Q: Can you give specifics of how one might assess a child's conceptual understanding?
A: The Process Assessment of the Learner-II has a "Place Value" subtest and a "Part-Whole Relationships" subtest. In general, the subtests on the PAL-II allow us to determine why a student is struggling with basic arithmetic and/or problem-solving.

Q: So a math learning disability can be a result of any of these underlying reasons/skills?
A: The underlying cause of a math learning disability must be determined following a comprehensive evaluation. The evaluation must consider the multiple factors that underlie competent performance in math. To perform competently in an area of math, a student must have a conceptual understanding of the domain. In addition, the student must have the procedural knowledge to solve the problems. Cognitive systems support the conceptual and procedural competencies. The central executive controls the attentional and inhibitory processes needed to use procedures during problem solving, and much of the information supporting conceptual and procedural competencies is likely to be represented in the language or visuospatial systems (Baddeley, 1986). A breakdown in any one of these areas can have an adverse impact on achievement in math – see Geary, 2004. The evaluation must also consider that learning is dependent on other factors - e.g., sensorimotor functions, social-emotional, cultural, environmental, and situational factors.

Q: Students who are better at problem solving than computation - is this a function of intellect > EF? language strengths?
A: This would need to be assessed individually. Math problem solving requires basic arithmetic skills, understanding of the language involved in word problems, as well as executive functions.

Q: You wouldn't use the GAI instead of the FSIQ since 16.1% is not that unusual?
A: One of the criteria to use the GAI is a significant and unusual discrepancy between the FSIQ and the GAI. To determine clinical significance or an unusual discrepancy, Dr. Sattler recommends 15% as the cutoff criterion. Other researchers recommend 10%. In this case, the discrepancy is significant but not especially unusual.
Q: Is it acceptable to use the Spatial Span info from the WNV along with the norms and compare to the WISC-IV auditory WMI?
A: I would say as long as you are able to describe the test and defend why you chose it, that is acceptable. However, the WISC-IV Integrated easily integrates them together. You can certainly use other measures, like Spatial Span from WNV, as part of cross-battery assessment.

Q: I wouldn't consider Vocabulary a weakness because it is still within the average range...Same thing for Block Design.
A: Indeed, Vocabulary and Block Design are not normative weaknesses. However, they are personal or intra-individual weaknesses. Vocabulary is a weakness relative to the mean of the VCI; BD is a weakness relative to the PRI mean. In addition, MR is a strength relative to the PRI mean and DS and LNS are weaknesses relative to the mean of the 10 subtests that comprise the FSIQ. It is important to consider intra-individual weaknesses when looking at the pattern of cognitive strengths and weaknesses. When choosing a cognitive strength and weakness, best practice is to use a unitary construct. For this reason, it is important to consider the variability of the subtest scores that contribute to the index.

Q: Where is the Spatial Span test located?
A: The Spatial Span subtest is on the WISC-IV Integrated. It is also on the Wechsler Nonverbal Scale of Ability and on the (now revised) Wechsler Memory Scale-Third Edition.

Q: Why do you think he scored a 92 on math problem solving?
A: Although he performed better on the Math Problem Solving than on Numerical Operations, his performance on both subtests was affected adversely by the fact that he did not check his work. He does have the conceptual and procedural knowledge, so it is not clear why he performed better on the problem-solving subtest.

Q: Does the law really read that the PSW has to be in intellectual development? It seems to read that the PSW must be present in achievement or classroom performance.
A: Under the third method of SLD identification, IDEA describes "the child exhibits a pattern of strengths and weaknesses in performance, achievement, or both, relative to age, State-approved grade level standards or intellectual development." The law does not specify what is meant by performance. Based on this description, several researchers described PSW models. One example is the cognitive hypothesis testing model described by Hale and Fiorello (2004).
Q: Is it appropriate to judge that an age-appropriate skill (vocabulary), though considered to be a RELATIVE weakness, can be considered during the SLD determination process?
A: Yes, even gifted students can exhibit an SLD. Also see response to related question above. A relative weakness within an index indicates the index score is not a unitary construct. A unitary construct is important for PSW analysis.

Q: What teaching practices would help working memory?
A: In terms of intervention, we referenced dual encoding and organizational strategies.

Q: The pattern of strengths and weaknesses is used in which states? Do you know?
A: Sorry, I do not.

Q: What Dr. Maccow showed was from the Federal law. However, states/LEAs have interpreted that differently and many states list RTI as their solution.
A: IDEA describes three methods for SLD determination: ability-achievement discrepancy analysis, RtI, and the pattern of strengths and weaknesses. For this analysis, we used the PSW method because the webinar series focuses on the cause of the under-achievement. By definition, PSW analysis will help us to understand why the child is struggling.

Q: Did you use another measure to measure WM?
A: We used the Working Memory Index from the WISC-IV. In addition, we administered the Spatial Span subtest so we could compare auditory and visual working memory.

Q: Since working memory impacts reading and math, why is Steven only struggling in math and average/typical in reading? Would that not relate more to a lack of instruction or appropriate interventions in math?
A: For this webinar, we focused on math performance. I did not discuss the scores for reading and writing. However, on the WIAT-III Composite Score Summary, you will note that the scores for reading and written expression were consistent with the scores for math. All of the scores were in 80s. If we conduct PSW analysis for reading and writing, we note that reading and writing scores are consistent with working memory scores and inconsistent with the WISC-IV Verbal Comprehension Index.

Q: I work with adults and am wondering if you can direct me to any research that looks at a sleep disorder like sleep apnea as affecting working memory?
A: I am not familiar with the research on sleep apnea, but I can refer you to one study that was conducted with children. It describes the relationship between sleep and working memory. [http://www.nctsnet.org/nctsn_assets/Articles/17.pdf](http://www.nctsnet.org/nctsn_assets/Articles/17.pdf)
Q: Are these math questions from the Woodcock-Johnson or WIAT (slide numbers 45-46)?
A: The questions are from the Numerical Operations subtest on the WIAT-III.

Several questions relate to the evaluation of auditory processing:

Q: Would you ask an SLP to assess auditory processing. What measure(s) would they typically use to assess this?
Q: Auditory Processing assessments are almost impossible to obtain. Where are some resources for this assessment?
Q: What would you use to rule out auditory processing problems?
Q: Many in my field recommend avoiding attributing learning difficulties to auditory processing problems when there are clearly learning disabilities and attention difficulties. (My field is speech-language pathology.) Just wondered what theoretical construct you use in thinking about aud. processing and how this might change your intervention ideas.
Q: Just wondered how they would recommend auditory processing be assessed.
A: An audiologist makes the diagnosis of auditory processing disorder. The recommendations from the audiologist can help us identify appropriate classroom interventions and modifications. I am not familiar with many of the measures used by audiologists. Pearson publishes the SCAN-3 which is used to differentiate an auditory processing disorder from auditory attention and auditory comprehension problems. The nine subtests are Filtered Words; Auditory Figure–Ground: 0 dB signal-to-noise ratio; Auditory Figure–Ground: +8 dB signal-to-noise ratio; Auditory Figure–Ground: +12 dB signal-to-noise ratio; Competing Words–Free Recall; Competing Words–Directed Ear; Competing Sentences; Gap Detection; and Time Compressed Sentences.

Q: Would you hypothesize that Steven has ADHD due to working memory problems and possible attentional and inhibitory problems?
A: To answer this question, I would further assess attention. Based on the available data it appears that his ability to focus his attention was average on the Spatial Span subtest. I would want information on his ability to shift attention and on attentional capacity. He struggled to register the information on Digit Span, Letter-Number Sequencing, and Arithmetic. This is likely due to the auditory demands.

Q: What was the final conclusion on the case study presented? i.e., what was the disability identified?
A: Based on the PSW analysis, he would be classified with a Specific Learning Disability in mathematics. If we conduct the analyses for reading and writing, he will qualify in these areas as well.
Q: Does the child have a medical diagnosis? And if so, would you consider Other Health Impairment as an eligibility?
A: At this time, there is no medical diagnosis. A medical diagnosis could result in an educational classification of Other Health Impaired if the medical condition adversely affects academic achievement.

Q: Is it possible to send me the summary of your webinar?
A: We will share a link to the slides and recording in just a few days – watch your email for updates.

If you have further questions, please email

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