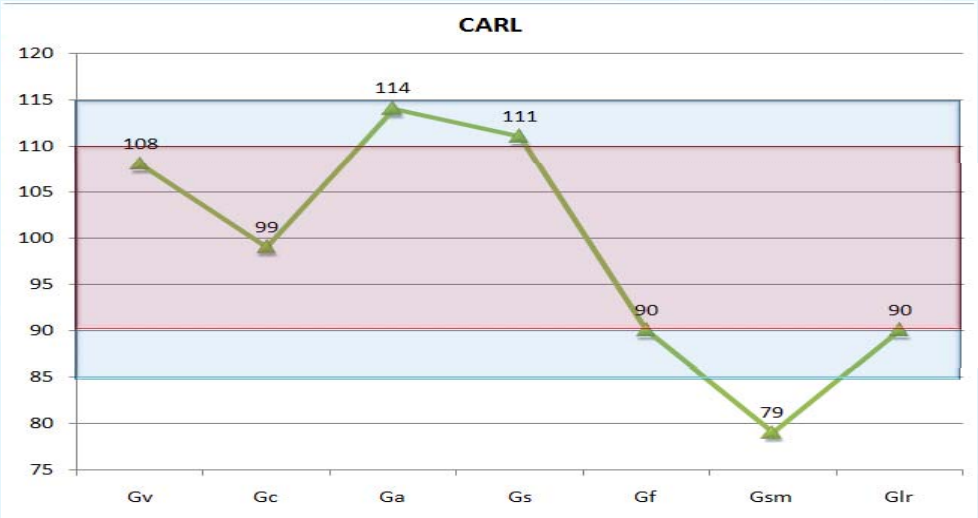
- Amy's cognitive testing shows a significant deficit in phonetic coding – she doesn't know how to translate symbols into sounds
- *Ga* deficit impacts her fluency – labored reading
- Lack of decoding and fluency impacts comprehension
- *Intervention should focus on Phonemic Awareness – Remediate Ga*

Mascolo and Flanagan (2008)



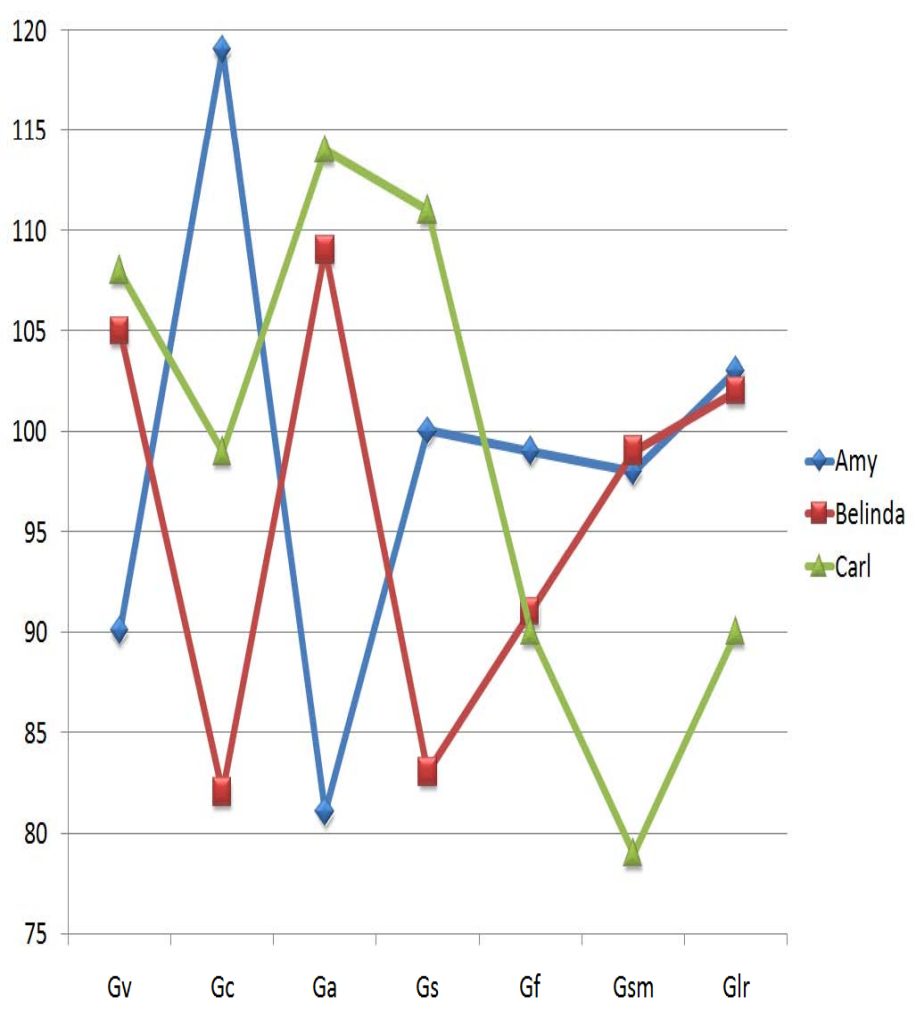
- *Gc* deficit – language deficit
- Comprehension is poor b/c of low *Gc*
- Poor vocabulary – needs to re-read to gain meaning, which impacts fluency
- *Intervention should focus on vocabulary development – Remediate Gc-VL, KO*
- Accommodation of extended time due to a global *Gs* deficit

Mascolo and Flanagan (2008)



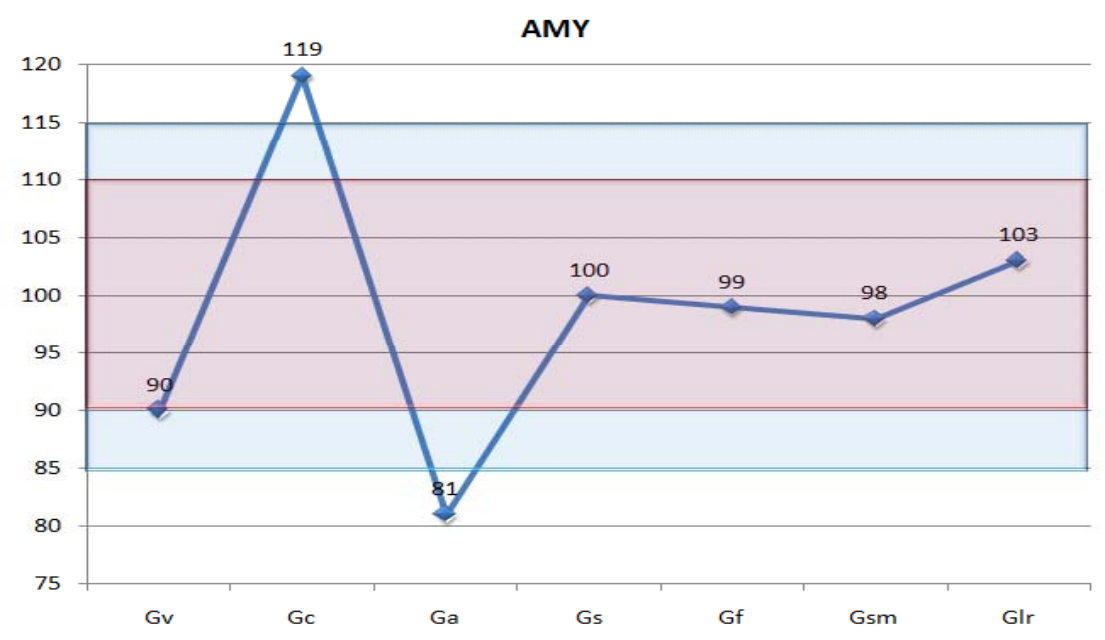
- *Gsm* deficit
- Decoding is poor – he cannot hold the complete phonemic string in mind long enough to say the word
- Comprehension is poor because he needs to allocate all memory space decoding words and therefore cannot focus on meaning
- Fluency is impaired because he must re-read the text to gain meaning
- *Intervention should focus on developing a sight word vocabulary*
- Carl needs to be taught *compensatory strategies* to assist with poor *Gsm (text previews; guided notes; one comprehension question at a time)*

Mascolo and Flanagan (2008)



- All had same academic deficits (decoding, comprehension, fluency)
- ***All made slow gains with Reading Recovery***
- All had different patterns of cognitive strengths and weaknesses
- Reading Recovery – allocating time to areas that do not need to be trained
- Not enough explicit instruction in main problem area ***because the intervention was not tailored***

Mascolo and Flanagan (2008)



- No need to focus on comprehension and fluency
- Amy needs phonemic awareness training

Mascolo and Flanagan (2008)

Intervention: Auditory Discrimination in Depth (ADD) / Lindamood Phonemic Sequencing (LiPS)

April 23, 2007

Overview
Program information
Research
Effectiveness
References
Appendices
Beginning Reading
PDF: Intervention Report (757 KB)
PDF: Technical Appendices (768 KB)

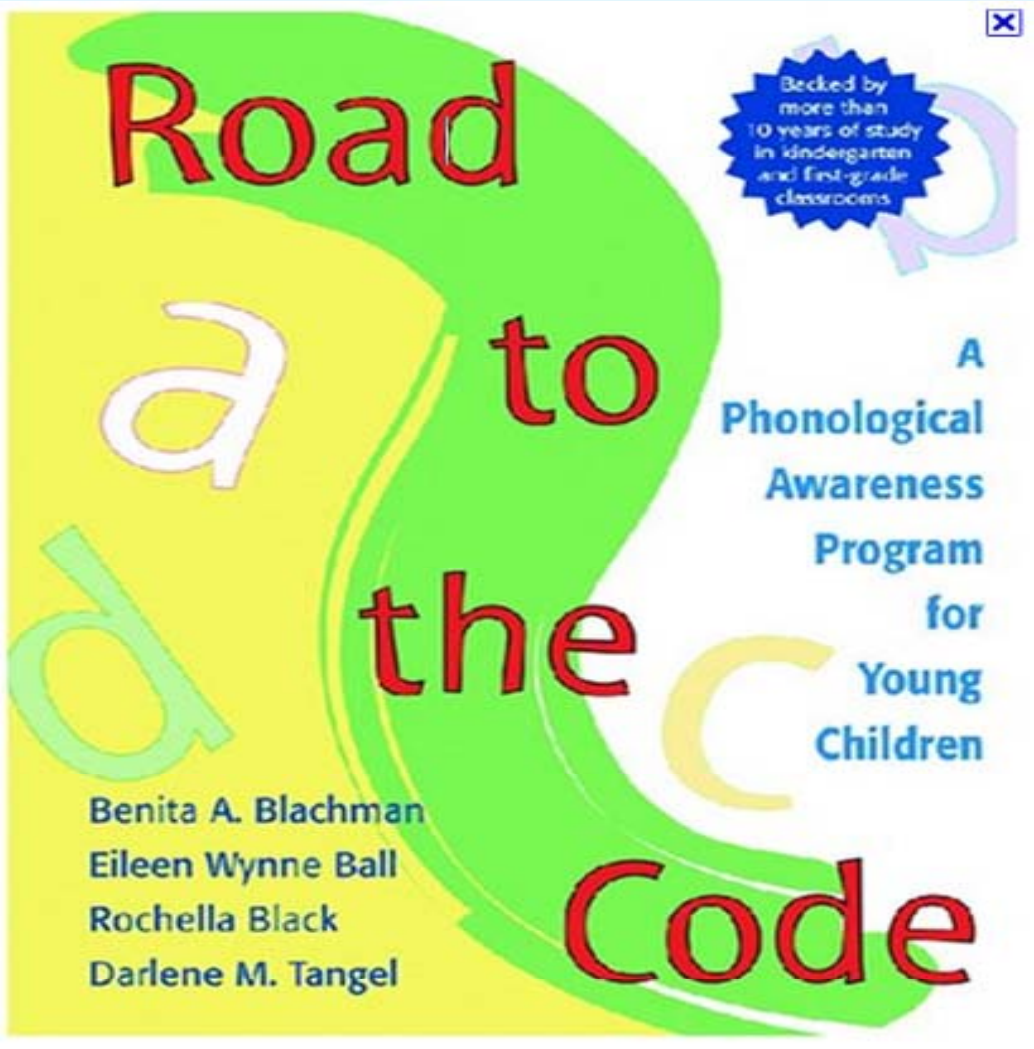
Overview

The *Auditory Discrimination in Depth (ADD) Program®* (currently called the *Lindamood Phonemic Sequencing (LiPS) Program®*) is designed to teach students skills to successfully decode words and to identify individual sounds and blends in words. Initial activities engage students in discovering the lip, tongue, and mouth actions needed to produce specific sounds. After students are able to produce, label, and organize the sounds with their mouths, subsequent activities in sequencing, reading, and spelling use the oral aspects of sounds to identify and order them within words. The program also offers direct instruction in letter patterns, sight words, and context clues in reading. The *Auditory Discrimination in Depth Program®* is individualized to meet students' needs and is often used with students who have learning disabilities or difficulties. The version of the program tested here involved computer-supported activities.

Research

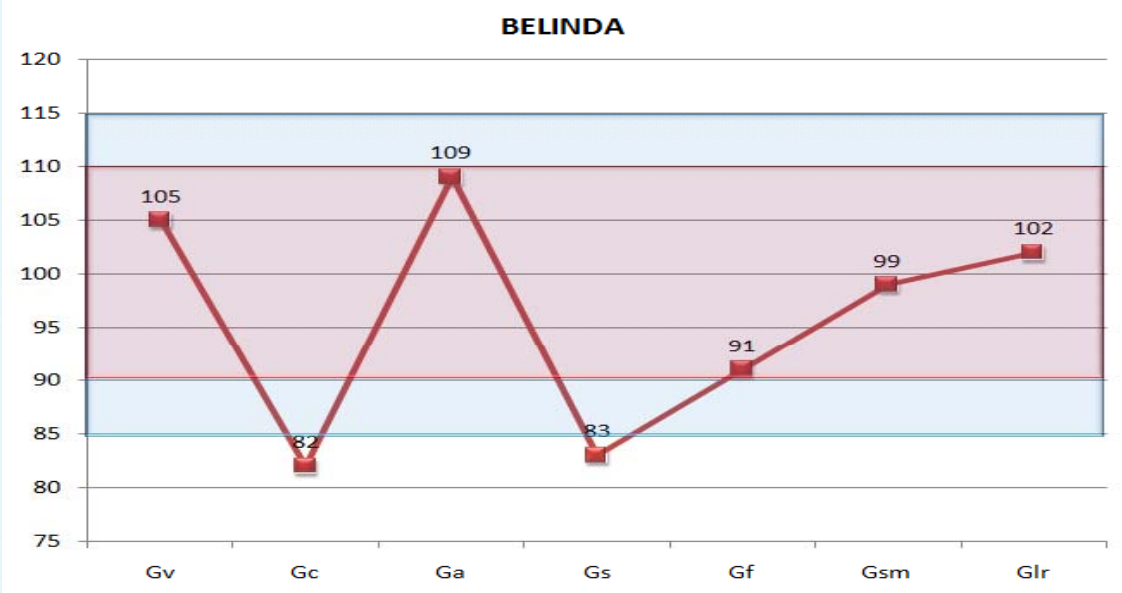
One study of *Auditory Discrimination in Depth®* met the What Works Clearinghouse (WWC) evidence standards. The study included 150 first grade students in five elementary schools. [1]

The WWC considers the extent of evidence for *Auditory Discrimination in Depth®* to be small for alphabetics and comprehension. No studies of *Auditory Discrimination in Depth®* that met WWC standards with or without reservations addressed outcomes in the domains of fluency and general reading achievement.



Another Program for Ga-Phonetic Coding Deficit

Essential Component	Definition	High Priority Skill	Examples	Instructional research
Phonemic Awareness	Awareness that spoken words are made up of individual sounds.	Blending 2 and 3 sounds to make spoken words. Segmenting spoken words into individual sounds	Teacher places three pictures on the board. She says three sounds out loud that represent the name of one of the pictures. Student listens and says the word. Students move three chips into the sound boxes as they say single sounds of the word /h/ /ou/ /se/ (house).	Make sure students know meanings of words that are used in sound blending and sound segmenting activities.
Phonics	Understanding that words are made up of letters, sounds are connected to letters, and can use these letter and letter combinations to read and spell unfamiliar words.	Blends sounds in printed words together and reads words as a whole accurately.	Teacher tells students –dge and –ge both stand for /j/ at the ends of words. Students sort 20 –ge and –dge words to determine when –dge spelling is used. Students read the words when done. The teacher points to the written word matador and asks the student how many syllables or parts are in the word.	Keep the end in mind. Have students apply phonics skills daily in reading and writing activities.



- No need to focus on decoding
- Belinda needs to focus on *building her vocabulary*
- She will also benefit from strategies/adaptations to build fluency

Mascolo and Flanagan (2008)

Florida Center for Reading Research

Text Talk

What is Text Talk?

Text Talk is an oral language instruction program intended for all students in grades K-3. It is designed to supplement a school's core reading program with 20 minutes of daily whole or small group instruction delivered by the teacher. The goal of the program is to develop the student's ability to construct meaning of sophisticated vocabulary words within the context of read-alouds and explicit vocabulary instruction. These vocabulary words and ideas are contextualized with explicit descriptions of how the words are used in the story and through interactive discussions.

The *Text Talk* instructional approach was developed by Drs. Isabel L. Beck and Margaret G. McKeown based on findings from their many years of research. These findings are depicted in their book, Bringing Words to Life which describes the rationale and methods for teaching children rich, robust vocabulary words. These words are not ordinarily found in their speaking vocabulary but would most likely be in their conceptual lexicon and appear in a variety of texts. Described as Tier 2 words in their book, Beck and McKeown underscore the importance of providing students repeated opportunities to hear and use these new vocabulary words in different contexts. The instructional strategies discussed in Bringing Words to Life are applied in the *Text Talk* program.

Text Talk

Robust Vocabulary Instruction
for grades K–3

- Text Talk Home
- Program Overview
  - Read-Aloud Text
  - Active Talk
  - Direct Instruction
  - Teacher Support
- About Vocabulary
- Research & Results
- Program Authors
- Try It Free
- Funding Opportunities
- Contact Text Talk

Order Now!

- Buy in The Teacher Store
- Download An Order Form
- Find Your US Sales Executive
- Download International Order Form (PDF)

Or Call 1-800-SCHOLASTIC

Program Overview

Text Talk supports three levels of learners:

- Level A Grades K–1
- Level B Grades 1–2
- Level C Grades 2–3

See component list

Each level of Text Talk includes:

Read-Aloud Books

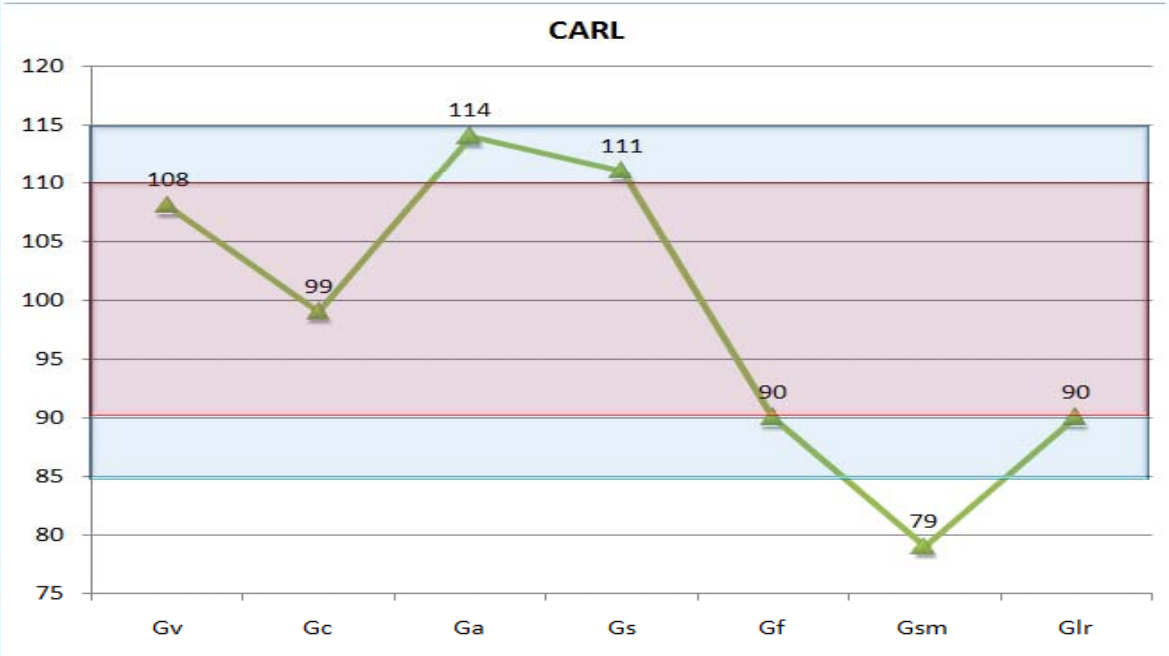
Look inside a Level A book.
Look inside a Level B book.
Look inside a Level C book.
Learn More

Active Talk

See Close-up
Learn More

Flanagan & Alfonso, NASP 2012

http://teacher.scholastic.com/products/texttalk/overview/readaloud.htm



- No need to focus on comprehension or fluency
- Carl needs sight word reading and memory strategies

Mascolo and Flanagan (2008)

MULTILIT

Making up lost time in literacy

MULTILIT for teachers and other educational professionals

PROFESSIONALS
Schools & Teachers
Individual Practitioners
Organisations

Learning to read is one of the most important skills a child can learn. It is the key to all future academic success. But some children find learning to read especially difficult and they need effective assistance based on sound scientific principles and research.

Children who have failed to learn to read in the first few years of schooling need intensive, systematic reading instruction if they are not to fall further behind, or even become complete non-readers.

Results from the 'Making Up Lost Time In Literacy' (MULTILIT) Initiative show clearly that students with reading problems, taught by our methods, can and do make extraordinary gains in literacy skills over short periods of time—hence, they make up lost time in literacy.

MULTILIT, a research-based initiative of the Macquarie University Special Education Centre (MUSEC), in Sydney, Australia, is led by Professor Kevin Wheldall, Director of MUSEC and Director of the **MULTILIT Research Unit** . Through continuing research and development, he and his team of Australian academic researchers and special educators published the first edition of the ***MULTILIT Reading Tutor Program*** in 1998.

The MULTILIT Program incorporates the three key features research shows that effective tuition programs for low-progress readers need to include:

- 'phonics' or word attack skills
- sight words recognition; and
- supported book reading in a one to one context.

View a short video

View a short video about the NEW MULTILIT Reading Tutor Program

http://www.multilit.com.au/

Login with Facebook to see what your friends are reading | Enable Social Reading

Breast Cancer Breakthrough Explains Differences In Cancer Among Races, Possible New Therapies

Posted: 06/06/2012 4:40 pm Updated: 06/06/2012 5:09 pm

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"These findings prove the importance of personalizing cancer drug treatment so that it targets the genetic make up of a particular tumour rather than presuming one therapy can treat multiple, similar-looking tumours," Steven Jones, co-author of the study, told the *Canadian Press*.

Shapira drew a similar conclusion from her study. "The striking difference in the patterns of microRNA expression between African American and Caucasian breast cancer patients **may provide insight into answering why, when receiving similar treatments, outcomes are different between** African Americans and Caucasians," she said.

CHC Broad Ability	CHC Broad Ability Definition	General Manifestations of the CHC Broad Ability	Manifestations of the CHC Broad Ability in Academic Areas	Recommendations/ Interventions
Fluid Reasoning (*Gf*)	•Novel reasoning and problem solving •Processes are minimally dependent on learning and acculturation •Involves manipulating rules, abstracting, generalizing, and identifying logical relationships	***Difficulties with:*** • Higher level thinking •Transferring or generalizing learning •Deriving solutions for novel problems •Extending knowledge through critical thinking •Perceiving and applying underlying rules or process(es) to solve problems	***Reading Difficulties:*** •Inferential reading comprehension •Abstracting main idea(s) ***Math Difficulties:*** •Math reasoning (word problems) •Internalizing procedures and processes used to solve problems •Apprehending relationships between numbers ***Writing Difficulties:*** •Essay writing and generalizing concepts •Developing a theme •Comparing and contrasting ideas	•Develop student's skill in categorizing objects and drawing conclusions •Use demonstrations to externalize the reasoning process •Gradually offer guided practice (e.g., guided questions list) to promote internalization of procedures or process(es) •Targeted feedback •Cooperative learning •Reciprocal teaching •Graphic organizers to arrange information in visual format •Metacognitive strategies •Comparison of new concepts to previously learned (same vs. different) •Using analogies, similes, metaphors when presenting tasks

Manifestations of CHC Ability Weaknesses and Empirically-based Recommendations and Interventions (Flanagan, Alfonso, & Mascolo, 2011)

Gf Deficit

- Reading
  - Difficulties with inferential reading comprehension
  - Difficulty abstracting main idea
- Writing
  - Difficulty with essay writing and generalizing concepts
  - Difficulty developing a theme
  - Difficulty with comparing and contrasting ideas
- Math
  - Difficulties with math reasoning (word problems)
  - Difficulties with internalizing procedures and processes used to solve problems
  - Difficulty apprehending relationships between numbers

- Develop student's skill in categorizing objects and drawing conclusions
- Use demonstrations to externalize the reasoning process
  - Gradually offer guided practice (e.g., guided questions list) to promote internalization of procedures or process(es)

- Targeted feedback
- Cooperative learning
- Reciprocal teaching
- Graphic organizers to arrange information in visual format

Targeted Feedback

- Feedback to students is important and needs to be *concrete* and *specific*
  - Highlight parts of the task that they executed appropriately
  - Identify where things went "wrong" or off-course
  - Describe how to correct the mistakes
  - Provide opportunity for self-correction and/or practice

1. Read the Problem
2. Select Important Information
3. Select Operation to Use
4. Solve the Problem
5. Check your work (ask yourself: does my answer make sense?)

Ann baked 12 cookies for her school's bake fair. She had 3 customers in her line that each wanted a cookie. How many cookies did she have left after she served the customers?

12

X 3

36

1. Read the Problem
2. Select Important Information
3. Select Operation to Use
4. Solve the Problem
5. Check your work (ask yourself: does my answer make sense?)

Ann baked 12 cookies for her school's bake fair. She had 3 customers in her line that each wanted a cookie. How many cookies did she have left after she served the customers?

12

X 3

36

Feedback:

Great job of selecting important information (numbers 12 and 3)

Did not identify the appropriate operation (used multiplication instead of subtraction)

I think you might have seen the word "each" first and selected multiplication, but if you read on you would have realized that the question was asking about "how many left" and could have selected subtraction

Focus on reading the whole problem first, then going back to reread for what the problem is asking for.

Also, if you checked your work, you might have seen that the answer 36 did not make sense in the context of the problem. Your computation was correct, but how could she have more cookies left than what she started with?

Reading and Writing Examples (Gf)

- Directed Reading-Thinking Activity (DR-TA)
  - Activating prior knowledge and making a prediction about the story
  - Reading and stopping to confirm/revise predictions
  - Making new predictions and continuing to stop to confirm/revise
  - Process is organized by the teacher and can be implemented with a more general "predicting" technique whereby the teacher explains what a prediction is first and begins by modeling the strategy (e.g., using the title/cover art of a book) and progressing through collaborative, guided, and finally, independent thinking

- Written Expression
  - Inspiration software (www.inspiration.com)

CHC Broad Ability	CHC Broad Ability Definition	General Manifestations of the CHC Broad Ability	Manifestations of the CHC Broad Ability in Academic Areas	Recommendations/ Interventions
Crystallized Intelligence *(Gc)*	•Breadth and depth and knowledge of a culture •Developed through formal education and general learning experiences •Stores of information and declarative and procedural knowledge •Ability to verbally communicate and reason with previously learned procedures	*Difficulties with:* •Vocabulary acquisition •Knowledge acquisition •Comprehending language •Fact-based/informational questions •Using prior knowledge to support learning	***Reading Difficulties:*** •Decoding and comprehension ***Math Difficulties:*** •Understanding math concepts and the "vocabulary of math" ***Writing Difficulties:*** •Grammar (syntax) •Bland writing with limited descriptors •Verbose writing •Inappropriate word usage ***Language Difficulties:*** •Understanding class lessons •Expressive language – "poverty of thought"	•Provide an environment rich in language and experiences •Frequent practice with and exposure to words •Read aloud to children •Vary reading purpose (leisure, information) •Work on vocabulary building •Teach morphology •Use text talks

CHC Broad Ability	CHC Broad Ability Definition	General Manifestations of the CHC Broad Ability	Manifestations of the CHC Broad Ability in Academic Areas	Recommendations/ Interventions
Auditory Processing *(Ga)*	•Ability to analyze and synthesize auditory information	*Difficulties with:* •Hearing information presented orally, initially processing oral information •Paying attention especially in the presence of background noise •Discerning the direction from which auditory information is coming •Foreign language acquisition •Acquiring receptive vocabulary	***Reading Difficulties:*** •Acquiring phonics skills •Decoding and comprehension •Using phonetic strategies ***Math Difficulties:*** •Word problems ***Writing Difficulties:*** •Spelling •Note taking •Poor quality of writing	•Phonemic awareness activities •Emphasis on sight-word reading •Teach comprehension monitoring (e.g., does the word I heard/read make sense in context?) •Annunciating sounds in words in an emphatic manner when teaching new words for reading or spelling •Use work preview/text preview to clarify unknown words •Provide guided notes during note taking activities •Build in time for clarification questions related to "missed" or "misheard" items during lecture •Supplement oral instructions with written instructions •Shortening instructions •Preferential seating •Localizing sound source for student •Minimizing background noise

Manifestations of CHC Ability Weaknesses and Empirically-based Recommendations and Interventions (Flanagan, Alfonso, & Mascolo, 2011)

CHC Broad Ability	CHC Broad Ability Definition	General Manifestations of the CHC Broad Ability	Manifestations of the CHC Broad Ability in Academic Areas	Recommendations/ Interventions
Long-Term Retrieval *(Glr)*	•Ability to store information (e.g., concepts, words, facts) and fluently retrieve it later through association	Difficulties with: •Learning new concepts •Retrieving or recalling information by using association •Performing consistently across different task formats (e.g., recognition versus recall formats) •Speed with which information is retrieved and/or learned •Paired learning (visual-auditory) •Recalling specific information (words, facts)	***Reading Difficulties:*** •Accessing background knowledge to support new learning while reading (Associative Memory deficit) •Slow to access phonological representations during decoding (RAN deficit) ***Math Difficulties:*** •Recalling procedures to use for math problems •Memorizing and recalling math facts ***Writing Difficulties:*** •Accessing words to use during essay writing •Specific writing tasks (compare and contrast; persuasive writing) conceptual) •Note-taking ***Language Difficulties:*** •Expressive – circumlocutions, speech fillers, "interrupted" thought, pauses •Receptive – making connections throughout oral presentations (e.g., class lecture)	•Repeated practice with and review of newly presented information •Teach memory strategies (verbal rehearsal to support encoding, use of mnemonic devices) •Use multiple modalities when teaching new concepts (pair written with verbal information)* •Limit the amount of new material to be learned; introduce new concepts gradually and with a lot of context •Be mindful of when new concepts are presented •Make associations between newly learned and prior information explicit •Use lists to facilitate recall (prompts) •Expand vocabulary to minimize impact of word retrieval deficits •Build in wait-time for student when fluency of retrieval is an issue •Provide background knowledge first before asking a question to "prime" student for retrieval

Manifestations of CHC Ability Weaknesses and Empirically-based Recommendations and Interventions (Flanagan, Alfonso, & Mascolo, 2011)

CHC Broad Ability	CHC Broad Ability Definition	General Manifestations of the CHC Broad Ability	Manifestations of the CHC Broad Ability in Academic Areas	Recommendations/ Interventions
Visual Processing (*Gv*)	•Ability to analyze and visualize information	*Difficulties with*: •Recognizing patterns •Reading maps, graphs, charts •Attending to fine visual detail •Recalling visual information •Appreciation of spatial characteristics of objects (e.g., size, length) •Recognition of spatial orientation of objects	***Reading Difficulties:*** •Orthographic coding (using visual features of letters to decode) •Sight-word acquisition •Using charts and graphs within a text in conjunction with reading •Comprehension of text involving spatial concepts (e.g., social studies text describing physical boundaries, movement of troops along a specified route) ***Math Difficulties:*** •Number alignment during computations •Reading and interpreting graphs, tables, and charts ***Writing Difficulties:*** •Spelling sight-words •Spatial planning during writing tasks (e.g., no attention to margins, words that overhang a line) •Inconsistent size, spacing, position, and slant of letters	• Capitalize on student's phonemic skills for decoding tasks • Teach orthographic strategies for decoding (e.g., word length, shape of word) • Overlay graphs and charts with visual labels • Provide written or oral explanation for visual concepts • Review spatial concepts and support comprehension through the use of hands-on activities and manipulatives (e.g., using models to demonstrate the moon's orbital path) • Highlight margins during writing tasks • Provide direct handwriting practice • Use graph paper to assist with number alignment

Manifestations of CHC Ability Weaknesses and Empirically-based Recommendations and Interventions (Flanagan, Alfonso, & Mascolo, 2011)

CHC Broad Ability	CHC Broad Ability Definition	General Manifestations of the CHC Broad Ability	Manifestations of the CHC Broad Ability in Academic Areas	Recommendations/ Interventions
Processing Speed (*Gs*)	•Speed of processing, particularly when pressured to pay focused attention •Usually measured by tasks that require rapid processing, but are relatively easy	*Difficulties with*: •Efficient processing of information •Quickly perceiving relationships (similarities and differences between stimuli or information) •Working within time parameters •Completing simple, rote tasks quickly	***Reading Difficulties:*** •Slow reading speed •Impaired comprehension •Need to reread for understanding ***Math Difficulties:*** •Automatic computations •Computational speed is slow despite accuracy •Slow speed can result in reduced accuracy due to memory decay ***Writing Difficulties:*** •Limited output due to time factors •Labored process results in reduced motivation to produce ***Language Difficulties:*** •Cannot retrieve information quickly – slow, disrupted speech as cannot get out thoughts quickly enough •Is slow to process incoming information, puts demands on memory store which can result in information overload and loss of meaning	•Repeated practice •Speed drills •Computer activities that require quick, simple decisions •Extended time •Reducing the quantity of work required •Increasing "wait" times both after questions are asked and after responses are given

Manifestations of CHC Ability Weaknesses and Empirically-based Recommendations and Interventions (Flanagan, Alfonso, & Mascolo, 2011)

CHC Broad Ability	CHC Broad Ability Definition	General Manifestations of the CHC Broad Ability	Manifestations of the CHC Broad Ability in Academic Areas	Recommendations/ Interventions
Short-Term Memory (*Gsm*)	•Ability to hold information in immediate awareness and use or transform it within a few seconds	*Difficulties with*: •Following oral and written instructions •Remembering information long enough to apply it •Remembering the sequence of information •Rote memorization	***Reading Difficulties:*** •Reading comprehension •Decoding multisyllabic words •Orally retelling or paraphrasing what one has read ***Math Difficulties:*** •Rote memorization of facts •Remembering mathematical procedures •Multi-step problems and regrouping •Extracting information to be used in word problems ***Writing Difficulties:*** •Spelling multisyllabic words •Redundancy in writing (word and conceptual levels) •Note taking	•Provide opportunities for repeated practice and review •Provide supports (e.g., lecture notes, study guides, written directions) to supplement oral instruction •Break down instructional steps for student •Provide visual support (e.g., times table) to support acquisition of basic math facts •Outline math procedures for student and provide procedural guides or flashcards for the student to use when approaching problems •Highlight important information within a word problem •have student write all steps and show all work for math computations

Manifestations of CHC Ability Weaknesses and Empirically-based Recommendations and Interventions (Flanagan, Alfonso, & Mascolo, 2011)

Reading Comprehension Strategies

- Affinity
- Anticipation Guide
- Cloze
- Concept Definition Map
- Cornell Graphic Organizer
- DR/TA
- Fishbone
- K-W-L-S
- Learning Logs
- Minute Paper
- Pairs-Read
- Paraphrasing
- QAR
- RAFT
- Reciprocal Teaching
- Rock Around the Clock
- SQ3R
- Structured Note-taking
- Summarizing
- Venn Diagram
- Vocabulary in Context

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Breast Cancer Breakthrough Explains Differences In Cancer Among Races, Possible New Therapies

Posted: 06/06/2012 4:40 pm Updated: 06/06/2012 5:09 pm

"These findings prove the importance of personalizing cancer drug treatment so that it targets the genetic make up of a particular tumour rather than presuming one therapy can treat multiple, similar-looking tumours," Steven Jones, co-author of the study, told the *Canadian Press*.

Shapira drew a similar conclusion from her study. "The striking difference in the patterns of microRNA expression between African American and Caucasian breast cancer patients **may provide insight into answering why, when receiving similar treatments, outcomes are different between** African Americans and Caucasians," she said.

LET'S

LOOK

AT

A REPORT

- While we must adhere to our current legal definitions, experts agree that the definition needs to evolve.

- The aforementioned framework reflects the future of SLD assessment-some issues are not related to processing problems but other types of problems.

Our job will be to tell the difference between the two…
failure to RTI is not going to do this job.

Mather (2012)

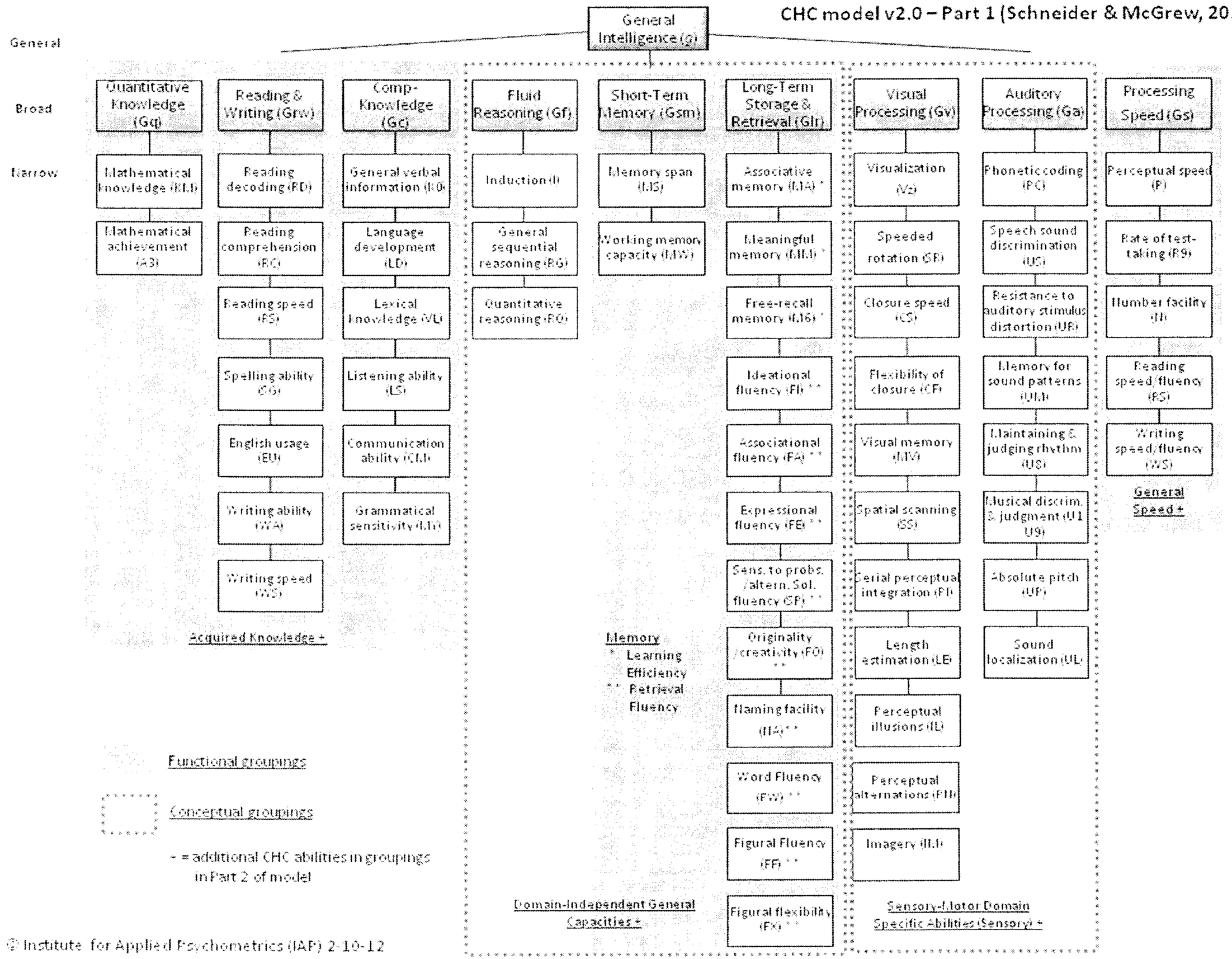
Reached our Goals?

How CHC Links School Psychologists With Speech Language Pathologists

(or how to collaborate besides using a staple)

Andrew Shanock, PhD, NCSP
College of Saint Rose
Albany, NY
shanocka@strose .edu

CHC model v2.0 – Part 1 (Schneider & McGrew, 2012)



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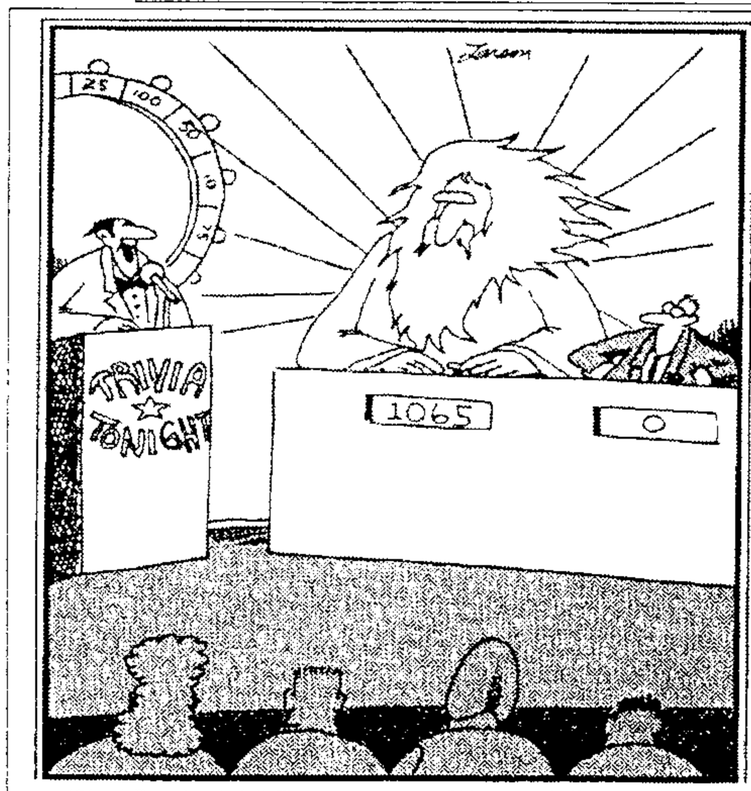
Gc
Comprehension-Knowledge

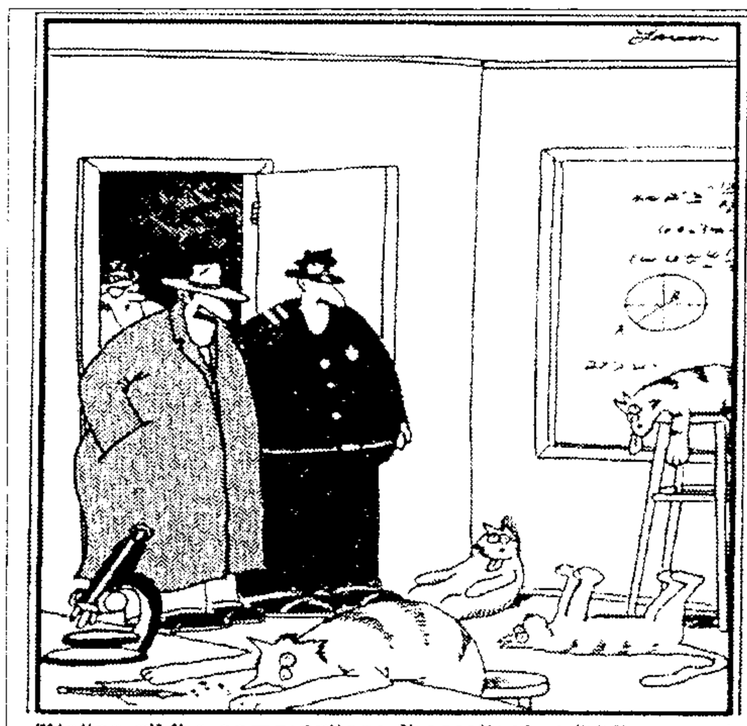


"Yes! That's right! The answer *is* 'Wisconsin!' Another 50 points for God, and ... uh-oh, looks like Norman, our current champion, hasn't even scored yet."

- The breadth and depth of knowledge of a culture
- The ability to communicate one's knowledge (especially verbally)
- The ability to reason using previously learned knowledge or procedures
- Originally described as "crystallized intelligence"
- "Jeopardy" players have waaaay too much Gc.
- Includes Listening Skills and Oral Communication.

3

Gf
Fluid Reasoning


"Notice all the computations, theoretical scribblings, and lab equipment, Norm. ... Yes, curiosity killed these cats."

•Novel reasoning and problem solving that depend minimally on learning and acculturation

•Ability to reason, form concepts, and solve problems that often include novel information or procedures

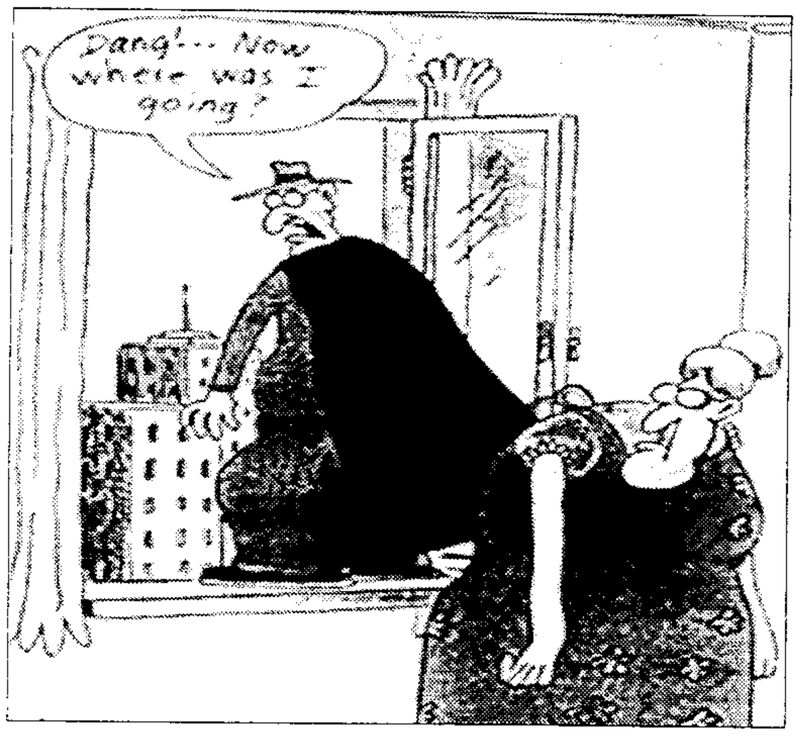
•Induction & deduction are hallmarks of *Gf*

•Impacts math reasoning, reading comprehension, higher level thinking

•The first few times you do Soduku, you are using your Fluid Reasoning. After you learn the trick, it becomes crystallized knowledge (Gc)

4

Gsm
Short-term Memory



- Ability to apprehend and hold information in immediate awareness and then use it within a few seconds
- 7 chunks of information (+ /– 3)
- Working Memory and Memory Span

- Working Memory is key in most academic areas.

5

Glr
Long-term (Storage &) Retrieval

- Ability to store information and fluently retrieve it later
- Ability to retrieve from file cabinet
- Not to be confused with acquired stores of knowledge (*Gc*)
- There has to be an intervening event. Can mean retrieving information learned several seconds earlier.
- Not long term memory
- Includes Rapid Naming, Meaningful Memory, Associative memory
- All contestants on Jeopardy have good Gc, but those who are more effective at retrieving the info do better.

6

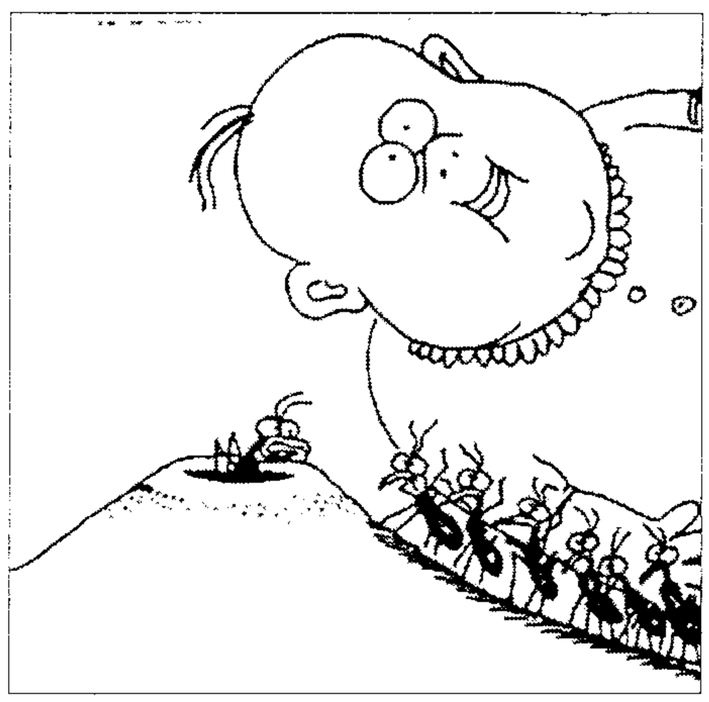
Ga
Auditory Processing

"No, I said release the *hounds* ... the ***hounds!***"

- Ability to analyze, synthesize, & discriminate auditory stimuli
- Ability to perceive and discriminate speech sounds that may be presented under distorted conditions
- Not to be confused with an "auditory learner" or how well someone hears. Can be hearing impaired and still have good Ga
- Includes Phonemic Awareness

7

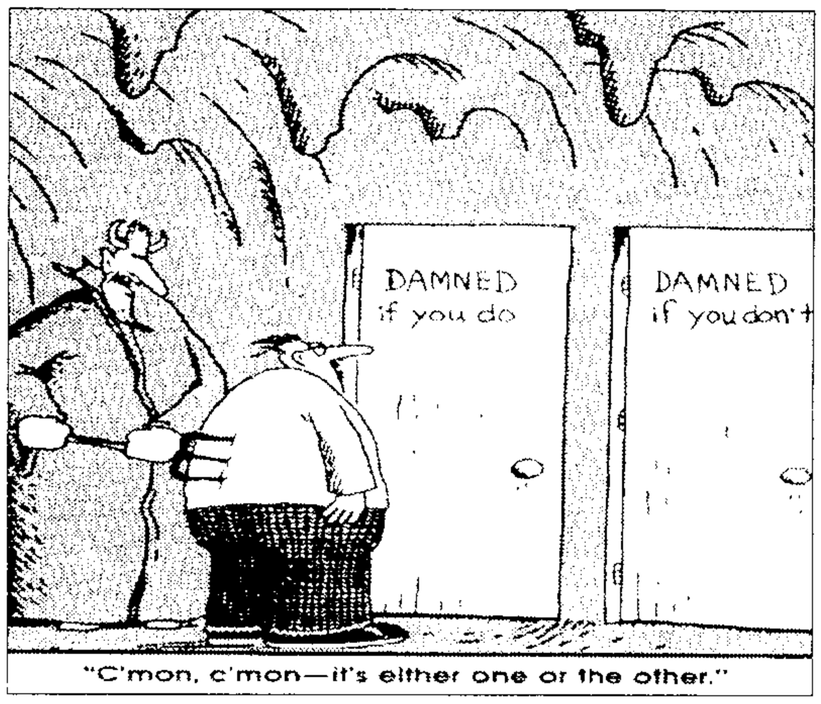
Gv
Visual-Spatial Thinking



- Ability to perceive, analyze, synthesize and think with visual patterns
- Ability to store and recall visual representations
- Fluent thinking with stimuli that are visual in the "mind's eye"
- Not to be confused with a "visual learner" or how well does someone see. Can be visually impaired and still have good Gv

8

Gs
Processing Speed



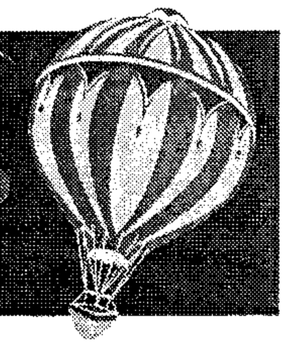
- Ability to perform automatic cognitive tasks, particularly when measured under pressure to maintain focused attention
- Attentive speediness
- Usually measured by tasks that require rapid cognitive processing but little thinking
- Card sorting, game of Perfection

9

Summary of Relations btwn CHC Abilities and Processes and Academic Achievement
(Flanagan, Ortiz, Alfonso & Mascolo, 2006)

CHC Ability	Reading Achievement	Math Achievement	Writing Achievement
Gf	Inductive (I) and general sequential reasoning (RG) abilities play a moderate role in reading comprehension	**Inductive (I) and general sequential (RG) reasoning abilities are consistently very important at all ages.**	Inductive (I) and general sequential reasoning abilities is related to basic writing skills primarily during the elementary school years (e.g., 6 to 13) and consistently related to written expression at all ages
Gc	**Language development (LD), lexical knowledge (VL), and listening ability (LS) are important at all ages. These abilities become increasingly more important with age.**	**Language development (LD), lexical knowledge (VL), and listening abilities (LS) are important at all ages. These abilities become increasingly more important with age.**	**Language development (LD), lexical knowledge (VL), and general information (K0) are important primarily after age 7. These abilities become increasingly more important with age.**
Gsm	Memory span (MS) is important especially when evaluated within the context of working memory.	Memory span (MS) is important especially when evaluated within the context of working memory.	Memory span (MS) is important to writing especially spelling skills whereas working memory has shown relations with advanced writing skills (e.g., written expression)
Gv	Orthographic Processing	May be important primarily for higher level or advanced mathematics (e.g., geometry, calculus)	
Ga	**Phonetic coding (PC) or "phonological awareness/processing" is very important during the elementary school years.**		**Phonetic coding (PC) or "phonological awareness/processing" is very important during the elementary school years for both basic writing skills and written expression (primarily before age 11).**
Glr	**Naming facility (NA) or "rapid automatic naming" is very important during the elementary school years.** Associative memory (MA) may be somewhat important at select ages (e.g., age 8)	Naming Facility (NA), Associative Memory (MA)	Naming facility (NA) or "rapid automatic naming" has demonstrated relations with written expression, primarily the fluency aspect of writing
Gs	**Perceptual speed (P) abilities are important during all school years, particularly the elementary school years.**	**Perceptual speed (P) abilities are important during all school years, particularly the elementary school years.**	**Perceptual speed (P) abilities are important during all school years for basic writing and related to all ages for written expression.**

10



Redundancy

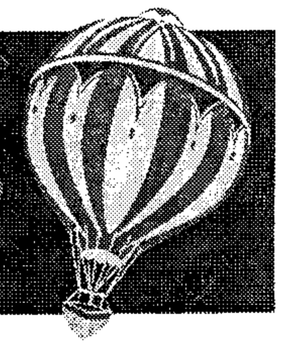
WJ-III/WESCHLER	TOLD-P:4	Time to Administer
Picture Vocabulary	Picture Vocabulary	10 min.
Oral Comprehension	Syntactic Understanding	10 min.
Sentence Repetition	Sentence Imitation	5 min.
Auditory Attention	Word Discrimination	10 min.
Sound Awareness	Phonemic Analysis	10 min.
Sound Blending	Word Articulation	5 min.
	Relational Vocabulary	
	Morphological Completion	

11

Redundancy

WJ-III/WESCHLER	TAPS-3	Time to Administer
Sound Blending	Phonological Blending	10 min.
Auditory Attention	Word Discrimination	10 min.
Numbers Reversed	Number Memory Reversed	5 min.
Memory for Words	Word Memory	5 min.
Sound Awareness	Phonological Segmentation	10 min.
Sentence Repetition	Sentence Memory	5 min.
	Auditory Comprehension	
	Auditory Reasoning	
Digit Span	Numbers Forward	5 min.

12



CULTURE-LANGUAGE TEST CLASSIFICATIONS (C-LTC)

AND

CULTURE-LANGUAGE INTERPRETIVE MATRIX (C-LIM)

SAMUEL O. ORTIZ, PH.D.
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MATRIX OF CULTURAL LOADING AND LINGUISTIC DEMAND CLASSIFICATIONS OF THE WISC-IV SUBTESTS

DEGREE OF CULTURAL LOADING	DEGREE OF LINGUISTIC DEMAND: LOW	DEGREE OF LINGUISTIC DEMAND: MODERATE	DEGREE OF LINGUISTIC DEMAND: HIGH
LOW	**MATRIX REASONING** (*Gf*-RG) Cancellation (*Gs*-P,R9)	**BLOCK DESIGN** (*Gv*-SR, Vz) **SYMBOL SEARCH** (*Gs*-P,R9) **DIGIT SPAN** (*Gsm*-MS, MW) **CODING** (*Gs*-R9)	**LETTER-NUMBER SEQUENCING** (*Gsm*-MW)
MODERATE		**ARITHMETIC** (*Gq*-A3) Picture Concepts (*Gc*-K0, *Gf*-I)*	
HIGH	Picture Completion (*Gc*-K0, *Gv*-CF)*		**INFORMATION** (*Gc*-K0) **SIMILARITIES** (*Gc*-LD,VL) **VOCABULARY** (*Gc*-VL,LD) **COMPREHENSION** (*Gc*-K0, LS) Word Reasoning (*Gc*-VL, *Gf*-I)*

**These tests demonstrate mixed loadings on the two separate factors indicated.*

Note: Some of the ability and culture-language classifications listed in this packet are preliminary, based primarily on expert consensus procedures and judgment, and thus subject to change in accordance with future research findings. They are not intended for diagnostic purposes but rather to guide decisions regarding the relative influence of acculturation and English-language proficiency on test results.

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MATRIX OF CULTURAL LOADING AND LINGUISTIC DEMAND CLASSIFICATIONS OF THE WJ III

DEGREE OF CULTURAL LOADING	DEGREE OF LINGUISTIC DEMAND: LOW	MODERATE	HIGH
LOW	**SPATIAL RELATIONS** (*Gv*-VZ,SR)	**VISUAL MATCHING** (*Gs*-P,R9) **NUMBERS REVERSED** (*Gsm*-MW)	**CONCEPT FORMATION** (*Gf*-I) **ANALYSIS SYNTHESIS** (*Gf*-RG) **AUDITORY WORKING MEMORY** (*Gsm*-MW)
MODERATE	**Picture Recognition** (*Gv*-MV) **PLANNING** (*Gv*-SS) **PAIR CANCELLATION** (*Gs*-R9)	**VISUAL-AUDITORY LEARNING** (*Glr*-MA) **Delayed Recall – Visual Auditory Learning** (*Glr*-MA) **RETRIEVAL FLUENCY** (*Glr*-FI) **RAPID PICTURE NAMING** (*Glr*-NA)	**MEMORY FOR WORDS** (*Gsm*-MS) **INCOMPLETE WORDS** (*Ga*-PC) **SOUND BLENDING** (*Ga*-PC) **AUDITORY ATTENTION** (*Ga*-US/U3) **DECISION SPEED** (*Gs*-R4)
HIGH			**VERBAL COMPREHENSION** (*Gc*-VL,LD) **GENERAL KNOWLEDGE** (*Gc*-K0)

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MATRIX OF CULTURAL LOADING AND LINGUISTIC DEMAND CLASSIFICATIONS OF THE CELF-4

DEGREE OF CULTURAL LOADING	DEGREE OF LINGUISTIC DEMAND: LOW	MODERATE	HIGH
LOW		Number Repetition-Forward (Gsm) Number Repetition-Backward (Gsm)	Familiar Sequences (Gsm)
MODERATE			Concepts and Following Directions (Gc/Gsm) Recalling Sentences (Gsm)
HIGH		Sentence Structure (Gc-LS)	Word Structure (Gc) Semantic Relationships (Gc) Word Definitions (Gc) Expressive Vocabulary (Gc) Word Classes-Expressive (Gc) Word Classes-Receptive (Gc) Understanding Spoken Paragraphs (Gc) Formulated Sentences (Gc) Sentence Assembly (Gc)

Note: Some of the ability and culture-language classifications listed in this packet are preliminary, based primarily on expert consensus procedures and judgment, and thus subject to change in accordance with future research findings. They are not intended for diagnostic purposes but rather to guide decisions regarding the relative influence of acculturation and English-language proficiency on test results.

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MATRIX OF CULTURAL LOADING AND LINGUISTIC DEMAND CLASSIFICATIONS OF THE CASL

DEGREE OF CULTURAL LOADING	DEGREE OF LINGUISTIC DEMAND: LOW	MODERATE	HIGH
LOW			
MODERATE			Grammatical Morphemes (Gc-MY) Grammaticality Judgment (Gc-MY) Syntax Construction (Gc-MY, OP) Paragraph Comprehension (Gc-LS) Sentence Comprehension (Gc-LS) Sentence Completion (Gc-LD) Basic Concepts (Gc-VL) Antonyms (Gc-VL)
HIGH			Idiomatic Language (Gc-LD, K2) Nonliteral Language (Gc-LD, K2) Meaning from Context (Gc-LS) Inference (Gc-LS) Ambiguous Sentences (Gc-VL) Pragmatic Judgement (Gc-LD, K0) Synonyms (Gc-VL)

Note: Some of the ability and culture-language classifications listed in this packet are preliminary, based primarily on expert consensus procedures and judgment, and thus subject to change in accordance with future research findings. They are not intended for diagnostic purposes but rather to guide decisions regarding the relative influence of acculturation and English-language proficiency on test results.

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MATRIX OF CULTURAL LOADING AND LINGUISTIC DEMAND CLASSIFICATIONS OF THE CTOPP

DEGREE OF CULTURAL LOADING	DEGREE OF LINGUISTIC DEMAND: LOW	MODERATE	HIGH
LOW		Memory for Digits (Gsm-MS) Nonword Repetition (Gsm-MS)	Rapid Digit Naming (Glr-NA) Blending Nonwords (Ga-PC:S) Sound Matching (Ga-PC:A)
MODERATE			Rapid Color Naming (Glr-NA) Rapid Letter Naming (Glr-NA) Blending Words (Ga-PC:A) Segmenting Nonwords (Ga-PC:A) Phoneme Reversal (Ga-PC:A, Gsm-MW)* Elision (Ga-PC:A)
HIGH			Rapid Object Naming (Glr-NA) Segmenting Words (Ga-PC:A)

**These tests demonstrate mixed loadings on the two separate factors indicated.*

Note: Some of the ability and culture-language classifications listed in this packet are preliminary, based primarily on expert consensus procedures and judgment, and thus subject to change in accordance with future research findings. They are not intended for diagnostic purposes but rather to guide decisions regarding the relative influence of acculturation and English-language proficiency on test results.

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PSYCHOEDUCATIONAL EVALUATION
Confidential

Name: Britton Fakename
D.O.B.: 10/27/98
D.O.E.: 9/8, 9/23, 10/20/12

District: Somewhere CSD
Grade: 8
Age: 13

For the reader:

The following is a summative explanation of Britton's performances within each cognitive area. The reader is directed to the Appendix at the end of this report for more specific definitions of statistical information.

The primary statistic that will be discussed is called Standard Score (SS). When a new test is developed, it is *normed* on a *sample* of hundreds or thousands of people. The sample should be like that for a good opinion poll: female and male, urban and rural, different parts of the country, different income levels, etc. The scores from that norming sample are used as a yardstick for measuring the performance of people who then take the test. This human yardstick allows for the difficulty levels of different tests. The student is being compared to other students on both difficult and easy tasks. There are more scores in the middle than at the very high and low ends. In essence, it is most common to be within the Average Range. Standard Score indicates how far a particular score is from a test's average. The unit that tells the distance from the average is the standard deviation (sd) for that test. For the tests used in this assessment, the Standard Score of 100 is Average the standard deviation is 15.

However, in some cases, falling within a particular classification, such as the Average Range, may give the impression that the area measured is adequate. While this is usually the case, in some instances, this may not be. Take for example an eye exam. If a 20 year old were to take the test, having 20/20 vision would be typical. If the 20 year old were to have 20/80 vision, it would be below the Average Range and show that glasses are needed. If the results of an eye exam for a 60 year old were 20/80, this would be Average for this age group (or an SS of 100). However, while in the Average Range, the person would still need to address her/her vision problem.

The Relative Proficiency Index adjusts for this occurrence and clarifies strengths and weaknesses within groups (age norms). It allows statements to be generated about a person's predicted quality of performance on tasks similar to the ones tested. The RPI is expressed on a fraction (i.e. 85/90), with the denominator (the last number) being a constant of 90. The numerator (the first number) ranges from 0 to 100, reflecting the person's performance. If a person were to score an 85/90, it would mean that the person would perform with 85% success on those tasks that average age mates would perform with 90% success. Performances that are between 75/90 to 96/90 would be considered to be within the Average Range. It should be noted that only Woodcock Johnson subtests provide this type of statistic and will be used at various points during this discussion.

Within each cognitive and academic area, various subtests will be discussed as an example of an overall performance. The subtests will initially be written in *italic* font and regular font throughout the rest of the text. While not all subtest performances will be discussed, all will be represented by the examples, as well as indicated on individual tables within the body of the text and within the Appendix.

Performances will be discussed in comparison to herself (*relative*) and to her same age peers (*normative*) on which the test battery was normed. In some cases, a performance may be indicated as a relative weakness but a normative strength. This would mean, in comparison to her other performances, the area talked about was weaker. However, the overall performance, in comparison to the Average performance of her peers, was stronger. In the same vein, a child's performance can be a relative strength but normatively weak. This would mean that while all of the performances were lower than the Average same age peer, the particular performance was a strength and should be considered in academic planning.

To further clarify what the standard score represents, they will be discussed in two ways: as falling within a specific classification (e.g., Superior, High Average, Average, Low Average, and Low) and also 'below', 'above', or 'within the normal limits'. Normal limits are considered to encompass the Average Range, as described above. Standard Scores that fall below a 90 are considered 'below the normal limits' (normative weakness) and those standard scores falling above 109 would be considered 'above the normal limits' (normative strength).

Within each cognitive area, various subtests will be discussed as an example of an overall performance. The subtests will initially be written in *italic* font and regular font throughout the rest of the text. While not all subtest performances will be discussed, all will be represented by the examples, as well as indicated on individual tables within the body of the text and within the Appendix.

Britton cognitive and academic abilities will be broken down into various 'broad' cognitive areas. Each area will then be broken down further into 'narrow abilities' or subcategories of the 'broad' ability. Broad abilities include her background knowledge, ability to work with novel information, short-term and long term memory, processing speed, and visual spatial processing.

Finally, throughout the discussions some subtests will be described along with examples of the various questions asked. These examples are NEITHER actual questions from the assessment battery nor are they actual responses. They are included only to clarify how Britton performed on the individual tasks.

Cognitive Results

Using a common metric, half of all children will receive a standard score between 90 and 109, which is the Average Range. **Her overall cognitive ability, as indicated by Woodcock Johnson Scales, was found to be within the Low Average Range (Standard Score [SS] of 85; 16th percentile)**. This indicates that Britton performed as well or better than 16 percent of individuals her age in the standardization sample. There is a 95% chance that her true abilities fall within the Low Average Range (SS of 81 to 89). Strengths and weaknesses were found within each area. Her relative strengths included her vocabulary, and novel reasoning skills. Britton had significant difficulty with tasks that tapped into her rapid automatic naming and short term memory.

Crystallized/Background Knowledge (Gc)

Cluster	Test Battery	Subtest Name	Standard Score	Confidence Interval (68%)	%ile	Classification
Crystallized Knowledge (Gc) Cluster Score =			**86**	**81 to 91**	**17**	**Low Average**
Breadth/depth of acquired cultural knowledge and its effective application	WJ-III	General Information	85	78 to 92	16	Low Average
	WJ-III	Verbal Comprehension	86	79 to 93	17	Low Average
	DAS-II	Verbal Similarities	80	73 to 87	9	Low Average
	DAS-II	Word Definitions	93	86 to 100	32	Average

Crystallized, or background knowledge (Gc), which is one's breadth and depth of knowledge of culture and vocabulary, is highly correlated with most academic areas. It is the level of previously learned concepts 'crystallized' or stored in one's knowledge bank or 'mental file cabinet'. Those with strong crystallized abilities may be good at games such as Trivia Pursuit or solving crossword puzzles. Contestants on Jeopardy have a high level of background knowledge. Britton had some difficulty in this area as she performed in the Low Average Range

Britton exhibited a fair vocabulary, performing at the low end of the Average Range, as she was able to provide definitions to a variety of concrete and abstract terms (*Word Definitions*). For terms that were slightly abstract and may be used in daily language, such as 'helpful', Britton would at times use the word in a sentence and then provide the definition. For other terms, Britton would typically provide clear concise definitions. She had variable success providing definitions to higher level, less commonly used terms such as 'propose'. Britton further exhibited her decent vocabulary when asked to provide synonyms and antonyms of a variety of terms.

While Britton appeared to have a fair vocabulary, she struggled on tasks that tapped into her ability to problem solve with verbal information. Britton had difficulty when she had to identify the category or primary characteristic of a group of three terms (*Verbal Similarities*). She had relative success with concrete terms that are typically grouped together, such as common household pets. She began to have trouble when groupings were slightly more abstract or based on secondary characteristics (ice, candle, cheese all melt). She would usually provide a general answer that exhibited some understanding of the grouping, but she

would lack specificity. For example, she might explain that 'jump', 'run', and 'dance' are things that are 'done outside'. She further had trouble completing verbal reasoning tasks when she had to infer the relationships between a pair of terms and apply it to a second pair of terms (A:B as C:D). Like her other performances, Britton was able to answer most concrete questions that maintained the same sequence, but began to struggle when the pattern was slightly altered to A:C as B:D. Overall, Britton seems to have a fair receptive language base, but has relative working on tasks that require her to have a deeper knowledge from which to work. In the classroom, these struggles may exhibit themselves if asked to compare and contrast concepts, or follow subtleties of language within prose.

Short Term Memory (Gsm)

Cluster	Test Battery	Subtest Name	Standard Score *	Confidence Interval (68%)	%ile	Classification
Short Term Memory (Gsm)		**Cluster Average =**	**71**	**66 to 76**	**3**	**Borderline**
Ability to hold info in immediate awareness & use it within a few seconds	WJ-III	Numbers Reversed	69	62 to 76	2	Well Below Avg
	WJ-III	Auditory Working Memory	64	57 to 71	1	Well Below Avg
	WJ-III	Understanding Directions	83	76 to 90	13	Low Average
	WJ-III	Memory for Words	70	63 to 77	2	Borderline
	DAS-II	Recall of Sequential Order	70	63 to 77	2	Borderline

Short-term memory (Gsm), which is the ability to hold information in immediate awareness and then use it within a few seconds, has been found to have a relationship with reading, math, and written expression. There are two subcategories of short term memory; memory span and working memory. Britton had significant difficulties on all tasks that tapped into her short term memory, performing near or within the Well Below Average Range. After explaining what the tasks involved, Britton would usually state that she knew that she was going to have difficulty.

- **Memory Span**

Memory span requires one to repeat information in the same sequence immediately after it is presented, such as a phone number. Britton performed within the Borderline Range when asked to repeat a series of random common words (*Memory for Words*). Her RPI of 6/90 further indicates her skill on this task was quite limited. She was able to repeat a series of four words that combined contained up to five syllables. For five word sequences, Britton would use words that were not mentioned neither in the presentation nor in previous presentations. On a variety of items, Britton would also omit some of the terms within the sequence.

- **Working Memory**

Working memory is the ability to temporarily store and mentally manipulate information. This is similar to a person attempting to solve a multistep math problem without pencil and paper. Britton had significant difficulties on most tasks that tapped into this area, as she rarely could reorganize a sequence of more than three. For example, when asked to reverse the order of a random sequence of numbers (*Numbers Reversed*), Britton performed in the Well Below Average Range with an RPI of 8/90. If presented with a sequence of three

numbers, she would engage in verbal auditory rehearsal, saying the sequence aloud several times before attempting to reverse. This problem solving technique had variable success as on some items her answer would include the correct digits but in the wrong order. For four digit sequences, like her performance on Memory for Words, she would include information that was not part of the initial presentation.

On a slightly more complex working memory task, Britton was asked to reorder a sequence of words and numbers by restating the words in order of presentation then the numbers in order of presentation (*Auditory Working Memory*). Britton had trouble with the initial three item sequences, usually omitting a word or including a word that was not part of the initial presentation. For sequences that were four in length, Britton consistently included words and numbers that were different than the original sequence. Her RPI of 11/90 further indicates the level of difficulty she had on this task. Britton's working memory difficulties persisted when she was provided a visual cue to assist her in reorganizing presented information (*Recall of Sequential Order*). Here, Britton was provided a picture of a person standing and was asked to reorder a sequence of body part names from highest to lowest. Immediately after a four word sequence was provided, Britton would state that she could not recall any part.

In comparison, Britton had relative success, although within the Low Average Range, when she had to point to various objects in a pictured scene after listening to a sequence of recorded 'if-then' instructions (*Understanding Directions*). The task increased in linguistic complexity in terms of the number of items to be remembered and the order in which they are to be identified. Britton was attentive, could follow some two part 'if-then' directions. While the previous working memory tasks involved random sequences and information, for this task the information was contextualized both linguistically and visually as the scenes depicted familiar social events and details, such as people in library.

Working memory is a key construct in most academic areas. When writing, for example, a student has to retain their thought while thinking about the appropriate spelling and printing of the various words. If presented with several bits of new information at once, without repetition, a student who has weak working memory can easily get lost and unsure of the lessons being taught.

Long Term Retrieval (Glr)

Cluster	Test Battery	Subtest Name Standard	Score	Confidence Interval (68%)	%ile	Classification
Long Term Retrieval (Glr)		**Cluster Average =**	*	*	*	*
Ability to store and retrieve information through association	WJ-III	Visual Auditory Learning	109	102 to 116	73	Average Range
	DAS-II	Recall of Objects	95	88 to 102	35	Average Range
	WJ-III	Retrieval Fluency	94	87 to 101	34	Average Range
	WJ-III	Rapid Picture Naming	69	62 to 76	2	Well Below Average
	DAS-II	Rapid Naming	63	56 to 70	1	Well Below Average
	KTEA	Naming Facility	66	59 to 73	1	Well Below Average
	KTEA	Association Fluency	88	81 to 95	10	Low Average Range

*Cluster Average could not be obtained due to variability between performances.

Long term retrieval (Glr) is the ability to store information in and fluently retrieve new or previously learned information, such as concepts, ideas, items, or names from long-term memory. Long term retrieval is the efficiency with which acquired knowledge is initially stored and later retrieved for immediate use. In other words, it is how quickly one can retrieve a file from their mental 'file cabinet'. For example, each Jeopardy contestant may know the answer (based on their strong background knowledge), but it is the one who is able to retrieve the information and buzz in first that gets the opportunity to respond.

Although the word long-term frequently carries with it the connotation of days, weeks, or months, the long term storage process can begin within several seconds or minutes of performing a task. Therefore the time lapse between the initial task and the recall of information is not necessarily of critical importance in defining long-term retrieval. More importantly is the occurrence of an intervening task that engages a person before the attempted recall of stored information. For example, a person going to another room to get her/her keys, after answering a phone call, may have difficulty recalling why they were going to the room. The phone call was the intervening task, no matter how long the phone call lasted.

Britton's performances in this area varied significantly, having the greatest difficulty with tasks that tapped into her rapid automatic naming (RAN), or the ability to readily name visual cues immediately and fluently. This is important skill for reading as each printed word is a 'picture' which should be immediately identified. Fluent readers will read (identify) several words a second. On three different RAN measures, Britton performed in near or within the Well Below Average Range. For example, on the WJ-III Rapid Picture Naming, Britton had to quickly name pictures of common objects. Britton had frequent long pauses prior to identifying some pictures. Her RPI was 25/90 indicating that her performance indicated a limited proficiency. She had similar struggles when asked to identify colors, words, or letters under timed pressure.

Britton seemed to have the most difficulty when presented with an array of five common animals each of one of five possible colors (*DAS-II Rapid Naming*). Britton had to name the color and the animal. Prior to her being asked to identify any of these particular stimuli, Britton was given an opportunity to review and name the objects she would be seeing on the card. This is unlike the previous task in which there was no preview and none of the pictured objects were repeated over the time of the task. In essence, on this latter task, Britton was cued into the limited set of objects she was to name. She had long pauses between and within each picture. She would elongate the color name (i.e. 'yellllllllllow') and often have to self correct the name of the animal. Her performance was significantly weaker than when only shown the animals or only the colors.

In comparison, Britton had relative success when she had to retrieve information from her background knowledge or if material was presented within context. For example, Britton performed at the high end of the Average Range when shown various novel symbols and told the 'names' of each symbol, such as the symbol ♣ meaning 'girl' (*Visual Auditory Learning*). This task also resembles the act of reading and learning. She was presented with five new symbols and asked to 'read' short sentences that included the newly presented

symbols and previously introduced symbols. Initially, she read each 'sentence' with some fluidity. As the number of 'words' she had to store and recall increased, she began to read each sentence in a halting fashion, almost naming each symbol rather than in a fluid manner. At times, Britton appeared to use context clues to assist in reading. For example, the verbs 'is' and 'are' were visually similar, but based on the nature of the sentence, Britton could self correct.

Britton performed at the low end of the Average Range when was asked to rapidly produce words based on specific parameters. Britton had relative success (Average Range) when she had to name or retrieve terms that fell within a general concept, such as names of cars or candy (*Retrieval Fluency*). She would have various bursts of categorical information, such as different brands of chocolate bars. Britton had some difficulty with her word fluency when she had to name words that began with a specific phoneme, such as /k/. Britton would stare ahead for a long period and within the thirty second time frame state no more than a few words. In essence, it seemed as if she was having trouble finding the 'file'. This is an important skill when trying to learn or master various phonemes and other letter sounds so one can build upon prior learning.

Auditory Processing (Ga)

Cluster	Test Battery	Subtest Name Standard	Standard Score	Confidence Interval (68%)	%ile	Classification
Auditory Perception (Ga)		**Cluster Average =**	**95**	**90 to 100**	**37**	**Average Range**
Ability to analyze, synthesize, and manipulate auditory patterns/stimuli	WJ-III	Auditory Attention	98	91 to 105	45	Average Range
	WJ-III	Sound Blending	88	81 to 95	21	Low Average
	WJ-III	Incomplete Words	99	92 to 106	49	Average Range

Auditory perception (Ga) is the ability to discriminate, analyze, and synthesize auditory stimuli. This is not how well one can hear or if they are an auditory learner, but can the person break apart or put together various phonemes. A subcategory of auditory processing is phonological awareness, which is a fundamental precursor to reading. It is the understanding that language is made up of individual sounds (phonemes) which are put together to form the words we write and speak. Britton performed within or near the normal limits on all tasks that tapped into this area. Further, her weak short term memory and adequate ability to retrieve words from her background knowledge seemed to impact her various performances.

For example, Britton had relative difficulty when asked to listen to individual phonemes and combine them into a single word (*Sound Blending*) such as 'cat' broken down into /c/ /a/ /t/. She ably blended two syllables to form a word (/pay/ /per/) but began to struggle when the word was broken into three or more parts. Her response would indicate that she forgot the initial sound that was presented. This would be consistent with her performance on the various short term memory tasks. In comparison, Britton had relative success, performing within the Average Range, when she had to identify whole words that were presented with a missing phoneme (ie. identifying 'uncle' when hearing /un/ /ul/). She would be able to retrieve the correct word from her vocabulary knowledge based on the sounds she heard.

Britton also exhibited a strong ability to hear subtle sound differences when she had to identify a target word that was spoken over crowd noise (*Auditory Attention*). Initially the crowd noise was in the background and the target word was in the foreground. As the task progressed, the stimuli slowly changed places. After hearing the word, she would have to choose between four pictures whose names were phonemically similar, such as 'seam', 'seen', and 'seed'. Britton performed well within the normal limits on this task, exhibiting good attention and concentration throughout, even when the target words were barely audible. So while she is able to hear the subtle differences, when presented with extended information (Sound Blending), she has difficulty putting those sounds together.

OTHER RECOMMENDATIONS:

Long Term Retrieval and Working Memory

1. Teach Britton specific memory strategies and how to recognize which strategy may be most useful in various situations. Examples include using verbal rehearsal, chunking, making ridiculous visual images composed of items that one has to remember, and mnemonic strategies.

2. Mnemonic strategies include both acronyms and acrostics. Acronyms are forming a word from the first letters of the words to be remembered (HOMES for the Great Lakes). Acrostics is taking the first letters of the words to be remembered and make up an easy to remember sentence using words that have the same first letters. For example, "Kings Play Chess On Fancy Green Soft Velvet" helps recall the order of classification in the animal kingdom. Plus this provides a silly, visual reference to help with recall.

3. To assist Britton in being more efficient when doing tasks that tap into her short term memory, explicit rehearsal training may be quite beneficial. The development of subvocal rehearsal is one cornerstone in building short term memory. The training would involve Britton name an item immediately after it was presented, then the first and second item together after the second item was presented and so on until all items of the series have been presented and rehearsed.

4. Semantic rehearsal is when Britton would be directed to create a brief sentence using the 'to be remembered' words. After creating the sentence, she would say it aloud and then keep repeating it until the next item is presented. A potentially more powerful technique is to present all of the words at once, and then have Britton create a story with all stimulus words embedded sequentially. This approach may be more effective than trying to remember a sequence of unrelated sentences.

5. Another memory intervention that has been linked in assisting children involves learning concepts both visually and verbally at the same time. To train Britton to visualize the application of verbal instructions, begin by presenting her with multistep instructions. Have the objects necessary for the task within view and then ask her to look at the objects as she imagines completing the task. As the training

process progresses, some objects are removed so that Britton is required to visualize them. She should be encouraged to keep on verbally rehearsing the instructions as she imagines carrying out the instructions.

Spelling and Reading

1. To assist with spelling and word identification, the teacher may want to engage Britton in word sorts. She would be given a group of words to sort and then asked to figure out various spelling patterns. For example, a sort may include *cow, found, plow, how, couch, shout, hound.* By sorting the words into two piles, Britton can see that the /ou/ sound is usually spelled with ***ow*** at the end of the word. Later, Britton could learn that /ou/ is spelled 'ow' in a one syllable word before a final /l/ or /n/ as in 'down' or 'owl'. Word sorts for alternative spellings of the same phoneme are also effective. More advanced word sorts could include common affixes.

2. Some research suggests that daily spelling tests are more effective than weekly spelling tests for students who have weak spelling and word identification skills. The procedure for keeping track of words has been referred to as 'spelling flow list' or 'add a word list'. This type of procedure would provide Britton repetition and review.

    a. Create a graph on which words may be written down the left side of the paper, and the days of several weeks are recorded across the top. Place a short list of words on the chart. These words may be words Britton misspells in writing or words designed to teach a specific spelling pattern
    b. Do daily testing of the words, placing a plus sign under each day the word is correct
    c. When the word is spelled correctly three days in a row, remove the word from the list, place it in a word box and add a new word to the list
    d. Review the word in the word box one week later. If misspelled, add it back to the list. If correct, return it to the word box.

3. A possible spelling technique that Britton can use independently (after being trained by a teacher) is called **Cover Copy Compare**. Britton is provided with correctly spelled words listed on the left of the page, with space on the right for the student to spell each word. When first introducing Cover-Copy-Compare worksheets to Britton, the teacher gives Britton an index card who is directed to look at each correctly spelled word. Britton is instructed to cover the correct model on the left side of the page with an index card and to spell the word in the space on the right of the sheet. Britton then uncovers the correct answer on the left to check her work.

4. **Rapid Word Recognition Chart** – Create a matrix that contains five rows of six irregular words (ie. 'who', 'said'), with each row containing the same six words in a different order. After a brief review of the words and a warm up in which the teacher points randomly to eight to ten words on the chart, Britton is timed for one minute (or until they complete the chart) as she reads each word in the squares aloud. Britton can then count and record the number of words read correctly.

Background Knowledge (Gc)

Cluster	Test Battery	Subtest Name	Standard Score	Confidence Interval (68%)	%ile	Classification
Background Knowledge (Gc) Cluster =			**106**	**101 to 111**	**65**	**Average Range**
Breadth and depth of acquired cultural knowledge and its effective application	WAIS-IV	Similarities	110	103 to 117	75	High Average
	WAIS-IV	Vocabulary	110	103 to 117	75	High Average
	WJ-III	General Information	94	87 to 101	35	Average Range
	WJ-III	Verbal Comprehension	97	90 to 104	43	Average Range
	CELF-4	Word Classes	110	103 to 17	75	High Average
	CELF-4	Semantic Relationships	115	108 to 122	84	High Average

Crystallized knowledge (Gc), which is one's breadth and depth of knowledge of culture and does depend on previously learned concepts, is highly correlated with most academic areas. For example, one's Gc can be useful in games such as Jeopardy or Trivia Pursuit. Ms. Ebbers' overall background knowledge was found to be within the Average Range (SS of 106; 65th percentile), and an area of relative strength.

Ms. Ebbers had relative success with tasks that tapped into her vocabulary. Throughout most of the subtests, Ms. Ebbers would take a few moments prior to responding. She would sometimes state slight frustration in that she could not immediately recall the definition or come up with an answer. For example, Ms. Ebbers was asked to provide definitions (*Vocabulary*) for a wide variety of words. Her overall performance was found to be within the High Average Range. However, on many of the items, Ms. Ebbers' first response was one that exhibited a general understanding but it was not a specific definition. Yet when asked to expand upon her initial response, she could provide a more detailed and specific answer.

Ms. Ebbers showed good verbal reasoning skills as she performed within the High Average Range when comparing words (*Similarities and Word Classes*). She was able to find both concrete and abstract connections. In some cases, she would talk her way through to an answer by defining both words and then coming up with a rationale on how they are similar. For Word Classes, Ms. Ebbers was read a list of four words and asked which two go together and her reasoning for the pairing. Ms. Ebbers often asked for the list to be repeated prior to responding. After finding the pair, Ms. Ebbers would sigh and take a few moments to explain her rationale. Both problem solving skills proved to be quite effective as a great majority of her answers were correct.

Where Ms. Ebbers had some difficulty was when she had to follow and complete a four part verbal analogy. She was able to quickly solve A:B C:D analogies (water is to ocean as sand is to desert), but was confused and unsure how to initially attack an A:C B:D analogy (water is to sand as ocean is to desert). After a few questions, Ms. Ebbers' figured out how to work the comparisons. In testing the limits of the test, Ms. Ebbers was able to respond correctly to some of the earlier problems that she missed. So while she initially had difficulty, once Ms. Ebbers came up with an effective problem solving technique, she was then able to correctly apply it to those that she erred. This is similar to an academic exam where Ms. Ebbers may be asked to apply a certain principle or concept to formulate an answer. A latter question may assist her in answering an earlier question that she may have had difficulty.

Overall, Ms. Ebbers background knowledge was an area of relative strength. She was often hesitant and/or deliberate in her approach. In discussing her response pattern, Ms. Ebbers acknowledged that she often does not feel confident in her knowledge base and becomes unsure on how to provide an answer. Still, she exhibited good problem solving skills to show her strong knowledge base.

PSYCHOEDUCATIONAL EVALUATION

Crystallized Knowledge (Gc)

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	CELF-4	Word Classes	110	103 to 17	75	High Average
	CELF-4	Semantic Relationships	115	108 to 122	84	High Average

Crystallized intelligence (Gc), which is one's breadth and depth of knowledge of culture and does depend on previously learned concepts, is highly correlated with most academic areas. For example, one's Gc can be useful in games such as Jeopardy or Trivia Pursuit. Ms. Ebbers' overall background knowledge was found to be within the Average Range (SS of 106; 65th percentile), and an area of relative strength.

Ms. Ebbers had relative success with tasks that tapped into her vocabulary. Throughout most of the subtests, Ms. Ebbers would take a few moments prior to responding. She would sometimes state slight frustration in that she could not immediately recall the definition or come up with an answer. For example, Ms. Ebbers was asked to provide definitions (*Vocabulary*) for a wide variety of words. Her overall performance was found to be within the High Average Range. However, on many of the items, Ms. Ebbers' first response was one that exhibited a general understanding but it was not a specific definition. Yet when asked to expand upon her initial response, she could provide a more detailed and specific answer.

Ms. Ebbers showed good verbal reasoning skills as she performed within the High Average Range when comparing words (*Similarities and Word Classes*). She was able to find both concrete and abstract connections. In some cases, she would talk her way through to an answer by defining both words and then coming up with a rationale on how they are similar. For Word Classes, Ms. Ebbers was read a list of four words and asked which two go together and her reasoning for the pairing. Ms. Ebbers often asked for the list to be repeated prior to responding. After finding the pair, Ms. Ebbers would sigh and take a few moments to explain her rationale. Both problem solving skills proved to be quite effective as a great majority of her answers were correct.

Where Ms. Ebbers had some difficulty was when she had to follow and complete a four part verbal analogy. She was able to quickly solve A:B C:D analogies (water is to ocean as sand is to desert), but was confused and unsure how to initially attack an A:C B:D analogy (water is to sand as ocean is to desert). After a few questions, Ms. Ebbers' figured out how to work the comparisons. In testing the limits of the test, Ms. Ebbers was able to respond correctly to some of the earlier problems that she missed. So while she initially had difficulty, once Ms. Ebbers came up with an effective problem solving technique, she was then able to correctly

Executive Skills Functioning
Self-Assessment Rating Scale

This Self Assessment is for training purposes only.
It is a compilation of many different scales from a variety of sources listed in the Bibliography.

Working Memory Holding facts in mind while manipulating information and completing a task. Accessing facts stored in long term memory.	Seldom	Sometimes	Frequently
1. Difficulty remembering details			
2. Difficulty following directions (particularly oral)			
3. Forgetful			
4. Difficulty completing tasks			
5. Difficulty with multi-step tasks			
6. Loses focus/easily distracted			
7. Does not remember what was just heard or read			
8. Overwhelmed/frustrated by too much information			

Comments: _____
_____
_____

Planning and Prioritizing The ability to create a roadmap to reach a goal	Seldom	Sometimes	Frequently
1. Difficulty setting long and short term goals			
2. Difficulty developing a timeline for projects			
3. Becomes overwhelmed juggling responsibilities			
4. Difficulty knowing where to start			
5. Not prepared			
6. Difficult time judging how long something will take			
7. Gets caught up in the details and misses big picture			
8. Has good ideas, but does not follow through			

Comments: _____
_____
_____

Organization The ability to arrange things according to a system	Seldom	Sometimes	Frequently
1. Difficulty organizing "stuff"			
2. Messy			
3. Loses things needed or work that has been done			
4. Difficulty expressing ideas			
5. Difficulty maintaining a sequence			
6. Late			
7. Careless			

Comments: _____
_____

Time Management The ability to estimate how much time one has, how to allocate time, and how to stay within time limits and deadlines	Seldom	Sometimes	Frequently
1. Difficulty working efficiently			
2. Difficulty developing timelines for projects			
3. Difficulty following a schedule			
4. Difficulty estimating time			
5. Late			
6. Difficulty deciding what to focus on first			

Comments: _____
_____

Metacognition The ability to stand back and take a bird's eye view of oneself in a situation; the ability to self monitor and self evaluate	Seldom	Sometimes	Frequently
1. Difficulty time thinking abstractly			
2. Difficulty problem solving			
3. Difficulty taking another person's perspective			
4. Unaware socially			
5. Unaware of how behavior impacts others			
6. Difficulty handling criticism			
7. Unaware of errors in work/difficulty checking over work			
8. Difficulty talking through situations			

Comments: _____
_____

Response Inhibition The capacity to think before acting.	Seldom	Sometimes	Frequently
1. Interrupts, speaks out of turn, speaks without thinking			
2. Procrastinates while doing other non-task related things			
3. Rushes through without reading directions			
4. Inconsistent			
5. Risk taker			
6. Jumps to conclusions			
7. Acts without thinking			
8. Difficulty with delayed gratification			

Comments: _____
_____

Emotional Control The ability to manage emotions to achieve goals	Seldom	Sometimes	Frequently
1. Overacts			
2. Difficulty calming down and working			
3. Explosions or angry outbursts			
4. Cries easily			
5. Frequent mood changes			
6. Impatient			
7. Low frustration tolerance			

Comments: _____
_____

Sustained Attention The capacity to maintain attention to a situation or task in spite of distractibility, fatigue, or boredom	Seldom	Sometimes	Frequently
1. Easily sidetracked			
2. Short attention span			
3. Becomes overwhelmed juggling responsibilities			
4. Difficulty completing work			
5. Overwhelmed by length/complexity of tasks to be done			
6. Rushes through work			
7. Difficulty noticing details			
8. Forgets assignments or materials to complete them			

Comments: _____

Task Initiation The ability to begin projects without procrastination, in an efficient or timely fashion	Seldom	Sometimes	Frequently
1. Difficulty starting work			
2. Difficulty following multi-step projects			
3. Becomes overwhelmed juggling responsibilities			
4. Stares at work, but does not begin it			
5. Completes work late			
6. Procrastinates			
7. Appears to be working			

Comments: _____

_____

Goal-Directed Persistence The ability to have a goal, follow through to the completion of the goal, and not be distracted by competing interests	Seldom	Sometimes	Frequently
1. Difficulty following through on goals			
2. Difficulty seeing connection between work and long term goals			
3. Difficulty beginning a task			
4. Difficulty getting back on task if interrupted			
5. Difficulty completing tasks			
6. Difficult time with delayed gratification			
7. Gives up			
8. Easily diverted from a plan or schedule			

Comments: _____

_____

Flexibility The ability to shift to a different thought or action according to changes in a situation	Seldom	Sometimes	Frequently
1. Difficulty with transitions			
2. Does not tolerate change in plans, schedule, or strategy			
3. Perseverates on thoughts, ideas, activities			
4. Frustrated by interruptions			
5. Difficult time continuing after an interruption			
6. Abandons tasks when they do not go as planned			
7. Does not address problems that arise			
8. Feels anxious about change			

Comments: _____

Executive Skills Strategies

Susan E. Hutaff Bonnie S. Henry

Executive Skill	Deficits	Accommodations	Strategies
Working Memory	• Looks like he is daydreaming • Difficulty remembering details • Forgetful • Short attention span • Puts hand up to answer, but forgets what he wanted to say • Difficulty sequencing events to complete • Difficulty completing activities/abandons activities • Forgets how to do a task in the middle of it. • Difficulty taking notes	• Simplify directions • Provide preferential seating • Provide purposeful checks for understanding • Provide structure to tasks • Provide copies of notes • Provide rubrics for assignments	• Checklists • "How to" lists • Outlines • Visualization and Association • Verbal rehearsal • Chunking of information • Mnemonic strategies • Flash cards • Visual calendars, organizers, planners • Method of Loci • Exercises to improve WM
Planning/Prioritization 6 Ps of Planning: Proper prior planning prevents poor performance. (Bizmove.com)	• Unprepared for class • Difficulty developing a time line for projects • Overwhelmed when juggling assignments • Trouble with main idea or determining important information • Difficulty setting goals • Difficulty determining the most important thing to do first and following through • Starts working at last minute	• Post materials checklist outside the classroom door • Provide schema for timelines • Provide guided "highlighting" activities • Develop a behavior plan for being prepared	• Check lists • "How to" lists • Organizers/binders • Color coding • Calendars/day planners • Schedule planning time • Plan for tomorrow, tonight • Think in sequence-Use key words to remember • Put plan in writing • First ten minutes: look over the plan for the day

Organization	• Unprepared for class • Frequently comes late to class • Does sloppy or incomplete work • Doesn't turn in work that has been done • Loses or misplaces things • Work area, book bag, notebooks are messy • Has good ideas, but cannot follow through • Written work is difficult to follow • Misses the main idea, gets bogged down in details. • Lacks study skills	• Develop a plan to check for organization of materials (Binder checks) • Provide a reward system for punctuality • Divide work into chunks for neat, well thought through answers • Provide time to plan before beginning an activity then signal for the student to begin • Make use of word processor when writing so that organizing/revising becomes part of the process • Check for understanding of main idea.	• Checklists, "How to" lists • Reflect on why punctuality is difficult. Get rid of obstacles. • Develop a plan to be on time • Use planning time to organize thoughts and the activity • Chunking • Use word processor and the writing process for written assignments. • Self questioning strategies • Take a study skills class

Time Management	• Difficulty working efficiently • Difficulty following a schedule • Frequently late to class • Difficulty trying to decide what to do first • Difficulty developing a timeline for projects • Has hard time estimating time • Difficulty learning to tell time • Doesn't turn in work on time • Wastes time	• Provide a syllabus for semester projects • Provide daily visual or written schedules • Give transition warnings • Have student verbally state an estimate of working time before starting • Grade work turned in and then increase amount expected • Provide timers	• Use schedules, day planners, calendars • Use timers and watches • Plan in terms of increments of time • Write a "task schedule" to complete an assignment • Verbally estimate time it will take to do the task • Practice sequencing skills • Self reward for staying on schedule
Metacognition	• Difficult time talking through situations, even when concrete • Difficult time thinking abstractly • Difficulty recognizing and discussing strengths and weaknesses • Difficulty knowing how he/she learns best • Easily frustrated • Loses sight of goals • Difficulty accepting corrective criticism • Difficulty finding careless mistakes • Not aware of other people's feelings and perception	• Model "talking through" stories, problems, projects • Provide visuals/outlines for talk throughs • Provide one to one opportunities to practice talking through • Use social stories • Before turning in assignments for a grade, let child grade his own paper and correct errors • Use three pluses and a wish	• Practice talking through stories, situations, projects • Make talk throughs a habit • Goal setting rubrics • Ask for help • Use feeling rubrics to judge frustration levels • Use feeling rubrics to determine how others feel • Use social stories • Role play • Check your work with a teacher's eye • Self monitoring rubrics • Self assessments before, during, after

Response inhibition	• Calls out • Interrupts • Acts wild/"out of control" • Jumps to inappropriate conclusions • Is a risk-taker or dare devil • Needs immediate feedback (delayed gratification is difficult)	• Model conversational rules and guidelines • Social stories • Visual signals • "Call out" cards	• Social stories • Role plays • Social groups • Visual reminders • Verbal rehearsal • Stop-Wait Cues
Emotional Control	• Tends to over-react • Impulsive • Can have angry outbursts • Can have mood changes • Angry • Fearful • Cries easily • Low frustration tolerance • Worries • Meltdowns • Impatient	• Model appropriate self-regulation • Verbalize problem solving in stressful situations • Write social stories with the student • Use emotional rating scales or thermometers • Be attuned to the student's emotional state to avoid meltdowns and rage • Provide a safe, calm place to de-escalate • Allow student to take an emotional break from the frustrating situation.	• Role plays • Social groups • Emotional rating scales and thermometers • Visual cues • Verbal rehearsal • Self calming techniques (breathing, eyes closed, counting)

Sustained Attention	• Easily distracted • Difficulty staying with tasks and completing assignments	• Provide signals to redirect • Provide periodic checks to ensure on task behavior • Preferential seating • Break work up into smaller units, then increase the amount required	• Use listening strategies • Create a success map for completing the assignment • Chunk assignments and reward for staying with the task • Self checks for understanding and on-task behavior • Ask questions during verbal lessons
Task Initiation	• Has difficulty getting started • Looks like he/she is getting ready to work, but isn't • Procrastinates	• Provide structure and routine • Provide a schedule for tasks • Stay close to the student until the task is begun • Reward beginning task	• Get the pencil moving strategy • Work first/then cues • Self reward getting started on a task

Goal-Directed Persistence	• Difficulty following through on goals set • Hard time seeing connection between work and long term y goals • Difficulty beginning a task • Difficulty getting back on task if interrupted • Difficulty completing tasks • Difficulty with delayed gratification • Gives up • Easily diverted from a plan or schedule • Behavior implies they don't care	• Model goal setting and follow through • Guided talk through of student's goals and periodic checks for follow through • Provide written "task schedule" for completion • Provide cues for student beginning a task • Separate how you feel about the student's work from feelings about the student	• Set goals • Develop a plan and timeline for meeting goals • Self reward for beginning and sticking with a task to completion • Have a plan for continuing work if interrupted (stand up and stretch, eyes shut) • Talk through goals and tasks that have to be done to complete. Write them down.
Flexibility	• Resists change • Difficulty with open ended questions and assignments • Gets upset with changes to schedule or routine. • Difficulty with transitions • Difficulty generating creative strategies to solve problems	• Maintain a structured learning environment • Prepare student for schedule changes • Validate frustration, but emphasis that a change is not a bad thing • Provide social stories and visual cues for unexpected change	• Practice flexibility exercises (generating multiple responses to situations) • Visual /written schedules • Self talk • Social stories • Role play • Participate in "structured chaos" activities

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