

Patterns of Strengths and Weaknesses (PSW) Models for Identifying SLD

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Annual Meeting of the National Association of School Psychologists, Chicago, March 2010

Abstract

Under IDEA 2004, a Pattern of Strengths and Weaknesses (PSW) model may be used in SLD identification. We discuss factors to consider when operationalizing a PSW model, and report a study comparing a PSW model and the ability-achievement discrepancy model applied to a mixed sample (with and without existing SLD classifications). The models agreed on 74% of cases, but showed some differences in the number and characteristics of the students identified.

The following are broad characteristics of several models.

Name of Model:	Consistency-Discrepancy	Concordance-Discordance	Aptitude-Achievement Consistency	Dyslexia	Oral & Written Language LD
Authors:	Naglieri (1999)	Hale & Fiorello (2004)	Flanagan, Ortiz, & Alfonso (2006)	Berninger (2007)	Berninger (2007)
Achievement weakness	---- consistent with related processing weakness < unrelated processing strength < achievement strength	<= 85 consistent with related processing weakness < unrelated cognitive strength	<= 85 consistent with related processing weakness < unrelated cognitive strength	< 100 ---- 15+ points below verbal ability	< 90 ---- ---- < achievement strength
Cognitive/process weakness (related to achievement weakness)	< child's average processing score consistent with achievement weakness	---- consistent with achievement weakness	<= 85 ----	< 90 ----	< 90 ----
Cognitive strength (unrelated to achievement weakness)	any PASS process ---- > unrelated achievement weakness > child's average processing score consistent with achievement strength	verbal ability, perceptual reasoning ---- > unrelated achievement weakness > cognitive/process weakness related to achievement weakness	ability, not process > 85 > unrelated achievement weakness (see EXBA-2 for further criteria)	verbal ability verbal ability >= 90 ---- ---- ----	perceptual reasoning percept reas >= 80 ---- ---- ----

Considerations when Evaluating PSW Models

Measures used to demonstrate “normal” cognitive functioning.

- Some cognitive measures are affected by processing deficits related to SLD, making them inappropriate as criteria for normal cognitive functioning.
- Variability among broad cognitive abilities is common in the population.
- A broad ability/process with a low *g* loading may be the only average or high score in a profile of otherwise low ability scores, but would not be a good indicator of normal cognitive functioning.

Thus, a PSW model cannot require *every* broad cognitive ability measure to be average or above. However, a PSW model tailored to a particular SLD (e.g., Berninger) may specify the broad ability that must be average or above.

Criteria for “normal” cognitive functioning.

- Flanagan/Ortiz/Alfonso, Berninger (Dyslexia): average or above (>85 for Flanagan; VCI >=90 for Berninger)
- Berninger (OWL LD): PRI >= 80
- Hale/Fiorello, Naglieri: no normative criterion; significantly higher than the cognitive-processing weakness that is related to the achievement weakness

How low must the achievement deficit be?

- Flanagan, Hale/Fiorello: low (standard score below 85)
- Berninger: for dyslexia, below the median (<100); for OWL LD, low (<90)
- Naglieri: no numerical criterion

What demonstrates a deficit in a process related to the achievement deficit? (Note that all models require the process to have a research-based theoretical relationship to the achievement deficit.)

- Berninger: normatively low (<90)
- Flanagan/Ortiz/Alfonso: normatively low (<= 85), significantly lower than the cognitive strength, and not significantly higher than the achievement deficit

- Hale/Fiorello, Naglieri: significantly lower than the cognitive strength, and not significantly higher than the achievement deficit

Comment: In practice, the Berninger and Hale/Fiorello criteria are similar, although the former is more stringent; assuming reliabilities of .9 for the achievement and process scores, the process score in the Hale/Fiorello model can be no higher than 94.

Application of a PSW Model to a Sample

Sample

1,036 students aged 6 to 19 who were included in either the 2003 WIAT-II®/WISC-IV® validity study or the 2008 WIAT-III® special-group studies; 24% had a school-designated SLD classification (14% in Reading/Writing, 4% in Reading/Writing/Math, and 6% in Math).

Operational criteria applied in this analysis

- WISC-IV Indexes used as measures of cognitive processing
- Both methods require an achievement standard score ≤ 85 in the area of SLD classification
- .05 significance level used throughout.

AAD (Regression Method)

- Actual achievement significantly lower than FSIQ-predicted achievement.

PSW

- Processing strength: Higher of VCI or PRI
- Processing weakness: Lowest Index score (regardless of clinical classification)
- Processing weakness significantly lower than processing strength (simple difference)
- Achievement weakness significantly lower than processing strength (simple difference)

Results

- Of the entire sample (including 24% with existing SLD classifications), 47% met AAD criteria and 25% met PSW criteria; 23% met both.
- 91% of those meeting PSW criteria also met AAD criteria.
- Total agreement: 74% (vs. 52% expected by chance); Cohen's Kappa = .46 (moderate agreement)

Comparison of Four Subgroups

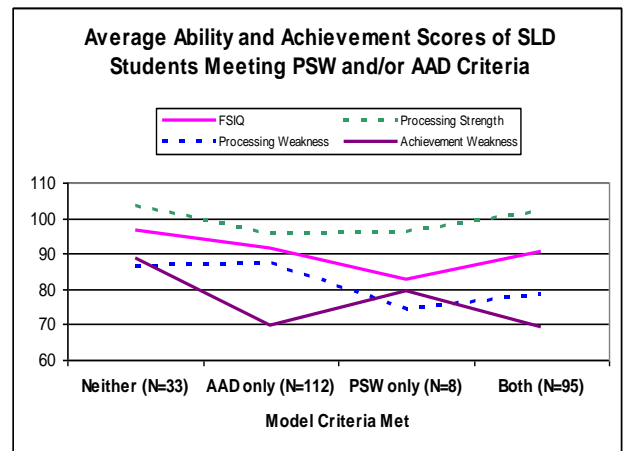
Among the 248 students with an existing SLD classification, there were significant ($p < .05$) differences between the PSW Only, AAD Only, Both, and Neither subgroups in both ability and achievement (see figure below):

- FSIQ was higher in the Neither group than in the PSW Only and Both groups.
- Achievement was higher in the Neither group than in all other groups, and was higher in the PSW Only group than in the AAD Only and Both groups.
- Processing weakness was lower in the PSW Only and Both groups than in the AAD Only and Neither groups.

Study Limitations

In practice, the proportion of students identified by practitioners as having an SLD will vary from the proportions reported here for the following reasons:

- Students are not identified as having an SLD solely based upon score patterns, but following a comprehensive evaluation that incorporates multiple sources of information.
- In this study, the processing strengths and weaknesses were selected without consideration of their theoretical relationships to the achievement weakness.
- It is likely that most of the prior SLD classifications were based on an AAD criterion.



References

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