Patterns of Strengths & Weaknesses Models for Identifying SLD

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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	—	< = 85	< = 85	< 100	< 90
	consistent with related processing weakness	consistent with related processing weakness	consistent with related processing weakness	—	—
	< unrelated processing strength	< unrelated cognitive strenght	< unrelated cognitive strenght	15+ points below verbal ability	—
	< achievement strength	—	—	—	< achievement strength
Cognitive/ process weakness (related to achievement weakness)		—	< = 85	< 90	< 90
	< child's average processing score				
	consistent with achievement weakness	consistent with achievement weakness	—	—	—
Cognitive strength (unrelated to achievement weakness)	any PASS process	verbal ability, perceptual reasoning	ability, not process	verbal ability	perceptual reasoning
	—	—	> 85	verbal ability > = 90	percept reas = 80
	> unrelated achievement weakness	> unrelated achievement weakness	> unrelated achievement weakness	—	—
	> child's average processing score	> cognitive/process weakness related to achievement weakness	(see EXBA-2 for further criteria)	—	—
	consistent with achievement strength	—	—	—	—

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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)

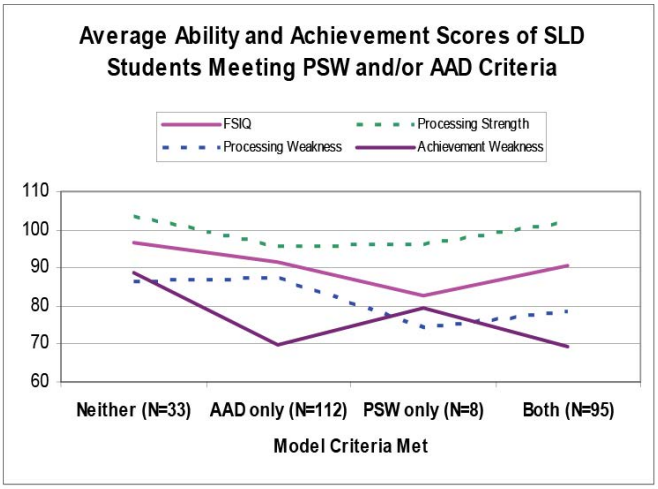
Results

- 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:

- 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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