PSW and the Power of Prediction: An approach to comprehensive re-evaluation

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Caveat

- The authors didn't, and continue to know squat about CHC theory. We were simply looking for a more logical and user friendly way to communicate the results of our assessment to staff, parent, and student.

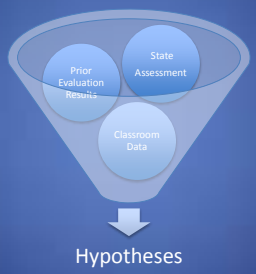
Rationale for approach

- Is there a more logical approach to explaining why a student qualifies or doesn't qualify for special ed as SLD, than the current model which relies on a regression table cut score?

Step 1: Generating hypotheses from existing data

- Which broad cognitive abilities might be holding the student back from being successful? These are the weaknesses
- Which broad cognitive abilities have been spared? These are the strengths

Hypothesizing Broad Cognitive Ability Strengths and Weaknesses



Hypothesis-generating questions

- Is Joey able to show you that he is understanding what is being asked of him? Gc
- Does Joey seem to process questions and information in a timely fashion? Do you have to wait very long for answers? Gs/Gt
- If exposed to information once, does he seem to retain the information? What if he is repeatedly exposed to the information? Ssm/Glr
- Is Joey able to solve problems that are new to him ? Gf

Hypothesis-generating questions

- Is Joey able to get his thoughts out on paper? Gv
- Does Joey seem to possess a solid vocabulary? Gc
- When faced with a problem, is Joey able to map out a strategy for success? Gv
- Is Joey able to recall what he just heard but not a week later? Glr
- Does Joey understand words with multiple meanings or idiomatic expressions? Gc

The Traditional PSW Approach

- Administer a standardized cognitive assessment in entirety
- Deduce potential areas of strength and weakness
- Validate with more subtests

In other words…

"Pissing in the wind and hoping it lands in right place."

{A Brooklyn expression}

The Inductive/Deductive Approach

- Available data leads to hypothesis regarding PSW-Broad Cognitive Ability

Then identify a subtest battery in attempt to confirm the hypothesis.

Hypothetical case: Typical referral (elementary level)

- Student has decent basic reading skills (decoding) and fluency acceptable, but…
- Doesn't seem to understand what he is reading and doesn't do well when asked questions about what he just read

The logic behind the approach

- Of the nine typical reading abilities, there are four broad cognitive abilities that impact

EITHER

decoding **or** comprehension:

The logic of this approach

Cognitive Ability	Correlates with…	Does NOT correlate with…
Auditory Processing (*Ga*)	Basic Reading	Reading Comprehension
Processing Speed (*Gs*)	Basic Reading	Reading Comprehension
Visual Processing (*Gv*)	Basic Reading	Reading Comprehension
Fluid Reasoning (*Gf*)	Reading Comprehension	Basic Reading

Logic behind deductive approach:

If comprehension suspect, then these should be relatively strong

Processing Speed (Gs)	• WISC-Coding; Symbol Search • KABC-time bonus (Pattern Reason)
Auditory Processing (Ga)	• WJ-Auditory Attention; Incomplete words
Visual Processing (Gv)	• KABC-Rover • WISC-Block Design

Logic of deductive approach:

If comprehension weak then these should be relatively weak

Fluid Reasoning (Gf)	• KABC-Story Completion • WISC-Matrix Analogies
Short term memory (Gsm)	• WISC-Digit Span • KABC-Atlantis, Rebus

Real Case Time

- Let us introduce you to Joey, our case study for this approach

I. Problem Identification

(The Curious Case of Joey)

- ☐ Low productivity
- ☐ Long latencies (talking/writing)
- ☐ Frequently shuts down in the classroom
  - Very limited classroom participation
- ☐ Withdraws into reading or gaming
- ☐ Strong memory for high interest material

II. Problem Analysis

Predicting cognitive strengths

Given his apparent strength in **reading comprehension**, we predicted strong abilities with fluid reasoning (Gf) on the following subtests…

II. Problem Analysis: Predicting cognitive strengths

- KABC: •Story Completion
- WISC: •Matrix Reasoning
- WISC: •Picture Concepts

II. Problem Analysis:
Predicting cognitive strengths

Given his apparent strength in **math**, (and his ability to recall correct algorithms without taking notes) we predicted strong abilities with Quantitative Knowledge (Gq) on the following subtests…

II. Problem Analysis: Predicting cognitive strengths

- WISC: •Arithmetic
- KABC: •Rover
- KABC: •Block Counting

II. Problem Analysis:
Predicting Cognitive Strengths

- Joey is a strong auditory learner (even closes his eyes…we assume he's not sleeping)
- Auditory Processing (Ga) –presumed strength
- Short-term Memory (*Gsm*)—presumed strength
- Long-term Memory (*Glr*)—presumed strength

II. Problem Analysis:
Predicting cognitive strengths

KTEA	• Listening Comprehension
KABC	• Atlantis • Rebus
KABC	• Atlantis Delayed • Rebus Delayed

II. Problem Analysis:
Predicting cognitive weakness

Given classroom data and observations, and a variety of assessments, we predicted lower performance levels with **processing speed tasks (Gs).**

II. Problem Analysis:
Predicting cognitive weakness

WISC IV
- Coding
- Symbol Search

KABC
- No time bonus on Story Completion

II. Problem Analysis:
Predicting cognitive weaknesses

Interviews and observations revealed that JV **processes and verbalizes ideas quickly** when **highly interested** in the subject matter…

Dr. Who, Mine Craft, Cards Against Humanity

The hypothesis is now refined…

Refined hypothesis
Part I

- Slow processing speed → **not** global processing deficit
- Linked to **writing** or **speaking only** when he can't rely on long term memory stores or high interest.

Refined Hypothesis
Part II

•Subtests that don't require high level visual-motor integration (Symbol Search) will be stronger than those that do (Coding)

Additional Data Required

An additional research question:

*Does a **scribe** or **keyboard** increase Joey's **processing speed** or ability to **generate ideas** as compared to handwritten work?*

The Envelope please: III. Assessment
Predicted Area of Strength

Cognitive Ability	Reflected Skill	Subtest(s)	Standard Score
Fluid Reasoning (Gf)	Reading Comprehension	KABC Story Completion	90
		WISC Matrix Reasoning	110
		WISC Picture Concepts	105

III. Assessment
Predicted Area of Strength

Cognitive Ability	Reflected Skill	Subtest(s)	Standard Score
Quantitative Knowledge (Gq)	Math calculation and problem solving	WISC Arithmetic	100
		KABC Rover	115
		KABC Block Counting	130

III. Assessment
Predicted Area of Strength

Cognitive Ability	Reflected Skill	Subtest	Score
Auditory Processing/*Ga*	Listening Comprehension	Listening Comprehension (KTEA)	123
Short-term Memory/*Gsm*	Basic Reading Reading Comp.	Rebus Atlantis (KABC)	115 135
Long-term Memory/*Glr*	Reading Comprehension	Rebus, Del. Atlantis, De.	140 135

III. Assessment
Predicted Area of Weakness

Cognitive Ability	Reflected Skill	Subtest(s)	Standard Score
Processing Speed (Gs)	Basic Reading	WISC Coding [Visual motor integration]	53
		WISC Symbol Search [No visual motor integration]	65

III. Assessment
Generating Ideas/Producing Work

Task	Handwritten	Typed	Latency Period
Alphabet	2:06	20 seconds	0 seconds
Sentence to copy	0.3 cwpm	23 cwpm	0 seconds
Sentence dictated	0.3 cwpm	9 cwpm	1-3 seconds between words
Independently composed sentence (high interest topic-chosen by Joey)	0.2 cwpm	16 cwpm	Handwritten = 3:10 Typed = 35 seconds

IV. Evaluation
Hypotheses validation

Our data provides evidence of the following validated hypothesis…

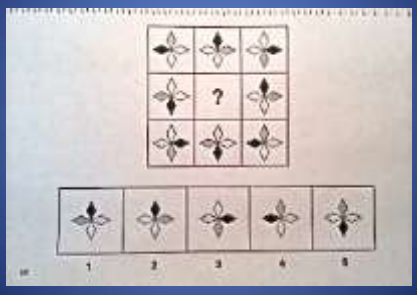
☐ Joey suffers from a psychological processing deficit that impact learning: **A deficit in processing speed**

☐ This processing deficit appears most often and with most intensity **when there are demands to either write or speak "on his feet"**

What is Joey doing inside his head?

- Importance of verbal mediation
- Does Joey utilize internal verbal mediation?

Metacognition: WISC Matrix Reasoning (Area of strength)



Joey's internal mediation

- Combination of **verbal mediation** and **silent visual analysis**
- Joey tells us…
  - Verbal mediation done mentally is fluent
  - When he has to say it out loud, it becomes "chopped up."

What is so special about this approach compared to the traditional PSW approach or compared traditional assessment?

IV. Evaluation: What's so special about this approach?

"Unless your study is exploratory in nature, your hypothesis should always explain what you **expect** to happen during the course of your experiment or research."

~ *American Scientist*

IV. Evaluation: What's so special about this approach?

Powerful process…Analyze existing data and referral information → predict which cognitive abilities will be strengths v. weaknesses

☐CHC theory → link between **symptoms** (referral data), **cognitive processes**, and the **subtests** used to validate the hypothesis

☐Predictive: Identifying the connections before assessment. This is intentional and logical

IV. Evaluation: Is it worth it?

- Post-evaluation meeting- extremely productive.
  - Atmosphere of understanding
  - Atmosphere of comprehensiveness
  - Increase in Joey's self esteem- focus had always been on lack of product
  - Predicting outcome of tests -adds validity

By the way…

Joey is on the Autism Spectrum…
so this approach is not just for SLD

V. Dealing with some concerns

- How do you know that you are testing the correct hypothesis? If not, you are wasting a lot of time.
- What if results are not consistent within your subtests?
- Our school is not an RTI school. Will we have sufficient data?

V. Dealing with some concerns

- One reason for giving an entire IQ battery first is to be able to deal with the possibility that the student is Intellectually Disabled. Shouldn't come to that conclusion based on a handful of selected subtests
- PSW relies on finding relative (to the overall IQ) strengths and weaknesses. By only giving select subtests, how do you find a 'relative strength or weakness'?

V. Building Your Hypothesis

- Asking the right questions at a referral becomes crucial.
- This also leads to asking hypothesis-formulating questions when reading prior evaluation data- now that's new!
- You don't stop asking questions until you are capable of generating a hypothesis

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The value of the traditional PSW approach

- Washington is not about to abandon the discrepancy table-
- Only a small handful of districts are in a position or frame of mind to use the RTI framework to qualify students as SLD
- The traditional approach gives us a FSIQ that can be used to qualify students-PSW then becomes supportive and explanatory