

**Why doesn't Sam complete assignments in a timely manner? More importantly, what can we do about it? Case Study with WISC-V**

Amy Dilworth Gabel, Ph.D., NCSP  
Director, Training and Professional Development  
Pearson Clinical Assessment



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## **The Process of Learning**


- Learning is the process of acquiring information.
- What are the cognitive and non-cognitive factors that enable students to show what they know and can do?
  - How do they collect, sort, store, and retrieve information? (Miller, 2007)
  - How do they receive, perceive, process, and remember information? (Elliott, 2007)
  - How do behavioral and personality characteristics impact performance?



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## Why Can't Sam Finish Assignments? (Gabel)

“Sam”



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Composite		Sum of Scaled Scores	Composite Score	Percentile Rank	95% Confidence Interval	Qualitative Description	SEM
Verbal Comprehension	VCI	32	133	99	123-138	Extremely High	4.74
Visual Spatial	VSI	31	132	98	122-137	Extremely High	4.24
Fluid Reasoning	FRI	31	131	98	122-136	Extremely High	3.67
Working Memory	WMI	18	94	34	87-102	Average	4.24
Processing Speed	PSI	20	100	50	91-109	Average	5.61
Full Scale IQ	FSIQ	91	122	93	115-127	Very High	3.00

Confidence intervals are calculated using the Standard Error of Estimation.

**Index Level Strengths and Weaknesses**

Index	Score	Comparison Score	Difference	Critical Value	Strength or Weakness	Base Rate
VCI	133	118.0	15.0	10.79	S	<=15%
VSI	132	118.0	14.0	9.93	S	<=10%
FRI	131	118.0	13.0	8.98	S	<=15%
WMI	94	118.0	-24.0	9.93	W	<=5%
PSI	100	118.0	-18.0	12.33	W	<=15%

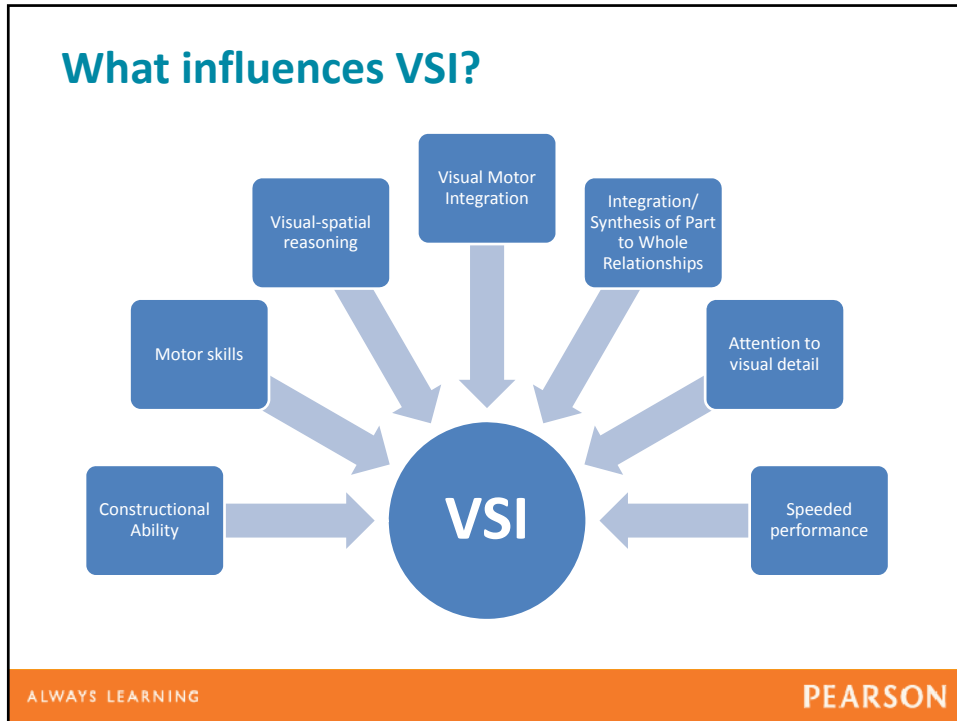
Comparison score mean derived from the five index scores (MIS).  
 Statistical significance (critical values) at the .05 level.  
 Base rates are reported by ability level.

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## Why Can't Sam Finish Assignments? (Gabel)



### Index Level Pairwise Difference Comparisons

Index Comparison	Score 1	Score 2	Difference	Critical Value	Significant Difference	Base Rate
VCI - VSI	133	132	1	12.46	N	56.0%
VCI - FRI	133	131	2	11.75	N	47.5%
VCI - WMI	133	94	39	12.46	Y	2.5%
VCI - PSI	133	100	33	14.39	Y	9.0%
VSI - FRI	132	131	1	10.99	N	39.0%
VSI - WMI	132	94	38	11.75	Y	1.5%
VSI - PSI	132	100	32	13.78	Y	6.0%
FRI - WMI	131	94	37	10.99	Y	2.0%
FRI - PSI	131	100	31	13.14	Y	10.5%
WMI - PSI	94	100	-6	13.78	N	27.5%

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## Why Can't Sam Finish Assignments? (Gabel)

Subtest Level Strengths and Weaknesses						
Subtest	Score	Comparison Score	Difference	Critical Value	Strength or Weakness	Base Rate
SI	18	13.2	4.8	3.07	S	<=2%
VC	14	13.2	0.8	3.26		>25%
BD	17	13.2	3.8	2.78	S	<=5%
VP	14	13.2	0.8	2.88		>25%
MR	16	13.2	2.8	2.67	S	<=10%
FW	15	13.2	1.8	2.08		<=25%
DS	7	13.2	-6.2	2.58	W	<=2%
PS	11	13.2	-2.2	2.88		<=25%
CD	4	13.2	-9.2	3.57	W	<=2%
SS	16	13.2	2.8	3.50		<=15%

Comparison score mean derived from the ten primary subtest scores (MSS-P).  
 Statistical significance (critical values) at the .05 level.

Subtest Level Pairwise Difference Comparisons						
Subtest Comparison	Score 1	Score 2	Difference	Critical Value	Significant Difference	Base Rate
SI - VC	18	14	4	3.02	Y	7.2%
BD - VP	17	14	3	3.04	N	17.4%
MR - FW	16	15	1	2.60	N	41.5%
DS - PS	7	11	-4	2.89	Y	11.1%
CD - SS	4	16	-12	3.63	Y	0.0%

Statistical significance (critical values) at the .05 level.

Total Raw Score to Base Rate Conversion			
Process Score		Raw Score	Base Rate
Longest Digit Span Forward	LDSf	4	96.5%
Longest Digit Span Backward	LDSb	3	85.5%
Longest Digit Span Sequence	LDSs	4	79.0%
Longest Letter-Number Sequence	LLNs	6	2.5%
Block Design Dimension Errors	BDde	1	<=15%
Naming Speed Literacy Errors	NSLe	1	>25%
Naming Speed Size-Color-Object Errors	NSscoe	1	>25%
Naming Speed Letter-Number Errors	NSlne	0	>25%
Naming Speed Quantity Errors	NSQe	0	<=25%

Base rates are reported by age group.

**MAKE SLIDE UPDATE to show BDn**

Process Level Pairwise Difference Comparisons (Raw Scores)				
Process Score Comparison	Raw Score 1	Raw Score 2	Difference	Base Rate
LDSf - LDSb	4	3	1	90.0%
LDSf - LDSs	4	4	0	
LDSb - LDSs	3	4	-1	70.5%


Base rates are reported by age group.

## Why Can't Sam Finish Assignments? (Gabel)

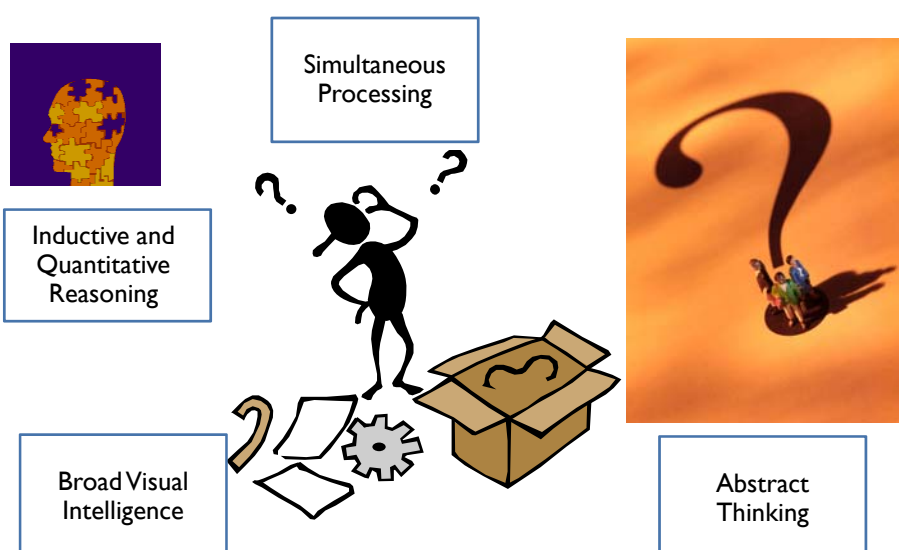
### Ruling in and ruling out hypotheses

Verbally-based	Abstract-visual analysis
Ruled out?	Ruled out?

**?Meaningful Observations?**



### What about impacts on Fluid Reasoning?



Simultaneous Processing

Inductive and Quantitative Reasoning

Broad Visual Intelligence

Abstract Thinking

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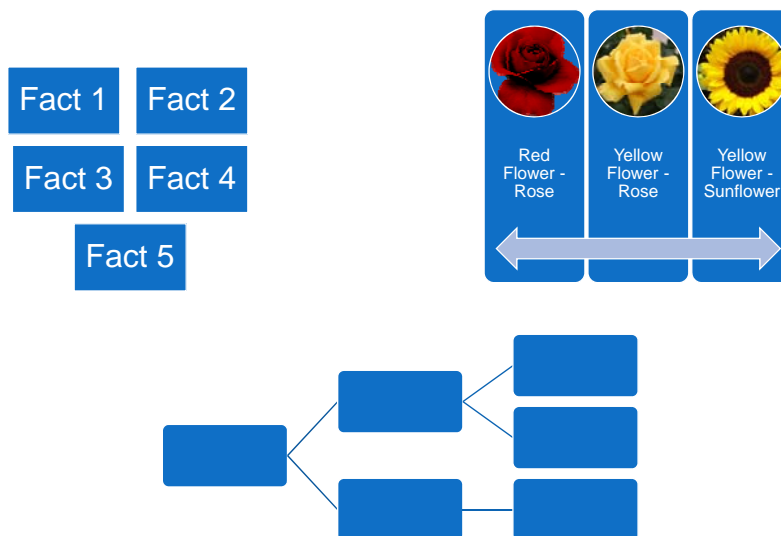
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## Why Can't Sam Finish Assignments? (Gabel)

### Abstract, Analytical Thinking

“As is expected for age, the longer the digit series became, the more difficulty X experienced in recalling them. Relative difficulty in recalling the longer spans of digits backward may be evidence of less well developed mental control. However, other sources of information suggest that his/her difficulties may reside more in the basic encoding process, perhaps related more to foundational attention and concentration, rather than in mental manipulation or working memory. Specifically, the better performance on the Letter-Number Sequencing and the Digit Span Backwards tasks are indications that working memory is not problematic; as long as the information is encoded, or registered properly, X can mentally manipulate the information to be recalled. However, there are many classroom tasks that may be adversely impacted by weaker attention and concentration, of course; a common finding is that students with this type of difficulty frequently take longer to complete assignments and often lose track of what they are doing. They may also appear distracted by less relevant stimuli around them.

### Connecting information



## Why Can't Sam Finish Assignments? (Gabel)

### What opportunities are there when administering FRI tasks to evaluate the impact of time or quantitative reasoning?

Matrix Reasoning	Figure Weights	Arithmetic
30-second guideline	Strict time limits	Strict time limits, but rules vary for items
Need to consider behavior & how child is performing	Primarily visual input	Primarily verbal input
	Evaluate impact of quantitative skills using QRI.	Evaluate impact of quantitative skills using QRI.

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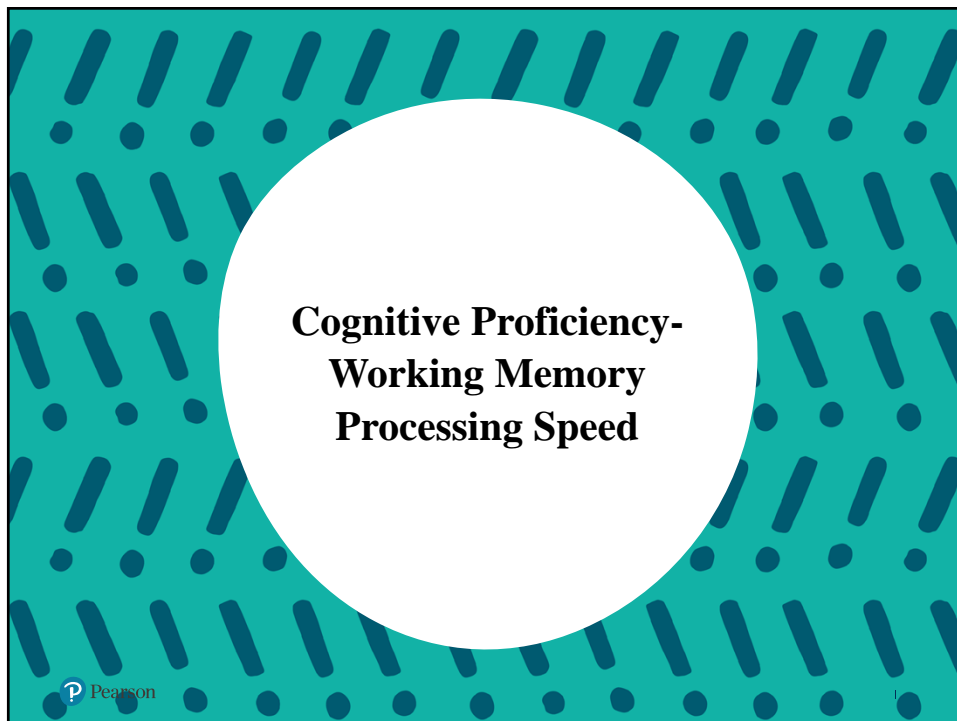
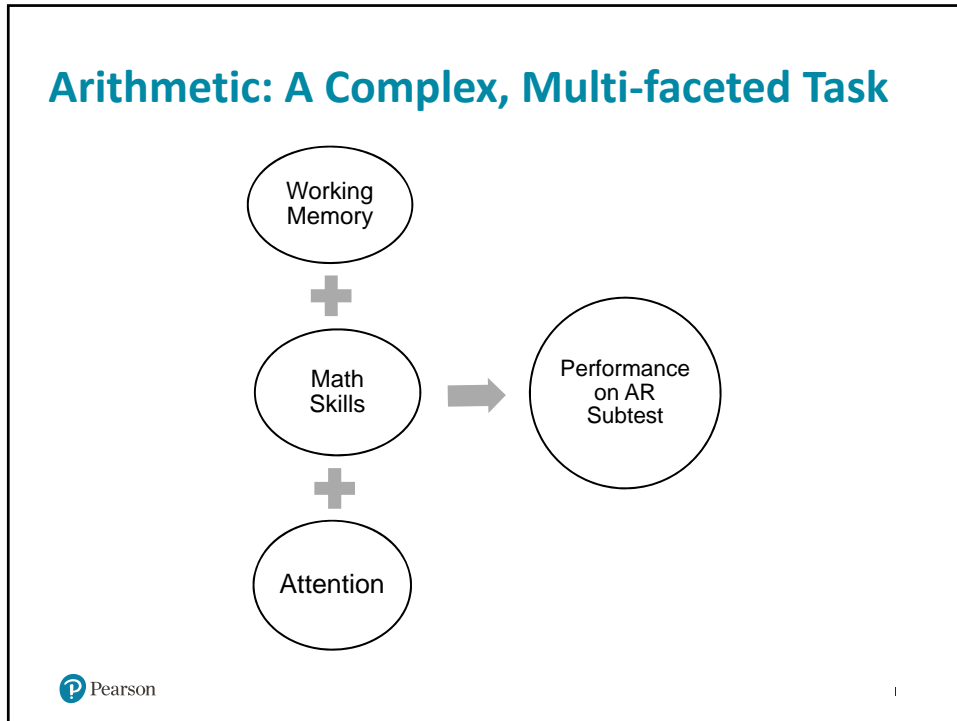
## What could account for a difference?

### Subtest Level Pairwise Difference Comparisons

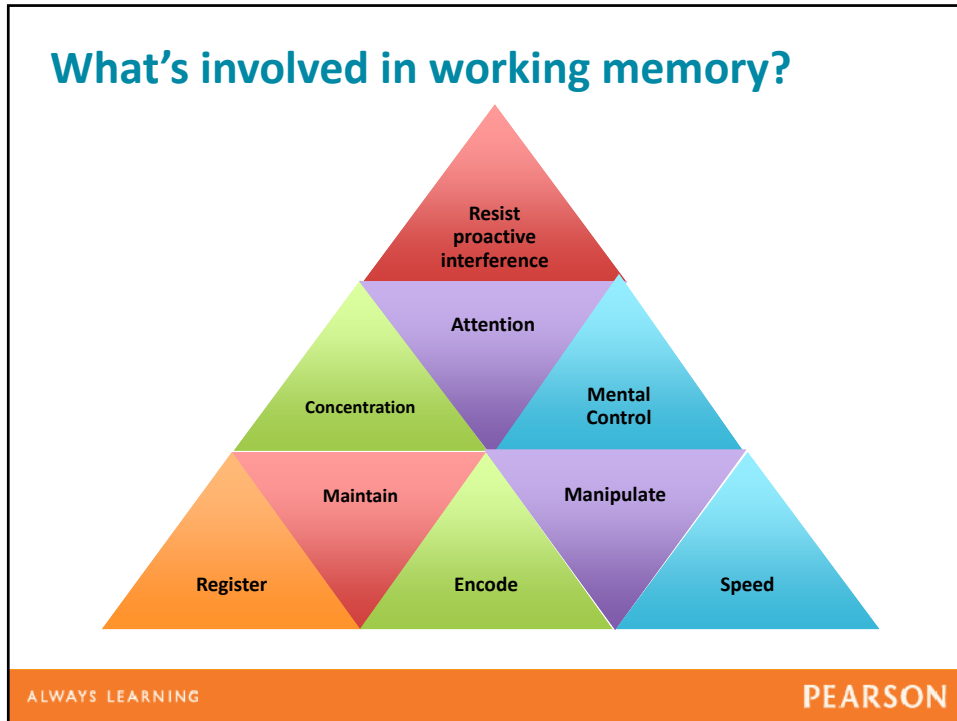
Subtest Comparison	Score 1	Score 2	Difference	Critical Value	Significant Difference	Base Rate
<b>Ancillary</b>						
FW - AR	15	11	4	2.33	Y	11.0%



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## Why Can't Sam Finish Assignments? (Gabel)

### Task Complexity and Memory



**Process Level Pairwise Difference Comparisons (Scaled Scores)**

Process Score Comparison	Score 1	Score 2	Difference	Critical Value	Significant Difference	Base Rate
BD - BDn	17	17	0	3.40	N	
BD - BDp	-	-	-	-	-	-
DSf - DSb	5	10	-5	3.69	Y	6.8%
DSf - DSs	5	8	-3	3.63	N	21.0%
DSb - DSs	10	8	2	3.66	N	32.3%
LN - DSs	16	8	8	3.38	Y	0.1%
CAR - CAs	9	9	0	3.59	N	

Statistical significance (critical values) at the .05 level.

## Why Can't Sam Finish Assignments? (Gabel)

### Contrast Scores

DSf vs. DSb	DSf vs. DSs	DSs vs. LN
12	11	18

*Contrast scores lower than 7 indicate performance that is lower than expected given the control variable. Those 13 and higher suggest performance is better than expected given the “prerequisite skill.”*

*DSf = 5   DSb = 10   DSs = 8   LN = 16*

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### Contrast Score Results

DSf vs. DSb (12)	DSf vs. DSs (11)	DSs vs. LN (18)
Hypotheses	Hypotheses	Hypotheses
<ul style="list-style-type: none"> <li>difficulties with attention (see behavioral notes);</li> <li>overall average mental manipulation skill given encoding</li> </ul>	<ul style="list-style-type: none"> <li>difficulties with global attention (see behavioral notes);</li> <li>overall average mental resequencing as expected given basic span capabilities</li> </ul>	<ul style="list-style-type: none"> <li>average attention and mental resequencing,</li> <li>better at dual-tasking than mental resequencing in working memory</li> </ul>

See Appendix C in the WISC-V Technical and Interpretive Manual.

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## Why Can't Sam Finish Assignments? (Gabel)

### Classroom manifestations of attention and working memory difficulties :

- Less efficient at learning
- Forgetful
- Problems integrating multiple cognitive process or managing multiple types of information
  - Difficulty completing complex problems
- Difficulty accessing learned information
  - Search & retrieval problems

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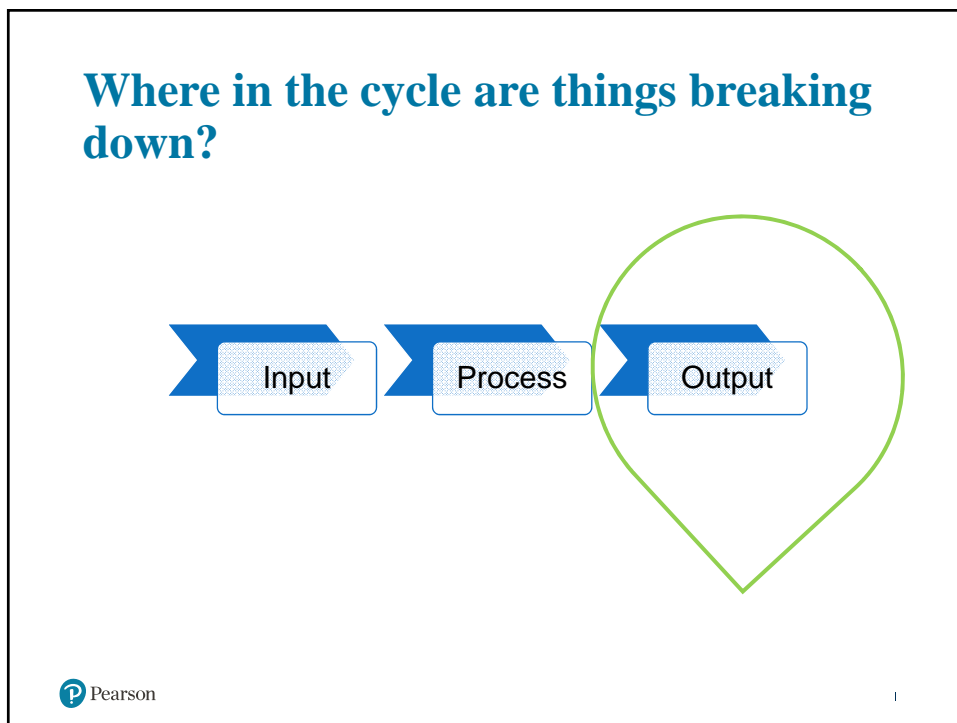
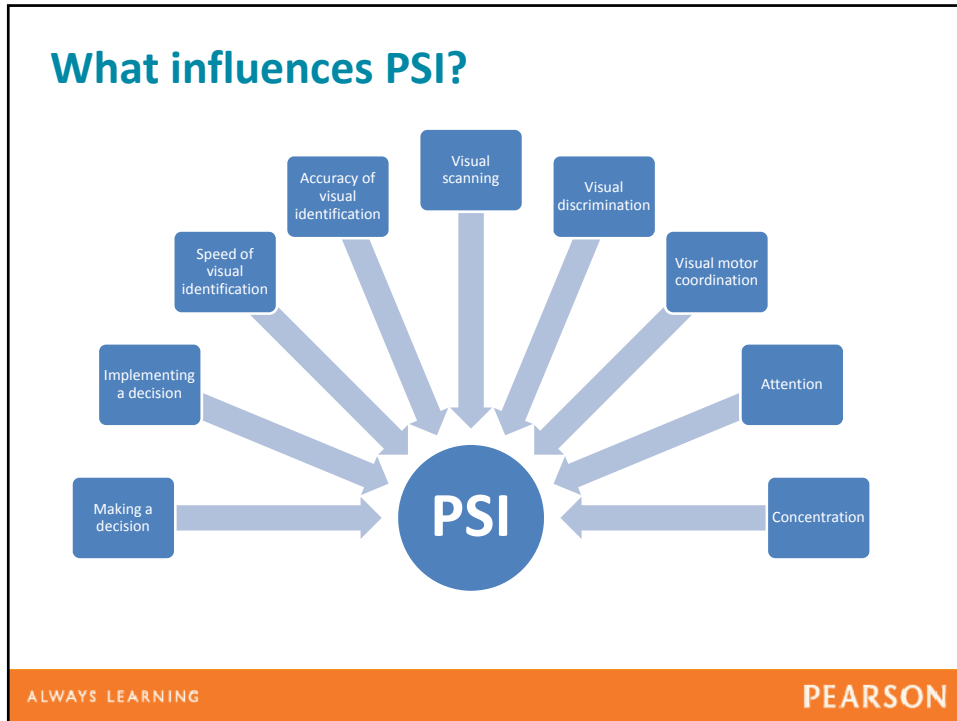
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## Why Can't Sam Finish Assignments? (Gabel)



## Why Can't Sam Finish Assignments? (Gabel)

<b>Similarities</b>	SI	18	99.6
<b>Vocabulary</b>	VC	14	91
(Information)	IN	-	-
(Comprehension)	CO	9	37
<b>Block Design</b>	BD	17	99
Visual Puzzles	VP	14	91
<b>Matrix Reasoning</b>	MR	16	98
<b>Figure Weights</b>	FW	15	95
(Picture Concepts)	PC	13	84
(Arithmetic)	AR	11	63
<b>Digit Span</b>	DS	7	16
Picture Span	PS	11	63
(Letter-Number Seq.)	LN	16	98
<b>Coding</b>	CD	4	2
Symbol Search	SS	16	98
(Cancellation)	CA	9	37

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### Classroom manifestations of problems associated with processing speed and automaticity:

- Slow processing speed reduces learning efficiency
  - Can't keep up with teacher or peers
- Work is unfinished/incomplete
- Behavioral problems
  - Internalizing or externalizing

## Why Can't Sam Finish Assignments? (Gabel)

### CPI

#### High CPI Scores

High degree of cognitive efficiency for manipulating and rapidly processing information.

#### Low CPI Scores

- Visual or auditory processing deficits.
- Inattention.
- Distractibility.
- Visuomotor difficulties.
- Limited working memory storage or mental manipulation capacity.
- Generally low cognitive ability.

### Potentially Meaningful Comparisons

#### Index Level Pairwise Difference Comparisons

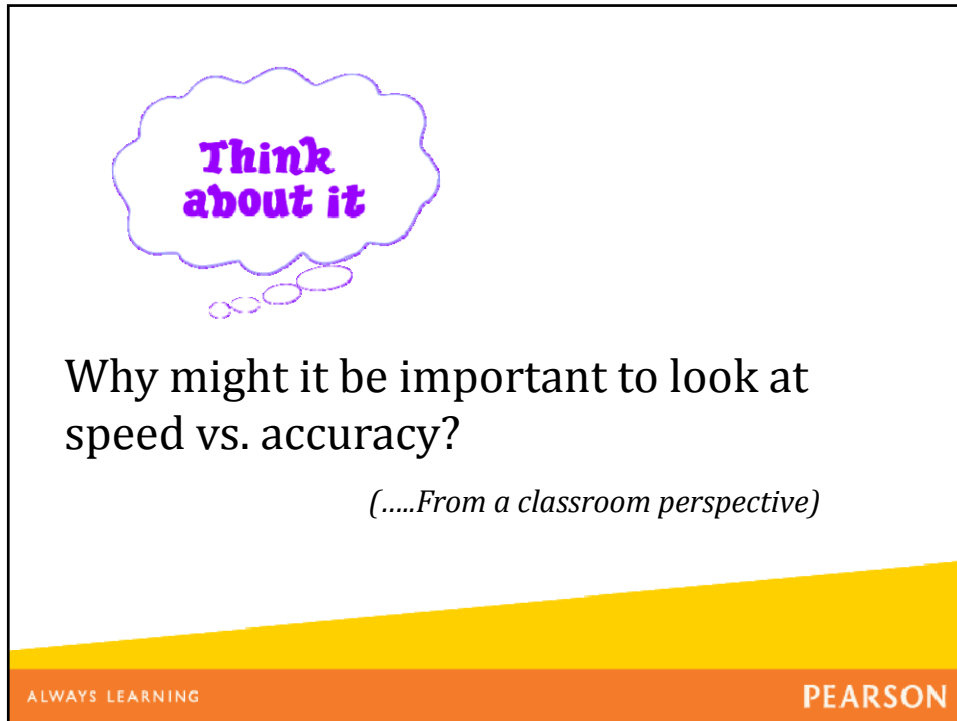
Index Comparison	Score 1	Score 2	Difference	Critical Value	Significant Difference	Base Rate
<b>Ancillary</b>						
GAI - FSIQ	138	122	16	3.58	Y	0.0%
GAI - CPI	138	96	42	10.18	Y	2.4%
WMI - AWMI	94	108	-14	6.85	Y	7.5%
<b>Complementary</b>						
NSI - STI	108	106	2	13.14	N	32.8%

Statistical significance (critical values) at the .05 level.

For comparisons between GAI and other indexes, base rates are reported by GAI ability level. For remaining comparisons, base rates are reported by FSIQ ability level.



Why Can't Sam Finish Assignments? (Gabel)



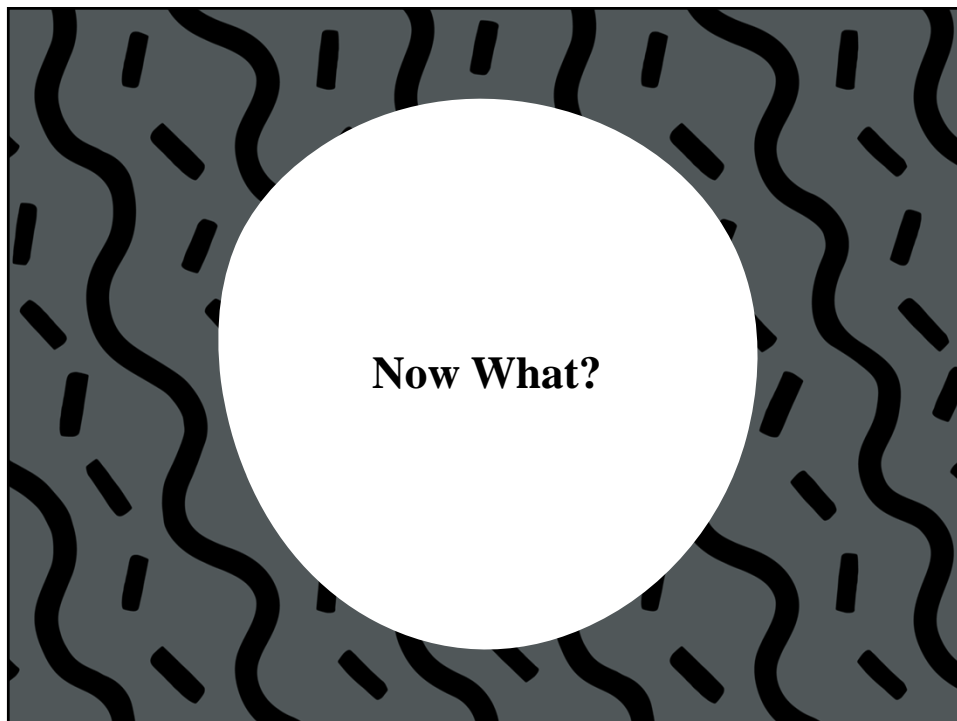
**Think  
about it**

Why might it be important to look at  
speed vs. accuracy?

*(.....From a classroom perspective)*

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The slide features a purple thought bubble at the top left containing the text 'Think about it'. Below it, the main text asks 'Why might it be important to look at speed vs. accuracy?' followed by a subtitle '(.....From a classroom perspective)'. The bottom of the slide has a yellow-to-orange gradient bar with the text 'ALWAYS LEARNING' on the left and 'PEARSON' on the right.




**Now What?**

The slide has a dark gray background with a pattern of black wavy lines and short black dashes. In the center is a large white circle containing the text 'Now What?' in a bold, black, sans-serif font.

## Why Can't Sam Finish Assignments? (Gabel)


### Examples of Psychological Processes

Attention & Mental Control	Visual Processes
<ul style="list-style-type: none"><li>Sustained attention, divided attention, recognize problem demand, plan action, sequence multiple actions to solve a problem</li></ul>	<ul style="list-style-type: none"><li>Spatial awareness, visual perceptual skills, perceptual organization, visual mental manipulation, and perceptual / visual discrimination</li></ul>

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### Processes - Input and Output

Sensorimotor	Language Processes
<ul style="list-style-type: none"><li>Integration of perceptual skills and problem-solving / decision-making into physical action</li></ul>	<ul style="list-style-type: none"><li>Receptive / expressive language, listening comprehension, vocabulary development, general knowledge. (VCI-related tasks)</li></ul>

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## Why Can't Sam Finish Assignments? (Gabel)

### What do we know about Sam?

- General cognitive abilities are intact
  - Overall reasoning/problem solving is very good
- Cognitive proficiency less well-developed
- Does better with a challenge
  - Task difficulty may be element of motivation or *recognition* of the need to focus and recruit appropriate level of resources

### Picture this



"I got this! No problem! I know I'm smart – easy!"



"You want me to do what?  
I know I'm smart, but I better  
Kick it up a notch!"

## What else is important?

- The whole child
  - Rigid, perseverative patterns in many areas
  - Underestimates how long things will take, how much attention must be regulated
  - Homework is a battleground
- What is the appropriate amount of practice?

## Suggestions

- Use an activity-based approach to actively engage Sam in a series of short activities with frequent feedback.
- Try setting time limits for Sam to work within (these should be reasonable limits based on the task to be accomplished). Try starting this out as a challenge, such as, "I think you can finish this work in 15 minutes; how about you?" Then, set the timer and see how s/he does.
  - Have Sam graph the results to track performance. If errors are at an unacceptable level, then graph challenges for time and accuracy.

## Suggestions - School

- Due to Sam's limited attention span, assigned tasks should be novel and non-repetitive when possible.
  - There are likely assignments where Sam does not need as much practice or reinforcement of skills. In these situations, reduced assignments are suggested (i.e., 5 - 10 problems instead of 20 problems, for example).
  - *When practice is required*, longer tasks can be divided into smaller parts that can be completed at different times. For example, a page of 20 arithmetic problems could be cut into 2 sections so Sam completes only 10 problems at a time.

## Consider

- Involving Sam and other groups of students in creating assignments "Assignment Expert Teams"
  - Described by Rademacher et. al., (1997)
- How to "teach" self-regulation
  - Self-directive process by which learners transform their mental abilities into academic skills" (Zimmerman, 2002, p. 66).
- Self monitoring
  - May require Solution-Focused Brief Counseling (Farrington et al., 2011; deShazer, 1982; Berg & Steiner, 2002 ).

## Suggestion for Home

- Homework assignments should be completed in a location where Sam can be monitored.
  - Use a prearranged, unobtrusive, non-punitive signal, such as a tap on the shoulder, to bring Sam back on task.
  - It is recommended that Sam not do his homework in an unsupervised room, as there are too many opportunities for distraction.

## Executive Functions

- Setting goals
- Planning
- Sequencing
- Prioritizing
- Organizing
- Initiating
- Inhibiting
- Pacing
- Shifting
- Self-monitoring
- Regulating emotional control
- Completing tasks



## What other interventions can you think of?

- To obtain your copy of the sample report for Sam, go to:
- [www.brainshark.com/pearsonassessments/Sam](http://www.brainshark.com/pearsonassessments/Sam)
  - Enter password Sam
  - Sign the guestbook
  - Add your intervention suggestion(s)
  - Download the report

## Helpful Resources

- Rademacher, J. A., Cowart, M., Sparks, J., & Chism, V. (1997). Planning high quality assignments with diverse learners. *Preventing School Failure*, 42(1), 12-18.
- Brown, T.E. (2014). Smart but stuck: Emotions in teens and adults with ADHD.
  - Does this sound pertinent to Sam?
- <http://www.drthomasebrown.com/resources/helpful-links/>
- Insoo Kim Berg, Therese Steiner (2002) *Children's Solution Work*. Norton.

## Why Can't Sam Finish Assignments? (Gabel)

### Important considerations

- Scores are only reflective of “what” the student was able to demonstrate, it doesn't answer why the results were obtained, nor does it provide individualized information regarding how that particular student processes information.
  - focusing on the HOW and makes the difference.
- It's what we do with the data that is most important.

### Thanks for Attending! Questions?

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866-335-8418 (Canada)

Content-related Questions may be directed to:  
Amy.Gabel@Pearson.com