



# Introducing *Insight*: A DVD-Administered Cognitive Test Based on CHC Theory



assessment  
**INNOVATIONS**



# Insight Topical Preview

- **Highlights (Validation Study)**
- **Testing Materials**
- **Proctoring**
- **DVD Administration**
- **Reports**
- **Composite Score Interpretations**
- **Discrepancy Score Interpretations**
- **Subtest Score Interpretations**
- **Relationships to Learning**
- **Technical Properties**
- **Validation Study Participation**
- **Contact Information**

## What is *Insight*?

### *Insight* is:

- Published by Assessment Innovations
- A group-administered test of cognitive ability using a DVD
- Used for Grade 2 through 7
- Scored by computer
- Easy to interpret
- Linked to academic functioning

## What is Assessment Innovations?

- Publishes assessments that are theoretically sound and empirically validated
- Provides innovative turn-key solutions that are user-friendly and cost-efficient
- Services include:
  - user trainings, seminars, and webinars
  - scoring and reports done through a data capture/processing center in Pennsylvania.

## *Insight*, A CHC Theory-based Measure

<b>CHC Broad Ability</b>	<b><i>Insight</i> Subtest</b>
Fluid Reasoning (Gf)	Fluid Reasoning
Crystallized Intelligence (Gc)	Crystallized Knowledge
Short-term Memory (Gsm)	Short-Term Memory
Visual Processing (Gv)	Visual Processing
Auditory Processing (Ga)	Auditory Processing
Long-Term Memory Retrieval (Glr)	Long-Term Memory Retrieval
Processing Speed (Gs)	Processing Speed

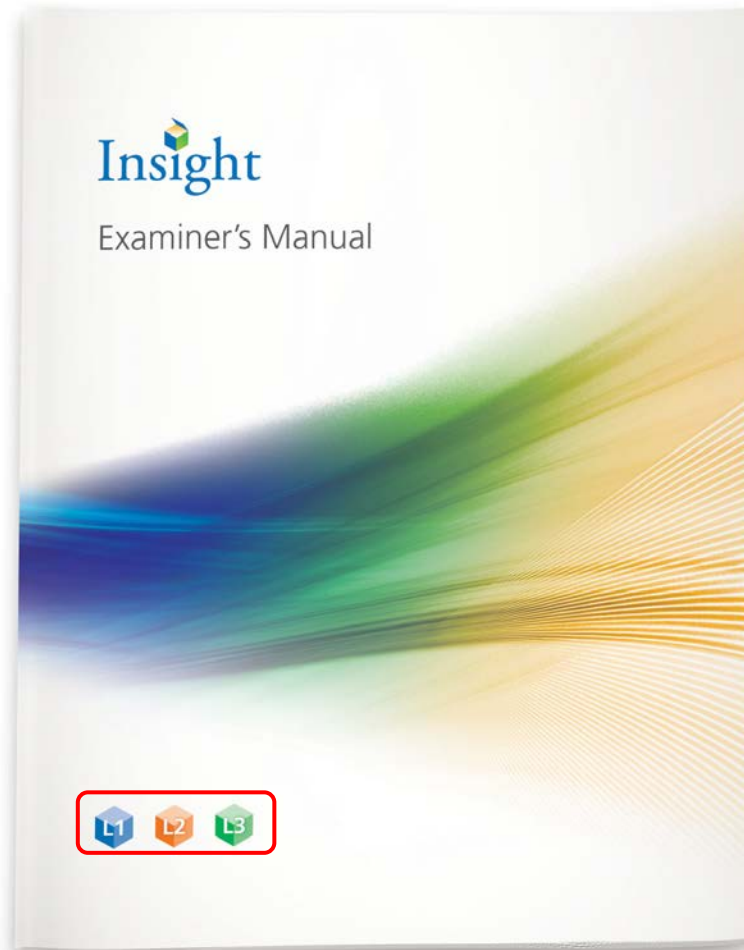
## *Insight Validation Study* **AYs 2013-2014 and 2014-2015**

- US normative data is being collected
- Stratified sampling frame includes US region, SES, ethnicity
- Randomly-selected classrooms in Grades 2-7 are asked to participate
- Free shipping, materials, and reports to/from districts
- Free WebEx training on DVD proctoring sessions
- Districts receive \$75 in addition to becoming eligible for a two-year 20% materials discount

# Insight Testing Materials





# Insight Testing Materials





# Insight Testing Materials

Usual First Name												Last or Family Name																																																													
<input type="radio"/>	A	<input type="radio"/>	B	<input type="radio"/>	C	<input type="radio"/>	D	<input type="radio"/>	E	<input type="radio"/>	F	<input type="radio"/>	G	<input type="radio"/>	H	<input type="radio"/>	I	<input type="radio"/>	J	<input type="radio"/>	<input type="radio"/>	A	<input type="radio"/>	B	<input type="radio"/>	C	<input type="radio"/>	D	<input type="radio"/>	E	<input type="radio"/>	F	<input type="radio"/>	G	<input type="radio"/>	H	<input type="radio"/>	I	<input type="radio"/>	J	<input type="radio"/>	<input type="radio"/>	K	<input type="radio"/>	L	<input type="radio"/>	M	<input type="radio"/>	N	<input type="radio"/>	O	<input type="radio"/>	P	<input type="radio"/>	Q	<input type="radio"/>	R	<input type="radio"/>	S	<input type="radio"/>	T	<input type="radio"/>	U	<input type="radio"/>	V	<input type="radio"/>	W	<input type="radio"/>	X	<input type="radio"/>	Y	<input type="radio"/>	Z

Birth Date			Test Date			Teacher:		School:	
Month	Day	Year	Month	Day	Year				
Jan	<input type="radio"/>	<input type="radio"/>	Jan	<input type="radio"/>	<input type="radio"/>				
Feb	<input type="radio"/>	<input type="radio"/>	Feb	<input type="radio"/>	<input type="radio"/>				
Mar	<input type="radio"/>	<input type="radio"/>	Mar	<input type="radio"/>	<input type="radio"/>				
Apr	<input type="radio"/>	<input type="radio"/>	Apr	<input type="radio"/>	<input type="radio"/>				
May	<input type="radio"/>	<input type="radio"/>	May	<input type="radio"/>	<input type="radio"/>				
Jun	<input type="radio"/>	<input type="radio"/>	Jun	<input type="radio"/>	<input type="radio"/>				
Jul	<input type="radio"/>	<input type="radio"/>	Jul	<input type="radio"/>	<input type="radio"/>				
Aug	<input type="radio"/>	<input type="radio"/>	Aug	<input type="radio"/>	<input type="radio"/>				
Sep	<input type="radio"/>	<input type="radio"/>	Sep	<input type="radio"/>	<input type="radio"/>				
Oct	<input type="radio"/>	<input type="radio"/>	Oct	<input type="radio"/>	<input type="radio"/>				
Nov	<input type="radio"/>	<input type="radio"/>	Nov	<input type="radio"/>	<input type="radio"/>				
Dec	<input type="radio"/>	<input type="radio"/>	Dec	<input type="radio"/>	<input type="radio"/>				

Grade	Student ID Number	Special Groups					
1 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Group 1	<input type="radio"/>
2 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Group 2	<input type="radio"/>
3 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Group 3	<input type="radio"/>
4 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Group 4	<input type="radio"/>
5 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Group 5	<input type="radio"/>
6 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Group 6	<input type="radio"/>
7 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Group 7	<input type="radio"/>
8 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Group 8	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Group 9	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Group 10	<input type="radio"/>

# Insight Testing Materials

## Insight Level 1

The following products are needed in order to administer *Insight Level 1* (Grade 2 and 3)



### Level 1 Testbook

Consumable



### Level 1 DVD and Examiner's Manual

Re-useable



### Examiner's Manual Download >

# Insight Testing Materials

## Insight Level 2

The following products are needed in order to administer *Insight* Level 2 (Grade 4 and 5)



### Level 2 Testbook

Consumable



### Level 2 DVD and Examiner's Manual

Re-useable



### Examiner's Manual Download >

# Insight Testing Materials

## Insight Level 3

The following products are needed in order to administer *Insight* Level 3 (Grade 6 and 7)



### Level 3 Testbook

Consumable



### Level 3 DVD and Examiner's Manual

Re-useable



### Examiner's Manual Download >

## Examiner's Manual

- Computer capable of playing a DVD
- LCD projector (or Smart Board)
- Speakers, so DVD can be heard by students

## How long does it take?

	Testing Times (in minutes, including instructions/samples)		
	Level 1 grades 2–3	Level 2 grades 4–5	Level 3 grades 6–7
Crystallized Knowledge	17	17	16
Visual Processing	16	16	16
Fluid Reasoning	14	14	14
<b>Gifted Screening</b>	<b>47</b>	<b>47</b>	<b>46</b>
Short-Term Memory	9	11	10
Long-Term Memory Retrieval	12	13	17
Auditory Processing	13	12	13
Processing Speed	3	3	3
<b>Total</b>	<b>84</b>	<b>86</b>	<b>89</b>

**Figure 2: Subtests and number of items by level**

	Number of items		
	Level 1	Level 2	Level 3
Crystallized Knowledge (Gc)	30	30	30
Visual Processing (Gv)	30	30	30
Fluid Reasoning (Gf)	30	30	30
Short-Term Memory (Gsm)	20	23	20
Long-Term Memory Retrieval (Glr)	36	48	72
Auditory Processing (Ga)	19	22	24
Processing Speed (Gs)	42	49	49

From *Insight* Technical Manual, p. 1:

[http://www.canadiantestcentre.com/pdfs/Insight\\_technical\\_%20manual.pdf](http://www.canadiantestcentre.com/pdfs/Insight_technical_%20manual.pdf)

# Same Day Administration Example

- First 3 subtests (50 minutes)
- Break
- Last 4 subtests (40 minutes)



# Insight Proctoring





# Insight Proctoring



# Insight Proctoring

Insight Level 1

	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Reasoning	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Memory	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing		
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>

**CTC**  
CANADIAN TEST CENTRE  
Educational Assessment Services

<http://aisolutions.us.com/INSIGHT/INSIGHT-demo.php>

# Insight Proctoring

Insight

Level 1

	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Reasoning	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Memory	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing		
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>

CTC  
CANADIAN TEST CENTRE  
Educational Assessment Services

# Insight Proctoring

Insight

Level 1

	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Reasoning	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Memory	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing		
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>

**CTC**  
CANADIAN TEST CENTRE  
Educational Assessment Services

# Insight Proctoring

Insight

Level 1

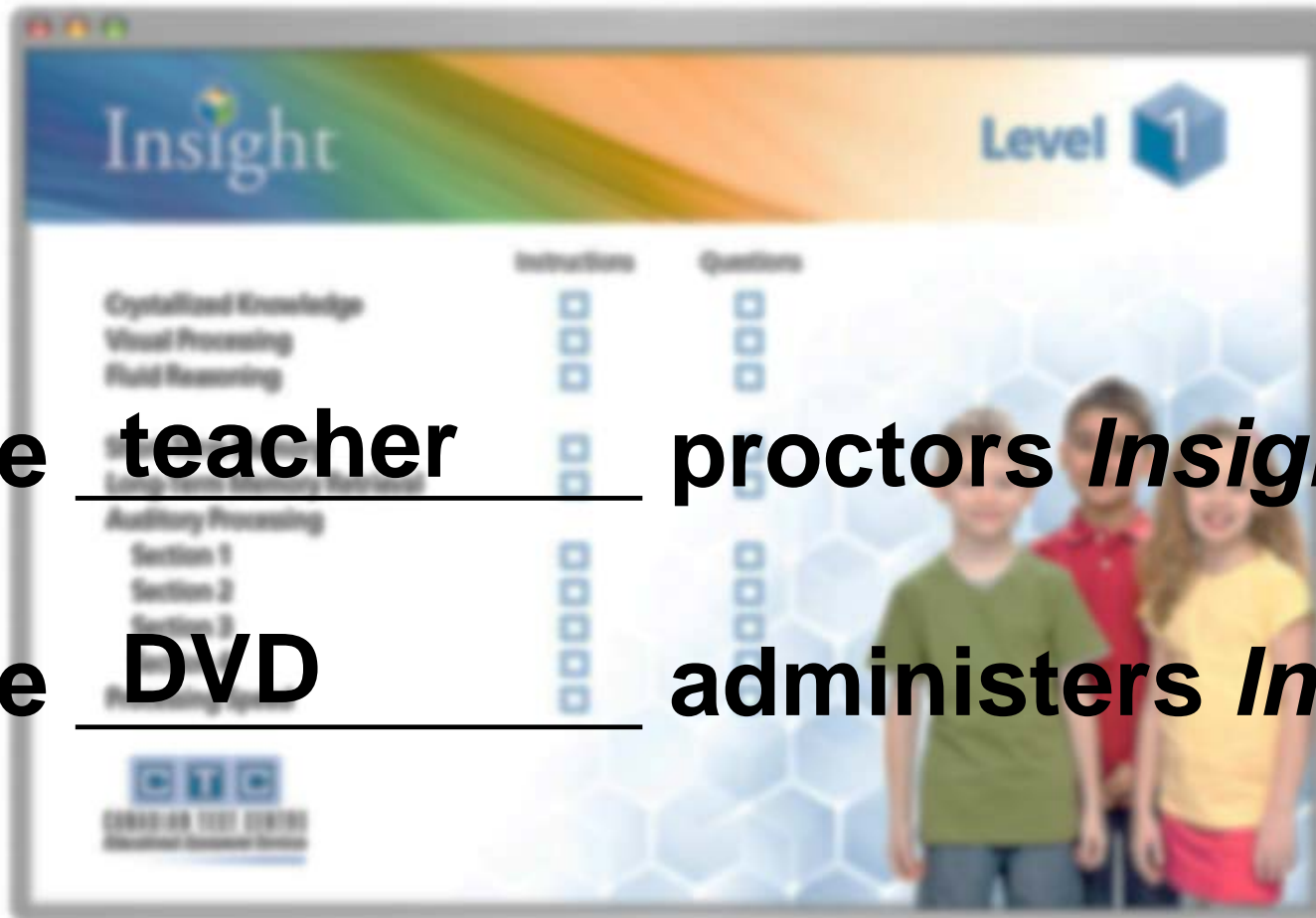
	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Reasoning	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Memory	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing		
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>

**CTC**  
CANADIAN TEST CENTRE  
Educational Assessment Services

# Insight Proctoring vs. Administering

**The teacher proctors *Insight*.**

**The DVD administers *Insight*.**





# Insight DVD Administration

	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Reasoning	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Memory	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing		
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>



# Insight DVD Administration

	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Reasoning	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Memory	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing		
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>



## Crystallized Knowledge

- The person's breadth and depth and application of acquired knowledge of the language, information, and concepts of a culture (p.3).<sup>1</sup>
- In the Crystallized Knowledge subtest of *Insight*, students are asked to identify how two things are alike (p.6).<sup>2</sup>

## Crystallized Knowledge

### SAMPLE

1

Cat and Dog

- They are black.
- They are animals.
- They run away.
- They are vegetables.

# Insight DVD Administration

	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Reasoning	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Memory	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing		
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>



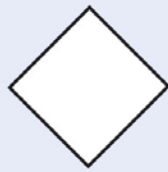
## Visual Processing

- The ability to generate, retain, retrieve, and transform well-structured visual images (p.3).<sup>1</sup>
- In the Visual Processing subtest of *Insight*, students are asked to identify the shape that can be made by combining two or more smaller shapes (p.7).<sup>2</sup>

## Visual Processing

**SAMPLE**

1



# Insight DVD Administration

	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
<b>Fluid Reasoning</b>	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Memory	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing		
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>





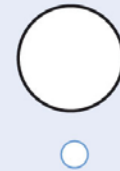
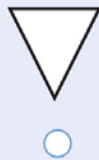
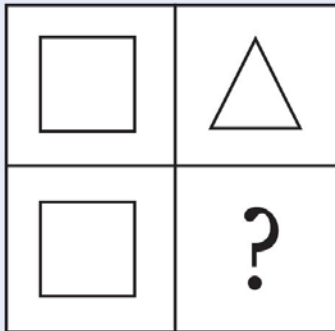
## Fluid Reasoning

- The use of inductive, deductive, and quantitative reasoning to solve novel, "on-the spot" problems (p.3).<sup>1</sup>
- In the Fluid Reasoning subtest of *Insight*, students are asked to identify the shape that best fits into the missing part of a matrix pattern (p.8).<sup>2</sup>

## Fluid Reasoning

**SAMPLE**

1



# Insight DVD Administration



# Insight DVD Administration

	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Reasoning	<input type="checkbox"/>	<input type="checkbox"/>
<b>Short-Term Memory</b>	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing		
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>



## Short-Term Memory

- The ability to apprehend, maintain awareness of, and mentally manipulate elements of information in the immediate situation (p.3).<sup>1</sup>
- In the Short-Term Memory subtest of *Insight*, students are asked to identify whether or not the second string of numbers is the reverse of the first string (p.9).<sup>2</sup>

## Short-Term Memory

### SAMPLE

A ● (N)

B ○ (N)

# Insight DVD Administration

	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Reasoning	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Memory	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing		
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>



## Long-Term Memory Retrieval

- The ability to store and consolidate new information in long-term memory and later fluently retrieve the stored information through association (p.4).<sup>1</sup>
- In the Long-Term Memory Retrieval subtest of *Insight*, students are asked to identify the symbol that was earlier associated with a given meaning (p.10).<sup>2</sup>



# Long-Term Memory Retrieval

**SAMPLE**



A



B



# Insight DVD Administration

	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Reasoning	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Memory	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing	<input type="checkbox"/>	<input type="checkbox"/>
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>



## Auditory Processing

- Abilities involved in discriminating patterns in sounds and musical structure, often against background noise or distorting conditions, or both (p.4).<sup>1</sup>
- In the Auditory Processing subtest of *Insight*, students are asked to discriminate sounds in words.

## Auditory Processing



# Insight DVD Administration

	Instructions	Questions
Crystallized Knowledge	<input type="checkbox"/>	<input type="checkbox"/>
Visual Processing	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Reasoning	<input type="checkbox"/>	<input type="checkbox"/>
Short-Term Memory	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Memory Retrieval	<input type="checkbox"/>	<input type="checkbox"/>
Auditory Processing		
Section 1	<input type="checkbox"/>	<input type="checkbox"/>
Section 2	<input type="checkbox"/>	<input type="checkbox"/>
Section 3	<input type="checkbox"/>	<input type="checkbox"/>
Section 4	<input type="checkbox"/>	<input type="checkbox"/>
Processing Speed	<input type="checkbox"/>	<input type="checkbox"/>



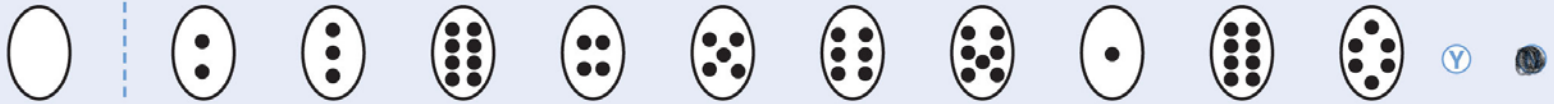
## Processing Speed

- The ability to automatically and fluently perform relatively easy or over-learned cognitive tasks, especially when high mental efficiency (i.e., attention and focused concentration) is required (p.4).<sup>1</sup>
- In the Processing Speed subtest of *Insight*, students are asked to identify whether or not a presented shape has an exact match in an array of shapes that follow (p.12).<sup>2</sup>

## Processing Speed

SAMPLE

1



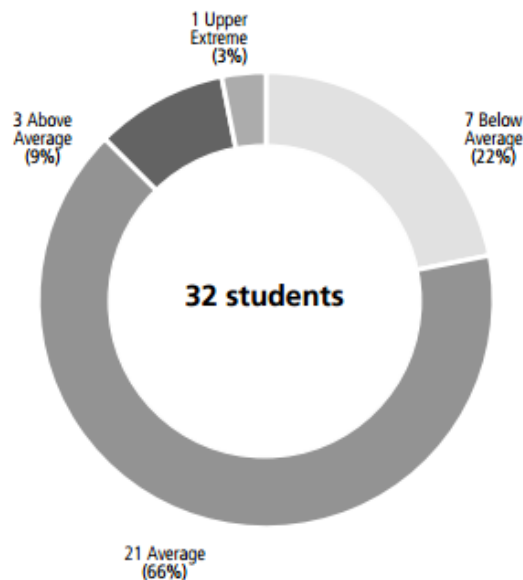
Test Date: Sep 01, 2011  
 Test Level: 1  
 Grade: 3  
 District: WILLOW DSB

*Insight* measures seven important cognitive abilities that have been associated with learning in school. It also provides screening to recommend students who may require further assessment. It is important to consider the student's day to day functioning in school in conjunction with *Insight* scores when making decisions about their strengths and needs.

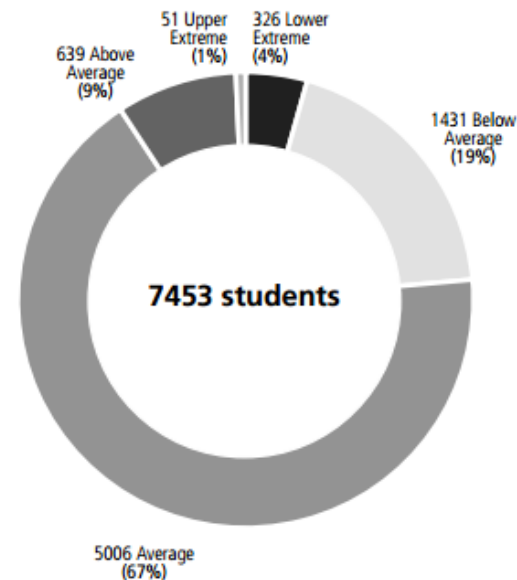
For more information about this report, go to [www.aisolutions.us.com/INSIGHT](http://www.aisolutions.us.com/INSIGHT)

### Insight Ability Score (IAS)

**School**  
 Percent of Students in Each Overall Cognitive Ability Category



**District**  
 Percent of Students in Each Overall Cognitive Ability Category



School	Insight Ability Score (IAS)	Insight General Ability Index (gI)	Insight Thinking Index (ITI)	Insight Memory/Processing Index (IMPI)
Number in Group	32	32	32	32
Mean Standard Score Range	93-104	89-104	91-104	97-106
Standard Deviation	15	20	17	11
Mean Stanine Range	4-6	4-6	4-6	5-6
Mean Percentile Rank Range	32-61	23-61	27-61	42-66

District	Insight Ability Score (IAS)	Insight General Ability Index (gI)	Insight Thinking Index (ITI)	Insight Memory/Processing Index (IMPI)
Number in Group	7453	7589	7527	7481
Mean Standard Score Range	94-95	92-93	94-95	98-99
Standard Deviation	14	18	15	12
Mean Stanine Range	4	4	4	5
Mean Percentile Rank Range	34-37	30-32	34-37	45-47

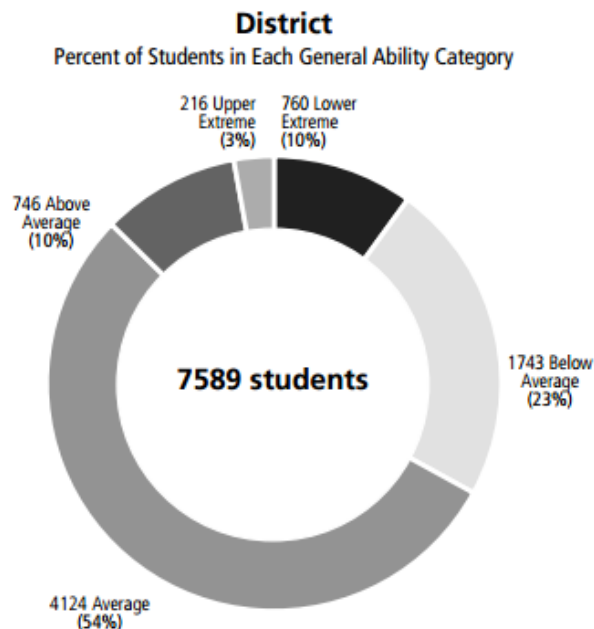
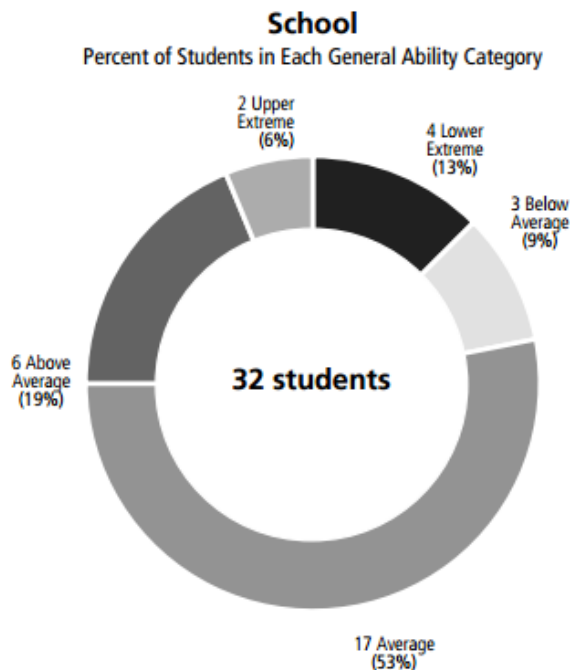


Test Date: Sep 01, 2011  
 Test Level: 1  
 Grade: 3  
 District: WILLOW DSB

*Insight* measures seven important cognitive abilities that have been associated with learning in school. It also provides screening to recommend students who may require further assessment. It is important to consider the student's day to day functioning in school in conjunction with *Insight* scores when making decisions about their strengths and needs.

For more information about this report, go to [www.aisolutions.us.com/INSIGHT](http://www.aisolutions.us.com/INSIGHT)

### Insight General Ability Index (gI)



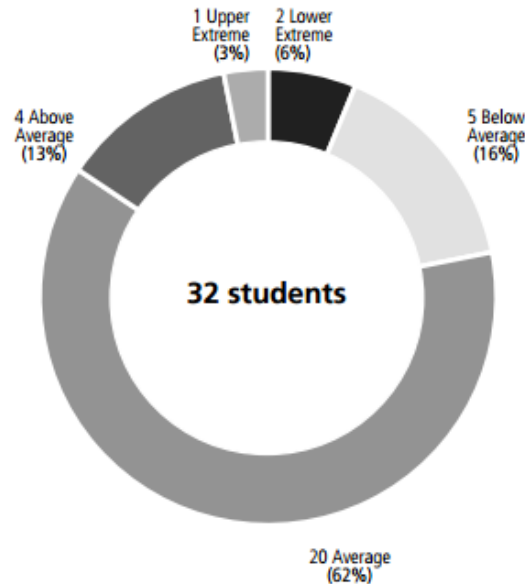
School	Insight Ability Score (IAS)	Insight General Ability Index (gI)	Insight Thinking Index (ITI)	Insight Memory/Processing Index (IMPI)	District	Insight Ability Score (IAS)	Insight General Ability Index (gI)	Insight Thinking Index (ITI)	Insight Memory/Processing Index (IMPI)
Number in Group	32	32	32	32	Number in Group	7453	7589	7527	7481
Mean Standard Score Range	93-104	89-104	91-104	97-106	Mean Standard Score Range	94-95	92-93	94-95	98-99
Standard Deviation	15	20	17	11	Standard Deviation	14	18	15	12
Mean Stanine Range	4-6	4-6	4-6	5-6	Mean Stanine Range	4	4	4	5
Mean Percentile Rank Range	32-61	23-61	27-61	42-66	Mean Percentile Rank Range	34-37	30-32	34-37	45-47

Test Date: Sep 01, 2011  
 Test Level: 1  
 Grade: 3  
 District: WILLOW DSB

*Insight* measures seven important cognitive abilities that have been associated with learning in school. It also provides screening to recommend students who may require further assessment. It is important to consider the student's day to day functioning in school in conjunction with *Insight* scores when making decisions about their strengths and needs.

For more information about this report, go to [www.aisolutions.us.com/INSIGHT](http://www.aisolutions.us.com/INSIGHT)

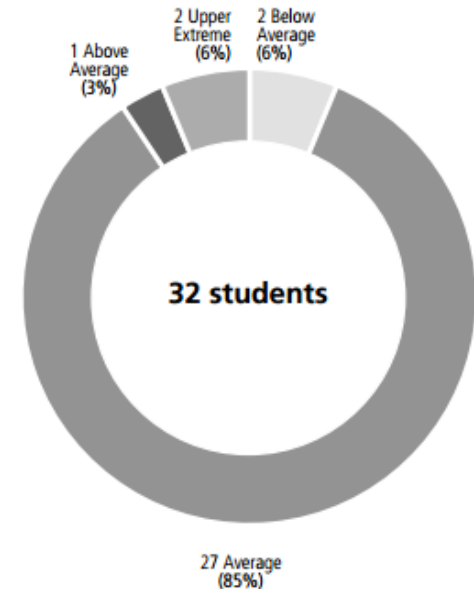
### School Insight Thinking Index (ITI)



This graph shows the proportion of students in the school falling in the different ability categories for the ITI.

The ITI is an index of the ability to use inductive, deductive, and quantitative reasoning to solve novel, "on-the-spot" problems; the ability involved in discriminating patterns in sounds and musical structure; the ability to generate, retain, retrieve and transform well-structured visual images; and the ability to store and consolidate new information in long-term memory and to later fluently retrieve the stored information through association.

### School Insight Memory/Processing Index (IMPI)



This graph shows the proportion of students in the school falling in the different ability categories for the IMPI.

The IMPI is an index of the ability to apprehend, maintain awareness of, and mentally manipulate elements of information in the immediate situation, as well as the ability to automatically and fluently perform relatively easy or over-learned cognitive tasks, especially when high mental efficiency is required.

Test Date: Sep 01, 2011  
 Test Level: 1  
 Grade: 3  
 District: WILLOW DSB

*Insight* measures seven important cognitive abilities that have been associated with learning in school. It also provides screening to recommend students who may require further assessment. It is important to consider the student's day to day functioning in school in conjunction with *Insight* scores when making decisions about their strengths and needs.

For more information about this report, go to [www.aisolutions.us.com/INSIGHT](http://www.aisolutions.us.com/INSIGHT)

## Students with Exceptional IAS or gI

### Students with IAS for overall ability in the Bottom 2%

### Students with IAS for overall ability in the Top 2%

LISA SIMPSON

HERB VINCENT

### Students with gI for general ability in the Bottom 2%

ROWENA BROWN

JOHN WEBER

RAUL CAMPBELL

HENRY DOW

BOB HICKS

ABE HICKS

### Students with gI for general ability in the Top 2%

IAN ALBERT

DOYLE ARTHUR

Test Date: Sep 01, 2011  
 Test Level: 1  
 Grade: 3  
 School: LAURIER PS  
 District: WILLOW DSB

### Insight General Ability Index (gI)

*Insight* measures seven important cognitive abilities that have been associated with learning in school. It also provides screening to recommend students who may require further assessment. It is important to consider the student's day to day functioning in school in conjunction with *Insight* scores when making decisions about their strengths and needs.

For more information about this report, go to [www.aisolutions.us.com/INSIGHT](http://www.aisolutions.us.com/INSIGHT)

			BILL STONE		
			ADAM SPENCER		
			TANYA SMYTHE		
			ROBBIE PAUL		
			LES MILES		
			BILLY MCKAY		
			GINA LITTLE		
			REBECCA LIAM		
			MONIQUE JENKINS		
			DAVE JASPER		
			JUDY GARRETT		
			DICK ELWAY	HERB VINCENT	
			ELIZABETH DOWLING	LISA SIMPSON	
			SARAH DAME	ROCKY ROW	
			PETE CARROLL	STAN GUNN	
			MARK CARR	SHIRLEY FRANKLIN	DOYLE ARTHUR
			LUCY ABBY	STEPHEN AMES	IAN ALBERT
BOB HICKS					
ABE HICKS	LISA GREEN				
RAUL CAMPBELL	HENRY DOW				
JOHN WEBER	ROWENA BROWN				
<b>Lower Extreme</b> Percentile Rank lower than 2	<b>Below Average</b> 2 – 15	<b>Average</b> 16 – 84	<b>Above Average</b> 85 – 98	<b>Upper Extreme</b> Percentile Rank greater than 98	





# Insight Score Interpretations

## **Available on Individual Students' Interpretive Reports:**

- **Composite/Summary scores – 4**
- **Discrepancy scores – 5**
- **Subtest scores – 7**

**(Note: All are standard scores with a mean of 100 and *SD* of 15.)**

# Insight Score Interpretations

## Interpretive Report: Composite Scores

Composite Score (Abbreviation)	Based on equal weight of:	What does it measure?
<b>1. Insight Ability Score (IAS)</b>	<u>All seven subtests:</u> Crystallized Knowledge (Gc) Visual Processing (Gv) Fluid Reasoning (Gf) Short-Term Memory (Gsm) Long-Term Memory Retrieval (Glr) Auditory Processing (Ga) Processing Speed (Gs)	Overall cognitive ability, or “g”

# Insight Score Interpretations

## Interpretive Report: Composite Scores

Composite Score (Abbreviation)	Based on equal weight of:	What does it measure?
<b>2. Insight General Ability Index (gI)</b>	<u>Three subtests:</u> Crystallized Knowledge (Gc) Visual Processing (Gv) Fluid Reasoning (Gf)	<ul style="list-style-type: none"><li>• Knowledge and thinking skills within a restricted range</li><li>• Sometimes used to screen students who are gifted</li></ul>



# Insight Score Interpretations

## Interpretive Report: Composite Scores

Composite Score (Abbreviation)	Based on equal weight of:	What does it measure?
<b>3. Insight Thinking Index (ITI)</b>	<u>Four subtests:</u> Visual Processing (Gv) Fluid Reasoning (Gf) Long-Term Memory Retrieval (Glr) Auditory Processing (Ga)	<ul style="list-style-type: none"><li>• Ability to use different types of reasoning to solve novel “on-the-spot” problems</li><li>• Sometimes called intentional cognitive processing</li></ul>

# Insight Score Interpretations

## Interpretive Report: Composite Scores

Composite Score (Abbreviation)	Based on equal weight of:	What does it measure?
4. <i>Insight Memory/ Processing Index</i> (IMPI)	<u>Two subtests:</u> Short-Term Memory (Gsm) Processing Speed (Gs)	<ul style="list-style-type: none"><li>• A measure of cognitive efficiency</li><li>• Refers to the ability to automatically and fluently perform relatively easy or over-learned tasks</li><li>• Sometimes called automatic cognitive processing</li></ul>

## **Interpretive Report: Discrepancy Scores**

Discrepancy Scores and Profiles – Each student's individual Interpretive Report provides information about possible discrepancies within the student's profile of composite and subtest scores.

(NOTE: The Interpretive Report indicates for you whether or not a discrepancy difference is statistically significant.)

# Insight Score Interpretations

## Interpretive Report: Discrepancy Scores

Comparison	Discrepancy Pattern	Possible Interpretation
<b><u>Two composite scores:</u></b> <b>Insight Thinking Index</b> <b>(Gv, Gf, Glr, Ga)</b>	$ITI > IMPI$	Thinking and reasoning skills may be more developed when compared to the student's lower performance on easy or over-learned tasks.
<b>versus</b> <b>Insight Memory/ Processing Index</b> <b>(Gsm &amp; Gs)</b>	$ITI < IMPI$	Thinking and reasoning skills may be less developed when compared to the student's higher performance on easy or over-learned tasks.

# Insight Score Interpretations

## Interpretive Report: Discrepancy Scores

Comparison	Discrepancy Pattern	Possible Interpretation
<b>Long-Term Memory and Retrieval (Glr)</b>	$Glr > Gc$	Learning new material in the test session may be more developed when compared to the student's lower performance for learning over time at home and at school.
<b>versus</b>		
<b>Crystallized Knowledge (Gc)</b>	$Glr < Gc$	Learning new material in the test session may be less developed when compared to the student's higher performance for learning over time at home and at school.

# Insight Score Interpretations

## Interpretive Report: Discrepancy Scores

Comparison	Discrepancy Pattern	Possible Interpretation
<b>Short-Term Memory/ Long-Term Memory and Retrieval</b>  <b>versus</b>  <b>Fluid Reasoning and Visual Processing</b>	$G_{sm}/G_{lr} > G_f/G_v$	Memory and learning skills may be more developed than solving problems with novel (new) information.
	$G_{sm}/G_{lr} < G_f/G_v$	Memory and learning skills may be less developed than solving problems with novel (new) information.

# Insight Score Interpretations

## Interpretive Report: Discrepancy Scores

Comparison	Discrepancy Pattern	Possible Interpretation
<b>Degree of Linguistic Demand (All 7 subtests included)</b>	$G_v, G_f > G_{sm}, G_{lr}, G_s > G_a, G_c$	Student appears to perform more strongly on subtests with fewer linguistic demands compared to subtests with greater linguistic demands.
	$G_v, G_f < G_{sm}, G_{lr}, G_s < G_a, G_c$	Student appears to perform less strongly on subtests with fewer linguistic demands compared to subtests with greater linguistic demands.

# Insight Score Interpretations

## Interpretive Report: Discrepancy Scores

Comparison	Discrepancy Pattern	Possible Interpretation
<b>Degree of Cultural Loading (All 7 subtests included)</b>	$G_v, G_f, G_{sm}, G_s > G_{lr}, G_a, > G_c$	Student appears to perform more strongly on subtests with less culturally loading compared to subtests with higher cultural loading.
	$G_v, G_f, G_{sm}, G_s < G_{lr}, G_a, < G_c$	Student appears to perform less strongly on subtests with less culturally loading compared to subtests with higher cultural loading.





# Insight Subtest Score Interpretations

Subtest scores – Inter-subtest score comparisons are not provided; however, the school psychologist may choose to exercise clinical judgment and skill to determine whether subtest profile “peaks and valleys” are substantiated with supporting data (e.g., file information and records, previous test scores, portfolios, parent/teacher anecdotal reports, etc.).



# Insight Subtest Score Interpretations

## Crystallized Knowledge

- The cognitive abilities associated with Gc are highly correlated with academic achievement. They serve as a good predictor of academic success and are a key indicator of giftedness.<sup>3,4</sup>



# Insight Subtest Score Interpretations

## Visual Processing

- **Gv**, along with **Gf** and **Gc**, are “most frequently strong in those traditionally selected for intellectual giftedness” (p.857).<sup>4</sup>



# Insight Subtest Score Interpretations

## Fluid Reasoning

- The cognitive abilities associated with **Gf** are highly correlated with academic success. Those with strong **Gf** ability are likely to excel in higher level thinking and reasoning. Such abilities are beneficial for solving novel problems, generating effective strategies, and thinking inductively and deductively.<sup>3,4</sup>



# Insight Subtest Score Interpretations

## Short-Term Memory

- "Above-average performance on memory tasks can indicate good attention. If information can be dealt with quickly, then the limited capacity system of short-term memory will not be overloaded, and more attention can be directed to higher-level tasks" (p.279).<sup>3</sup>

## Long-Term Memory Retrieval

- High performance on long-term retrieval tasks suggests that students will be successful on such tasks, while low performance suggests possible deficits.<sup>3</sup>



# Insight Subtest Score Interpretations

## Auditory Processing

- A prerequisite for success in reading and spelling competence, **Ga** is important for understanding reading disabilities (p.277).<sup>3</sup>

# Insight Subtest Score Interpretations

## Processing Speed

- “High performance on processing speed tasks indicates that a person is able to process information quickly, freeing up resources for higher-level thinking. Low performance on processing speed tasks suggests that the person may process visual symbols slowly or be inattentive” (p.286).<sup>3</sup>



# Insight: Relationships to Learning

[http://www.ctcinsight.com/pdf/Importance\\_of\\_Insight.pdf](http://www.ctcinsight.com/pdf/Importance_of_Insight.pdf)



## CHC Theory:

- CHC theory is derived from the concept that there are three strata of human cognitive abilities that differ in breadth and generality (p.1).<sup>1</sup>
- *Insight* subtests measure cognitive abilities that have been empirically linked to the emergence of development of specific academic functions (p.5).<sup>1</sup>

### Crystallized Knowledge (Gc):

- The person's breadth and depth and application of acquired knowledge of the language, information, and concepts of a culture (p.3).<sup>1</sup>
- In the Crystallized Knowledge subtest of *Insight*, students are asked to identify how two things are alike (p.6).<sup>2</sup>
- The cognitive abilities associated with Gc are highly correlated with academic achievement. They serve as a good predictor of academic success and are a key indicator of giftedness.<sup>3,4</sup>

### Visual Processing (Gv):

- The ability to generate, retain, retrieve, and transform well-structured visual images (p.3).<sup>1</sup>
- In the Visual Processing subtest of *Insight*, students are asked to identify the shape that can be made by combining two or more smaller shapes (p.7).<sup>2</sup>
- **Gv**, along with **Gf** and **Gc**, are "most frequently strong in those traditionally selected for intellectual giftedness" (p.857).<sup>4</sup>

### Fluid Intelligence (Gf):

- The use of inductive, deductive, and quantitative reasoning to solve novel, "on-the spot" problems (p.3).<sup>1</sup>
- In the Fluid Reasoning subtest of *Insight*, students are asked to identify the shape that best fits into the missing part of a matrix pattern (p.8).<sup>2</sup>
- The cognitive abilities associated with **Gf** are highly correlated with academic success. Those with strong **Gf** ability are likely to excel in higher level thinking and reasoning. Such abilities are beneficial for solving novel problems, generating effective strategies, and thinking inductively and deductively.<sup>3,4</sup>

### Short-Term Memory (Gsm):

- The ability to apprehend, maintain awareness of, and mentally manipulate elements of information in the immediate situation (p.3).<sup>1</sup>
- In the Short-Term Memory subtest of *Insight*, students are asked to identify whether or not the second string of numbers is the reverse of the first string (p.9).<sup>2</sup>
- "Above-average performance on memory tasks can indicate good attention. If information can be dealt with quickly, then the limited capacity system of short-term memory will not be overloaded, and more attention can be directed to higher-level tasks" (p.279).<sup>3</sup>

### Long-Term Memory Retrieval (Glr):

- The ability to store and consolidate new information in long-term memory and later fluently retrieve the stored information through association (p.4).<sup>1</sup>
- In the Long-Term Memory Retrieval subtest of *Insight*, students are asked to identify the symbol that was earlier associated with a given meaning (p.10).<sup>2</sup>
- High performance on long-term retrieval tasks suggests that students will be successful on such tasks, while low performance suggests possible deficits.<sup>3</sup>

### Auditory Processing (Ga):

- Abilities involved in discriminating patterns in sounds and musical structure, often against background noise or distorting conditions, or both (p.4).<sup>1</sup>
- In the Auditory Processing subtest of *Insight*, students are asked to discriminate sounds in words.
- A prerequisite for success in reading and spelling competence, **Ga** is important for understanding reading disabilities (p.277).<sup>3</sup>

### Processing Speed (Gs):

- The ability to automatically and fluently perform relatively easy or over-learned cognitive tasks, especially when high mental efficiency (i.e., attention and focused concentration) is required (p.4).<sup>1</sup>
- In the Processing Speed subtest of *Insight*, students are asked to identify whether or not a presented shape has an exact match in an array of shapes that follow (p.12).<sup>2</sup>
- "High performance on processing speed tasks indicates that a person is able to process information quickly, freeing up resources for higher-level thinking. Low performance on processing speed tasks suggests that the person may process visual symbols slowly or be inattentive" (p.286).<sup>3</sup>

## Footnotes:

<sup>1</sup> Beal, L. (2011). *Insight: Understanding Insight: A Group Test of Cognitive Abilities*. Markham: CTC/Canadian Test Centre. <sup>2</sup> Beal, L. (2011). *Insight: Examiner's Manual*. Markham: CTC/Canadian Test Centre. <sup>3</sup> Mather, N., & Wendling, B. J. (2005). Linking cognitive results to academic interventions for students with learning disabilities. In D. P. Flanagan & P. L. Harrison (Eds.), *Contemporary Intellectual Assessment 2nd ed.* (pp.269-294). New York, NY: The Guilford Press. <sup>4</sup> Volker, M. A., Lopata, C., & Cook-Cottone, C. (2006). Assessment of children with intellectual giftedness and reading disabilities. *Psychology in the Schools*, 43(8), 855-869.

# Insight: Relationships to Reading

## Crystallized Knowledge (Gc):

- When compared with other broad cognitive abilities, **Gc** is usually the strongest predictor of Basic Reading Skills (the ability to identify and pronounce individually printed letters, words, and phonically regular nonsense words).<sup>1</sup>
- When compared with other broad cognitive abilities, **Gc** is usually the strongest predictor of Reading Comprehension Skills (the ability to understand written text, generate synonyms and antonyms to given words, and complete analogies).<sup>1,2,6</sup>
- The knowledge of word meanings is one of the best predictor of students' reading comprehension abilities. This effect is found from kindergarten to the 12<sup>th</sup> grade.<sup>4</sup>

## Fluid Intelligence (Gf):

- During childhood and adolescence, there is a significant association between **Gf** and Reading Comprehension Skills (the ability to understand written text, generate synonyms and antonyms to given words, and complete analogies).<sup>3</sup>

## Processing Speed (Gs):

- **Gs** is important for the acquisition of most cognitive and academic skills. During elementary school years, there is a moderate relationship between **Gs** and reading achievement.<sup>1</sup>
- Passage Comprehension Skills (the ability to identify a key word that is missing from a reading passage) are significantly correlated with **Gs**.<sup>2</sup>
- **Gs** has a significant effect on Reading Decoding Skills (the ability to recognize and decode words, and the capacity to spell pseudo-words).<sup>3</sup>

## Short-Term Memory (Gsm):

- Moderate relationships can be found between **Gsm** and Basic Reading Skills (the ability to identify and pronounce individually printed letters, words, and phonically regular nonsense words) and between **Gsm** and Reading Comprehension Skills (the ability to understand written text, generate synonyms and antonyms to given words, and complete analogies).<sup>1</sup>
- Reading decoding skills consist of the ability to recognize and decode words and the capacity to spell pseudo-words. Short-Term Memory demonstrated "consistent direct effects on reading decoding skills," although variance existed across different age levels (p.223).<sup>3</sup>

## Long-Term Memory Retrieval (Glr):

- During the elementary school years, there is a moderate relationship between Long-Term Memory Retrieval and various components of reading achievement.<sup>1</sup>
- Long-Term Memory Retrieval, and especially the narrow cognitive ability Associative Memory, is strongly related to reading decoding skills (the ability to recognize and decode words, and the capacity to spell pseudo-words).<sup>3</sup>

## Auditory Processing (Ga):

- During early adulthood, **Ga** is consistently and significantly correlated with Basic Reading Skills (the ability to identify and pronounce individually printed letters, words, and phonically regular nonsense words).<sup>1</sup>
- **Ga** demonstrates a moderate relationship with Reading Comprehension Skills (the ability to understand written text, generate synonyms and antonyms to given words, and complete analogies) during the elementary school years.<sup>1</sup>
- **Ga** demonstrates a significant correlation with Word Attack (decoding nonsense words through phonetic analyses).<sup>2,6</sup>
- Current and future reading achievement are both highly correlated with phonetic coding abilities.<sup>4</sup>
- Individuals with reading difficulties often display a core processing deficit in phonological awareness tasks.<sup>7</sup>

# READING

## Footnotes:

- <sup>1</sup> Evans, J. J., Floyd, R. G., McGrew, K.S., & Leforgee, M. H. (2002). The relations between measures of Cattell-Horn-Carroll (CHC) cognitive abilities and reading achievement during childhood and adolescence. *School Psychology Review*, 31(2), 246-262. <sup>2</sup> Flanagan, D. P. (2000). Wechsler-based CHC cross-battery assessment and reading achievement: Strengthening the validity of interpretations drawn from Wechsler test scores. *School Psychology Quarterly*, 15(3), 295-329. <sup>3</sup> Floyd, R. G., Keith, T. Z., Taub, G. E., & McGrew, K. S. (2007). Cattell-Horn-Carroll cognitive abilities and their effects on reading decoding skills: g has indirect effects, more specific abilities have direct effects. *School Psychology Quarterly*, 22(2), 200-233. <sup>4</sup> Garcia, G. M., & Stafford, M. E. (2000). Prediction of reading by Ga and Gc specific cognitive abilities for low-SES White and Hispanic English-speaking children. *Psychology in the Schools*, 37(3), 227-235. <sup>5</sup> McGrew, K. S. (1993). The relationship between the Woodcock-Johnson Psycho-Educational Assessment Battery—Revised Gf-Gc cognitive clusters and reading achievement across the life-span. *Journal of Psychoeducational Assessment Monograph Series: Woodcock-Johnson Psycho-Educational Assessment Battery—Revised*, 39-53. Cordova, TN: Psychoeducational Corporation. <sup>6</sup> McGrew, K. S., Flanagan, D. P., Keith, T. Z., & Vandenberg, M. L. (1997). Beyond g: The impact of Gf-Gc specific cognitive abilities research on the future use and interpretation of intelligence tests in the schools. *School Psychology Review*, 26(2), 177-189. <sup>7</sup> Morris, R. D., Steubing, K. K., Fletcher, J. M., Shaywitz, S. E., Lyon, G. R., Shankweiler, D. P., Katz, L., Francis, D. J., & Shaywitz, B. A. (1998). Subtypes of reading disability: Variability around a phonological core. *Journal of Educational Psychology*, 90(3), 347-373.

# Insight: Relationships to Writing

## Crystallized Knowledge (Gc):

- When compared with other broad cognitive abilities, **Gc** and **Gs** usually display the most consistent relationship with writing achievement across the age groups.<sup>3</sup>
- Basic Writing Skills (the knowledge of spelling, punctuation and capitalization rules) is moderately related to **Gc** abilities from ages 7 to 9, and strongly related from age 9 onwards.<sup>2,3</sup>
- Written Expression (compositional fluency and compositional accuracy) is moderately related to **Gc** abilities from ages 8 to 10 and strongly related from 11 onwards.<sup>3</sup> A more recent study also supports this finding (moderate relationship from ages 7 to 10, and strong relationship from age 10 onwards).<sup>2</sup>
- "Comprehension-Knowledge was often the strongest and most consistent predictor of writing achievement across childhood and adolescence and that its strongest effects began as children enter upper elementary school (about age 10 years). It is logical that vocabulary knowledge and world knowledge would be highly related to knowledge of spelling, punctuation, and capitalization rules, as reflected in the basic writing skills analysis" (p.140).<sup>2</sup>

## Fluid Intelligence (Gf):

- For Basic Writing Skills (the knowledge of spelling, punctuation and capitalization rules), **Gf** has "primarily negligible effects until age 15 years" (p.138). However, in the oldest age levels observed in this study (15 to 18 years), **Gf** shows a moderate relationship.<sup>2</sup> An earlier study demonstrates a moderate relationship from ages 6 to 11 years.<sup>3</sup>
- The effect of **Gf** and Written Expression (compositional fluency and compositional accuracy) is mostly negligible, with the exception that moderate effects were found in participants who were 15 and 16 years of age.<sup>2</sup> Another study has found moderate relationship for Written Expression from ages 7 to 12 years.<sup>3</sup>

## Processing Speed (Gs):

- When compared with other broad cognitive abilities, **Gs** and **Gc** usually display the most consistent relationship with writing achievement across the age groups.<sup>3</sup>
- Basic Writing Skills (the knowledge of spelling, punctuation and capitalization rules) is moderately related to **Gs** from age 7 until age 17 years.<sup>2</sup>
- Written Expression (compositional fluency and compositional accuracy) is moderately or strongly related to **Gs** throughout most of childhood and adolescence.<sup>2</sup>
- "Processing Speed is believed to be important to written expression because the more rapidly an individual can automatize basic skills, the more attention and memory resources can be allocated to higher-level aspects of task performance" (p.140).<sup>2</sup>

## Auditory Processing (Ga):

- Before the age of 11, **Ga** is significantly related to both Basic Writing Skills (the knowledge of spelling, punctuation and capitalization rules) and Written Expression (compositional fluency and compositional accuracy).<sup>3</sup>
- A moderate relationship exists for **Ga** and Written Expression (compositional fluency and compositional accuracy) from ages 15 to 17.<sup>2</sup>
- Memory for sound patterns at the phonetic level (non-semantic) is a good predictor for measuring spontaneous spelling ability in written composition.<sup>1</sup>
- "Phonological coding, defined as segmenting spoken words into component syllables or phonemes, had concurrent validity for predicting achievement in reading real words and non-words and spelling real words" (p.163).<sup>1</sup>



## Long-Term Memory Retrieval (Glr):

- **Glr** has a strong effect on Basic Writing Skills (the knowledge of spelling, punctuation and capitalization rules) for participants who were 7 years of age. Subsequently, this relationship becomes moderate up until the age of 10 years.<sup>2</sup>
- **Glr** has a moderate effect on Written Expression (compositional fluency and compositional accuracy) in participants aged 6 to 7 years. However, the relationship between **Glr** and Written Expression is mostly negligible afterward.<sup>2</sup>

## Short-Term Memory (Gsm):

- Moderate relationships can be found between **Gsm** and Basic Writing Skills (the knowledge of spelling, punctuation and capitalization rules) and between **Gsm** and Written Expression (compositional fluency and compositional accuracy). For both, such relationship began after age 7, and continued throughout the ages included in this analysis (until age 18 years).<sup>2</sup> A previous study has resulted in similar findings, but the relationship occurs after age 10.<sup>3</sup>

## Footnotes:

<sup>1</sup> Berninger, V. W., Cartwright, A. C., Yates, C. M., Swanson, H. L., & Abbott, R. D. (1994). Developmental skills related to writing and reading acquisition in the intermediate grades: Shared and unique functional systems. *Reading & Writing, 6*(2), 161-196. <sup>2</sup> Floyd, R. G., McGrew, K. S., & Evans, J. J. (2008). The relative contributions of the Cattell-Horn-Carrall cognitive abilities in explaining writing achievement during childhood and adolescence. *Psychology in the Schools, 45*(2), 132-144. <sup>3</sup> McGrew, K. S., & Knopik, S. N. (1993). The relationship between the WJ-R Gf-Gc cognitive clusters and writing achievement across the life-span. *School Psychology Review, 22*(4), 687-695.

# Insight: Relationships to Math

## Fluid Intelligence (Gf):

- When compared with other broad cognitive abilities, **Gf** has the strongest association with applied mathematics skills for early elementary aged students.<sup>2</sup>
- When compared with other broad cognitive abilities, **Gf** holds the most consistent relationship with Basic Mathematics Skills (the ability to perform mathematical operations, and display one's knowledge of mathematical concepts).<sup>3</sup>
- **Gf** has a moderate relationship with Math Calculation Skills (the ability to calculate and perform basic mathematical operations fluently) throughout childhood and adolescence.<sup>1</sup>
- **Gf** has a moderate to strong relationship with Math Reasoning Skills (the ability to use mathematics operations in applied, real-world scenarios) throughout childhood and adolescence.<sup>1,3</sup>

## Short-Term Memory (Gsm):

- Between the ages of 7 and 17, **Gsm** is moderately related to Math Calculation Skills (the ability to calculate and perform basic mathematical operations fluently).<sup>1</sup>
- During the elementary school years, **Gsm** has a moderate relationship with Mathematics Reasoning Skills (the ability to use mathematics operations in applied, real-world scenarios).<sup>1,3</sup>

## Processing Speed (Gs):

- Speed of processing plays an important role during the early stages of acquiring most cognitive and academic skills. Specifically, the speed of processing demonstrates a significant and strong influence on mathematics performance.<sup>1</sup>
- **Gs** has a moderate to strong relationship with Math Calculation Skills (the ability to calculate and perform basic mathematical operations fluently). This effect is evident throughout the lifespan.<sup>1</sup>
- **Gs** has a moderate relationship with Mathematics Reasoning Skills (the ability to use mathematics operations in applied, real-world scenarios).<sup>1,3</sup>
- A consistent relationship can be found between **Gs** and Basic Mathematics Skills (the ability to perform mathematical operations, and display one's knowledge of mathematical concepts). This effect is strongest from ages 5 to 11 years.<sup>1</sup>

## Crystallized Knowledge (Gc):

- When compared with other broad cognitive abilities, **Gc** is usually the strongest predictor of mathematics achievement throughout the school-age years.<sup>1,3</sup>
- Math Calculation Skills (the ability to calculate and perform basic mathematical operations fluently) is moderately related to **Gc** abilities.<sup>1</sup>
- Math Reasoning Skills (the ability to use mathematics operations in applied, real-world scenarios) is moderately related to **Gc** abilities.<sup>1,3</sup>

## Long-Term Memory Retrieval (Glr):

- A moderate relationship can be found between **Glr** and Math Calculation Skills (the ability to calculate and perform basic mathematical operations fluently) and between **Glr** and Math Reasoning Skills (the ability to use mathematics operations in applied, real-world scenarios).<sup>1</sup>
- Basic Mathematics Skills (the ability to perform mathematical operations, and display one's knowledge of mathematical concepts) is less consistently related to **Glr**, and the relationship occurs only during late adolescence and early adulthood.<sup>1,3</sup>

## Visual Processing (Gv):

- There is a moderate relationship between **Gv** and Math Reasoning Skills (the ability to use mathematics operations in applied, real-world scenarios).<sup>3</sup>



## Footnotes:

- <sup>1</sup> Floyd, R. G., Evans, J. J., & McGrew, K.S. (2003). Relations between measures of Cattell-Horn-Carroll (CHC) cognitive abilities and mathematics achievement across the school-age years. *Psychology in the Schools*, 40(2), 155-171.  
<sup>2</sup> McGrew, K. S., Flanagan, D. P., Keith, T. Z., & Vanderwood, M. L. (1997). Beyond g: The Impact of Gf-Gc specific cognitive abilities research on the future use and interpretation of intelligence tests in the schools. *School Psychology Review*, 26(2), 177-189.  
<sup>3</sup> McGrew, K. S., & Hessler, G. L. (1995). The relationship between the WI-R Gf-Gc cognitive clusters and mathematics achievement across the lifespan. *Journal of Psychoeducational Assessment*, 13(1), 21-38.

# Insight Technical Properties

## Expert Consensus Study of *Insight*

Subtest	Broad Ability 1	Broad Ability 2
1	Fluid 92.3%	Verbal 15.4%
2	Crystallized 100%	Fluid 7.9%
3	Long-term Memory retrieval 100%	
4	Visual-spatial ability 100%	
5	Auditory processing 100%	
6	Short-term memory 100%	
7	Processing speed 100%	

# Insight Technical Properties

## Expert Consensus Study of *Insight*

Subtest	Ratings for Broad Ability	
	Mean	Mode
1 Fluid	4.5	5
2 Crystallized	4.4	5
3 Long-term Memory retrieval	4.3	4
4 Visual-spatial ability	4.7	5
5 Auditory processing	4.3	4, 5
6 Short term memory	3.9	4
7 Processing speed	4.2	4, 5

1= very poor

5 = very good

# Insight Technical Properties

## *Insight Validity Study*

**Table 1: Average *Insight* subtest scores for identified students**

	<b>Gc</b>	<b>Gv</b>	<b>Gf</b>	<b>Gsm</b>	<b>Glr</b>	<b>Ga</b>	<b>Gs</b>	<b>N</b>
<b>Identified in none of the groups</b>	<b>96</b>	<b>93</b>	<b>98</b>	<b>100</b>	<b>100</b>	<b>97</b>	<b>101</b>	4837
Mild Intellectual Disability	71	69	73	79	86	72	87	14 (28)
Learning Disability	86	83	84	89	92	85	94	145 (164)
Autism Spectrum Disorder	89	86	91	95	93	90	96	49 (102)
Behaviour	94	93	90	98	98	91	98	31 (45)
English Language Learner, Stage 1	74	91	100	93	89	82	97	67
English Language Learner, Stage 2	85	89	93	96	95	90	97	265
English Language Learner, Stage 3	91	91	96	99	97	95	99	506
English Language Learner, Stage 4	98	96	102	102	100	97	100	336
French Immersion	97	97	101	102	101	98	102	1242

# Insight Technical Properties

## *Insight Validity Study*

**Table 2: Average *Insight* composite scores for identified students**

	IAS	gl	ITI	IMPI	N
<b>Identified in none of the groups</b>	<b>96</b>	<b>94</b>	<b>96</b>	<b>100</b>	4837
Mild Intellectual Disability	66	67	67	79	14 (28)
Learning Disability	80	80	81	89	145 (164)
Autism Spectrum Disorder	87	85	87	95	49 (102)
Behaviour	92	90	91	97	31 (45)
English Language Learner, Stage 1	80	81	85	93	67
English Language Learner, Stage 2	86	85	88	95	265
English Language Learner, Stage 3	92	89	92	99	506
English Language Learner, Stage 4	99	98	99	100	336
French Immersion	99	97	99	103	1242



# Insight Technical Properties

## *Insight/WISC-IV* Validation Study: Hit Rate and False Negatives

**TABLE 1: post-test WISC-IV GAI  $\geq$  130 vs. pre-test *Insight* gl score**

# NO	pre-test gl score	# YES	cumulative # YES	HIT RATE	FALSE Negatives
41	135	144	361	78%	35%
5	134	8	217	77%	33%
5	133	9	209	76%	32%
9	132	16	200	75%	29%
5	131	13	184	75%	27%
12	130	12	171	72%	25%
11	129	17	159	71%	23%
9	128	21	142	71%	19%
11	127	17	121	70%	17%
22	126	16	104	68%	14%
28	125	20	88	65%	11%
20	124	15	68	63%	8%
33	123	21	53	61%	5%
25	122	13	32	59%	3%
31	121	19	19	57%	0%

# Insight Technical Properties

**TABLE 2: Accuracy of WISC-IV and *Insight***

	<b>pre-test cut score</b>	<b>HIT RATE</b>	<b>FALSE Negatives</b>
<b>WISC-IV GAI</b>	<b>130</b>	<b>81%</b>	<b>11%</b>
<b>Insight gl</b>	<b>128</b>	<b>71%</b>	<b>19%</b>

## *Insight* Reliability Study

The extreme composite score ranges are exactly where greater precision is important, as *Insight* composite scores are intended to be used for screening for exceptionalities.

In general, precision of composite scores within the 65–70 and 130–135 Standard Score ranges is greater than it is for more average Standard Score ranges.

The General Ability Index (gI) is often used to screen for giftedness, thus precision is especially important for the 130–135 Standard Score range, representing the top 2% of the student population.

# Insight Technical Properties

## Insight Reliability Study

**Table 1: Insight Composite Score Measurement Error**

**Insight Ability Score**

Standard Score Range	IAS N	IAS SS SEM	IAS SS ErrorVar	IAS SS TotalVar	IAS $1 - \frac{\text{ErrorVar}}{\text{TotalVar}}$
65-70	465	2.90	8.39	224.73	<b>0.96</b>
71-85	1465	5.95	35.43	224.73	<b>0.84</b>
86-114	4879	6.92	47.88	224.73	<b>0.79</b>
115-129	700	7.40	54.81	224.73	<b>0.76</b>
130-135	82	4.00	16.02	224.73	<b>0.93</b>

**Insight General Ability Index**

Standard Score Range	gl N	gl SS SEM	gl SS Error Var	gl SS Total Var	gl $1 - \frac{\text{ErrorVar}}{\text{TotalVar}}$
65-70	992	4.40	19.38	327.05	<b>0.94</b>
71-85	1721	8.77	76.89	327.05	<b>0.76</b>
86-114	3976	10.95	120.00	327.05	<b>0.63</b>
115-129	749	9.55	91.17	327.05	<b>0.72</b>
130-135	290	5.53	30.60	327.05	<b>0.91</b>

**Insight Thinking Index**

Standard Score Range	ITI N	ITI SS SEM	ITI SS Error Var	ITI SS Total Var	ITI $1 - \frac{\text{ErrorVar}}{\text{TotalVar}}$
65-70	562	3.41	11.64	252.48	<b>0.95</b>
71-85	1508	7.02	49.32	252.48	<b>0.80</b>
86-114	4658	8.72	76.02	252.48	<b>0.70</b>
115-129	797	8.80	77.40	252.48	<b>0.69</b>
130-135	140	5.52	30.47	252.48	<b>0.88</b>

**Insight Memory/Processing Index**

Standard Score Range	IMPI N	IMPI SS SEM	IMPI SS Error Var	IMPI SS Total Var	IMPI $1 - \frac{\text{ErrorVar}}{\text{TotalVar}}$
65-70	107	2.91	8.48	161.38	<b>0.95</b>
71-85	831	5.25	27.59	161.38	<b>0.83</b>
86-114	5806	6.53	42.63	161.38	<b>0.74</b>
115-129	758	7.26	52.75	161.38	<b>0.67</b>
130-135	119	3.07	9.41	161.38	<b>0.94</b>

# Insight Technical Properties

## *Insight* Reliability Study

**Table 2: Insight Subtest Score Measurement Error**

### Crystallized Knowledge

Standard Score Range	Gc N	Gc SS SEM	Gc SS Error Var	Gc SS Total Var	Gc $1 - \frac{\text{ErrorVar}}{\text{TotalVar}}$
65-70	711	6.42	41.17	262.30	<b>0.84</b>
71-85	1320	10.72	114.90	262.30	<b>0.56</b>
86-114	4779	13.63	185.68	262.30	<b>0.29</b>
115-129	818	10.90	118.91	262.30	<b>0.55</b>
130-135	126	7.04	49.62	262.30	<b>0.81</b>

### Visual Processing

Standard Score Range	Gv N	Gv SS SEM	Gv SS Error Var	Gv SS Total Var	Gv $1 - \frac{\text{ErrorVar}}{\text{TotalVar}}$
65-70	1144	5.75	33.09	360.33	<b>0.91</b>
71-85	1864	10.59	112.17	360.33	<b>0.69</b>
86-114	3526	13.46	181.10	360.33	<b>0.50</b>
115-129	915	10.71	114.72	360.33	<b>0.68</b>
130-135	300	6.45	41.56	360.33	<b>0.88</b>

### Fluid Reasoning

Standard Score Range	Gf N	Gf SS SEM	Gf SS Error Var	Gf SS Total Var	Gf $1 - \frac{\text{ErrorVar}}{\text{TotalVar}}$
65-70	907	6.10	37.17	418.74	<b>0.91</b>
71-85	1471	11.36	129.03	418.74	<b>0.69</b>
86-114	3556	14.79	218.61	418.74	<b>0.48</b>
115-129	1116	11.54	133.18	418.74	<b>0.68</b>
130-135	690	7.87	61.89	418.74	<b>0.85</b>

# Insight Technical Properties

## Insight Reliability Study

**Table 3: Insight Subtest Score Measurement Error**

### Short-Term Memory

Standard Score Range	Gsm N	Gsm SS SEM	Gsm SS Error Var	Gsm SS Total Var	Gsm $1 - \frac{\text{ErrorVar}}{\text{TotalVar}}$
65-70	112	3.55	12.59	138.27	<b>0.91</b>
71-85	778	6.12	37.46	138.27	<b>0.73</b>
86-114	5983	8.84	78.15	138.27	<b>0.43</b>
115-129	806	9.85	96.98	138.27	<b>0.30</b>
130-135					

### Long-Term Memory Retrieval

Standard Score Range	Glr N	Glr SS SEM	Glr SS Error Var	Glr SS Total Var	Glr $1 - \frac{\text{ErrorVar}}{\text{TotalVar}}$
65-70	104	2.15	4.64	111.43	<b>0.96</b>
71-85	846	3.89	15.13	111.43	<b>0.86</b>
86-114	6751	7.14	50.98	111.43	<b>0.54</b>
115-129					
130-135					

### Auditory Processing

Standard Score Range	Ga N	Ga SS SEM	Ga SS Error Var	Ga SS Total Var	Ga $1 - \frac{\text{ErrorVar}}{\text{TotalVar}}$
65-70	142	3.61	13.06	106.61	<b>0.88</b>
71-85	1014	6.91	47.77	106.61	<b>0.55</b>
86-114	6485	9.36	87.59	106.61	<b>0.18</b>
115-129					
130-135					

### Processing Speed

Standard Score Range	Gs N	Gs SS SEM	Gs SS Error Var	Gs SS Total Var	Gs $1 - \frac{\text{ErrorVar}}{\text{TotalVar}}$
65-70	188	2.70	7.31	213.34	<b>0.97</b>
71-85	1040	5.48	30.08	213.34	<b>0.86</b>
86-114	5217	4.88	23.86	213.34	<b>0.89</b>
115-129	972	4.22	17.78	213.34	<b>0.92</b>
130-135	227	1.77	3.13	213.34	<b>0.99</b>

## *Insight Validation Study* AYs 2013-2014 and 2014-2015

- US normative data is being collected
- Stratified sampling frame includes US region, SES, ethnicity

### **REMEMBER THIS SLIDE FROM BEFORE?**

- asked to participate
- Free shipping, materials, and reports to/from districts
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- Districts receive \$75 in addition to becoming eligible for a two-year 20% materials discount

# Insight Validation Study





## **Contact Assessment Innovations**

Assessment Innovations would be happy to answer any questions you might have. Please feel free to contact us by phone or email.

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Insight



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**Thank you for your time.**