Specific Learning Disability Identification: What Constitutes a Pattern of Strengths and Weaknesses?

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The 2004 Individuals with Disabilities Education Improvement Act (IDEA) and subsequent regulations published in 2006 have significantly changed the identification process for students suspected of having specific learning disabilities. Rather than using a discrepancy model contrasting intellectual and achievement test results, assessment specialists now incorporate a variety of methods to identify specific learning disabilities, including response-to-intervention, cognitive processing approaches, and the determination of a pattern of strengths and weaknesses. This article proposes a theoretical structure for determining specific learning disabilities using a pattern of strengths and weaknesses. Methods of examining multiple sources of data to demonstrate a pattern of strengths and weaknesses are discussed so that assessment teams can determine if the data converge to indicate a specific learning disability.

The 2004 Indviduals with Disabilities Education Improvement Act (IDEA) and subsequent regulations published in August 2006, have significantly changed the identification process for students suspected of having specific learning disabilities (SLD; Flanagan & Alfonzo, 2011; Mather & Kaufman, 2006; Schultz & Stephens, 2009a). According to the 2006 IDEA regulations (§300.307) concerning SLD, each state must adopt criteria for determining whether a child has a specific learning disability as defined by §300.8 (c)(10), requiring that states

1. Must not require the use of severe discrepancy between intellectual ability and achievement for determining whether a child has a specific learning disability as defined in §300.8 (c)(10);
2. Must permit the use of a process based on the child's response to scientific, research-based intervention; and
3. May permit the use of other alternative research-based procedures for determining whether a child has a specific learning disability as defined in §300.8 (c)(10); (IDEA, 20 U.S.C.§ 1414 (b)(6)(A).

Since these policies have been in effect, many state education agencies have opted to allow the use *alternative research-based procedures* in the context of a Response-to-Intervention (RTI) identification model (Flanagan & Alfonzo, 2011; Schultz & Stephens, 2009a; Zirkel & Thomas, 2010). Several states (e.g., Idaho, Michigan, Oregon, Texas) have allowed third-method approaches by identifying students with SLD by analyzing a pattern of strengths and weaknesses (PSW) (Flanagan, Fiorello, & Ortiz, 2010). Since states have autonomy in SLD identification methodology, the manner by which we identify a student with SLD continues to be a source of much controversy in the field (Fletcher, 2011; Fletcher, Barth, & Stuebing, 2011; Fuchs, Fuchs, & Stecker, 2010; Hale et al., 2010; Kavale, Kauffman, Bachmeier, & Lefever, 2008).

As local education agencies are no longer required to use a discrepancy model when determining SLD eligibility, increased reliance is placed on the knowledge and expertise of assessment teams in the areas of learning acquisition and special education law, in addition to the selection, administration, scoring, and interpretation of multiple forms of assessment. Eligibility criteria are no longer based on a simple score difference; instead, a disability is determined through the analysis of multiple sources of data, and the identification of strengths and weaknesses which impact learning.

The federal regulations state that eligibility decisions must be made using *a variety of assessment tools and strategies,* while states determine the types of necessary data to determine SLD. Very little guidance is provided on how to best analyze and interpret the data to make educationally and legally sounds decisions. The purpose of this paper is to (a) discuss the third method of patterns of strengths and weaknesses (PSW) approaches, (b) describe organization and data collection using a PSW approach, and (c) explain how to interpret data using sound data analysis principles.

Operational Definition of Patterns of Strengths and Weaknesses

A pattern is defined as *a combination of qualities, acts, tendencies, etc., forming a consistent or characteristic arrangement* (Random House, 2011). When determining SLD, a PSW approach is characterized by the following features: (a) multiple sources of data collected over a period of time using a variety of assessment tools and strategies, (b) data analyses which are grounded in the techniques of pattern seeking

(McMillan & Schumacher, 2010), (c) predictive and treatment validity, and (d) the use of logical and empirical evidence to guide decisions making. Establishing a pattern of strengths and weaknesses can be used in some states as the sole method of identifying learning disabilities, and in other states it is used in conjunction with other methods. This technique as currently used in many schools is described in the next sections. Although there are varied methods of implementation, the essential steps in the process include (a) the identifying an academic need in one of the seven areas found in federal guidelines for SLD, (b) determining if there is an area or areas of cognitive weakness that have a research-based link to problems in the identified academic area, (c) establishing whether there are other cognitive areas which are average or above, and (d) analyzing these findings for a pattern that will rule out or confirm the presence of SLD. Within this framework, multiple data sources are used.

Third Methods Approaches

Traditional models (i.e., prior to 2004) of SLD identification were characterized with an overreliance on quantitative data collection (i.e., discrepancy model) and a pre-referral process which lacked the rigor of response to intervention (RTI). Contemporary models of SLD identification require the examiner to follow more stringently the procedures outlined in the federal regulations (§300.304; i.e., a variety of assessment tools and strategies). These regulations, along with the RTI language referring to data collected *prior to and as part of the evaluation* to consider eligibility, have shifted the full and individual evaluation (FIE) from relying on data collected during relatively brief assessment periods to a more dynamic approach in which pre-referral data (e.g., RTI data, classroom performance, archival records) are collected over an extended period of time. This has resulted in an integrated approach which combines the benefits of RTI with the specificity of an individualized comprehensive assessment addressing cognitive factors impacting learning (Fiorello, Hale, & Snyder, 2006; Flanagan, Ortiz, Alfonso, & Dynega, 2006; Wodrich, Spencer, & Daley, 2006).

Integrating Response to Intervention and Cognitive Processing Approaches

Response-to-intervention

As RTI continues to evolve, considerable debate persists in the field concerning its nature and purpose (Fletcher, 2011; Fuchs, Fuchs, & Stecker, 2010; Hale et al., 2010; Kavale, et al., 2008). The statutory language of RTI contained in the 2006 IDEA regulating comments provides the legal backdrop concerning the role of RTI and SLD identification. The Analysis of Comments and Changes contained in the final IDEA part B regulations states the following:

> *An RTI process does not replace the need for a comprehensive evaluation. A public agency must use a variety of data gathering tools and strategies even if an RTI process is used. The results of an RTI process may be one component of the information reviewed as part of the evaluation procedures required under §§300.304 and 300.305. As required in §300.304 (b), consistent with section 614(b)(2) of the Act, an evaluation must include a variety of assessment tools and strategies and cannot rely on any single procedure as the sole criterion for determining eligibility for special education and related services* (p. 6648).

While these comments stipulate that an evaluation must include a variety of assessment tools and strategies (§300.309), they do not require assessment of intellectual development or direct measures of psychological processes. When RTI is used as a diagnostic method without consideration of cognitive factors one major criticism is that the operational definition of SLD is fundamentally changed (Flanagan et al., 2006; Kavale, 2005; Kavale et al., 2008). Hale, Kaufman, Naglieri, and Kavale (2006) noted that *RTI identifies students at risk for continued learning failure, but RTI alone cannot address the "definition" of SLD. SLD is a deficit in some (but not all) of the basic psychological processes that interfere with academic achievement* (p. 757).

Questions of using RTI as a diagnostic model to identify SLD are not limited to definitional issues. Other concerns include the technical adequacy of RTI practices (Baer et al. 2006; Barnett et al., 2006; McKenzie 2009), the emphasis on reading (Kavale 2005; Shinn, 2007), implementation of RTI in secondary schools (Fuchs, Fuchs, & Compton, 2010; Vaughn & Fletcher, 2010), fidelity and generalizability of RTI (Shinn, 2007), and the professional role ambiguity of implementation (Mellard, Deschler, & Barth, 2004; Kavale et al., 2008). These questions and others should be researched in order for RTI to become the primary methodology for SLD identification. This does not discount the value of RTI as an effective model (e.g., multi-tiers) and a necessary and vital component of determining areas of academic weakness and treatment response (Hale et al., 2010; Fletcher, 2011).

For RTI to be an effective process that goes beyond simple pre-referral, it needs to include a number of components. These included tiered levels of intervention, universal screening, progress monitoring, and data-based decision making (National Center on Response to Intervention, 2012). However, the assessment team needs to ensure that the tiered interventions were implemented with fidelity, that the progress monitoring data are accurate, and that the next step should be evaluation for a suspected learning disability. There are a number of ways to increase the probability that these assurances actually do occur. If there is an intervention specialist

on the campus that is involved in the RTI process, then that individual can help to train teachers in how to implement the tiered interventions and how to collect progress monitoring data. Additionally this individual can make focused observations in the classroom to see if the intervention is being implemented as intended. Schools do not always have such a specialist, but many states do require a classroom observation of the child before making the diagnosis of SLD. This observer may be the assessment specialist or the special education teacher with training in SLD. Rather than simply completing the district checklist, the observer needs to examine classroom instruction for evidence of treatment integrity.

Cognitive Processing Approaches.

Since the federal definition of a learning disability involves *a disorder in one or more of the basic psychological processes* (34 CFR § 300.8) and many states use processing approaches for diagnosing SLD, cognitive processing is an important area to address. In their meta-analysis of research on cognitive processing deficits and learning disabilities, Johnson, Humphrey, Mellard, Woods, and Swanson (2010) found moderate to large differences in effect sizes for the presence of cognitive processing deficits in students with learning disabilities. As a result, these researchers recommended that evaluations for suspected learning disabilities include assessment of cognitive processing abilities. Because of their findings, evaluation teams can be more confident in the predictive utility of their evaluations when they include assessment of processing abilities. Research has also demonstrated that interventions for reading are more effective when information on processing abilities is considered for developing interventions (Frijters el al., 2011).

The processing deficit approach to assessment includes these measures of specific psychological processes that interfere with a student's ability to perform academically (Flanagan et al., 2006; Kavale, 2005). This approach also establishes links between weaknesses in cognitive processing and academic achievement (Fiorello & Primerano, 2005; Flanagan et al., 2006). For example, deficits in fluid intelligence (Gf) and the links to math achievement have been cited both logically and empirically (Floyd, Evans, & McGrew, 2003) as well as links between auditory processing (Ga) and reading achievement (Anthony & Francis, 2005; Evans, Floyd, McGrew & Leforgee, 2002; Fiorello et al., 2006; Volker, Lopata, & Cook-Cottone, 2006).

Pattern of Strengths and Weakness

Methods integrating RTI and cognitive processing assessment to identify SLD have been gaining momentum in recent years as experts grapple with finding the best way to identify SLD (Flanagan, et al., 2006; Fiorello et al., 2006; Hale, Wyckoff, & Fiorello, 2011; Wodrich, et al., 2006). According to IDEA, determination of SLD can occur if

> *The child does not make sufficient progress to meet age or State-approved grade-level standards in one or more of the areas identified in 34 CFR 300.309(a)(1) when using a process based on the child's response to scientific, research-based intervention; or 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, that is determined by the group to be relevant to the identification of a specific learning disability, using appropriate assessments, consistent with 34 CFR 300.304 and 300.305*. (CFR 300.309 (a)(2)(ii), p. 46786).

Since *RTI only* approaches have not been reliably established as an effective SLD methodology, a combined approach integrating RTI with PSW has emerged in both policy and practice in several states (Schultz & Stephens, 2009b; Zirkel & Thomas, 2010). As many states transition to a PSW approach, contemporary practice is guided by several existing models. These models meet the operational definition of a PSW used in this article. In the case of SLD identification, patterns of strengths and weaknesses need to have predictive utility and the data collected must converge to address the following: (a) an individual's present educational performance, (b) an individual's future learning, and (c) educational need and special education eligibity. Three third method approaches are briefly described which illustrate common conceptualizations of identifying SLD using a PSW.

This cognitive hypothesis testing (CHT) approach (see Hale & Fiorello, 2004 for a complete discussion) is characterized by directly assessing the cognitive processes which have been empirically linked to academic achievement along with an examination of ecological factors and treatment validity (Fiorello et al., 2006). This assessment approach is embedded in a consultation-based problem solving process. Inherent in this approach are the critical role of RTI data collected, a thorough description of the presenting problem, and a review of the educational history to develop an initial theory about the student. If a cognitive processing problem is suspected, then this and related areas are assessed. Tests are selected based on the research-based association with the academic problem (for a complete discussion see McGrew and Wendling, 2010). For example, if the student exhibits difficulties in reading comprehension, then the cognitive processes associated with reading comprehension are evaluated. These processes include working memory, processing speed (specifically perceptual speed), long-term storage and retrieval (specifically rapid automatic naming), and auditory processing (specifically phonemic awareness). There are a number of standardized tests that address these areas such as the Woodcock-Johnson Tests of Cognitive Ability-III (Woodcock, McGrew, & Mather 2001), the

Kaufman Assessment Battery for Children-II (Kaufman, & Kaufman, 2004) and the Differential Ability Scales-II (Elliot, 2006). Crystallized knowledge is another area that should be assessed when problems are present in reading comprehension.

Hypotheses are then developed about the student's cognitive strengths and weaknesses and are then analyzed in the context of test results and environmental data. These assessment data are then used for a targeted intervention phase which makes this approach not only useful for identification, but also for treatment and remediation. For example, if a student has difficulty with reading comprehension and working memory, then the team can develop a plan that helps the child to improve working memory as well as reading comprehension (Dehn, 2008).

Decisions made with the CHT approach rely on data collected over time which are used logically to cross-analyze the assessment information. Results of formal cognitive testing are analyzed in the context of other sources of informal data including record review/history, systematic observations, behavior ratings, and parent/teacher interviews. These data can then be used to establish a concordance between specific weaknesses and presenting the academic concern, and discordance between areas of strengths and weaknesses. This methodology also addresses the treatment selection as assessment and intervention are logically and empirically interwoven (Fiorello et al., 2006; Hale, et al., 2011).

The Discrepancy/Consistency Approach (Naglieri, 1999) examines individual strengths and weaknesses through the theoretical lens of the PASS theory of intelligence. This method addresses four processes: planning, attention, simultaneous processing, and successive processes, along with specific academic achievement measures to create a profile of an individual's cognitive/academic strengths and cognitive academic weaknesses (Hale et al., 2006; Kroesbergen, Van Luit, & Naglieri, 2003). This planning process involved in PASS theory includes controlling, organizing, and monitoring behavior, while the attention process involves maintaining arousal and alertness while focusing on relevant stimuli. Simultaneous processing occurs when integrating multiple stimuli into a whole and processing them; successive processing is engaged when organizing individual items sequentially and processing them. The relationship between processing and achievement strengths, processing weaknesses, and academic weaknesses are systematically examined to identify discrepancies and consistencies between scores and are then used to identify SLD and link to instructional interventions (Naglieri, 2011).

This approach, like the CHT approach, links cognitive processing deficits with academic difficulties. Similarly, the Ability-Achievement Consistency model proposed byFlanagan, Ortiz and Alfonso (2007), examines cognitive processing strengths and weaknesses through using the Cattel-Horn-Carroll (CHC) theory of intelligence to create a profile in which logical and empirical links can be made between a cognitive weakness and academic weakness. This model, like the CHT approach, integrates multiple sources of data collected through the RTI process over time to identify a PSW consistent with SLD (Flanagan, Alfonso, & Mascolo, 2011).

In the Ability-Achievement Consistency model the evaluation team examines the referral problem, background information, information from parents and teachers, and observational data before assessing using standardized tests. To determine the presence of a SLD, the student is evaluated in the areas of suspected academic need, as well as in seven of the broad areas of cognitive ability in the CHC model. These areas include auditory processing, visual processing, short-term memory, long-term retrieval, crystallized knowledge/comprehension, fluid reasoning, and processing speed. When the student demonstrates an academic deficit that meets the criteria for a SLD, then there is a concurrent weakness in at least one of the cognitive areas that has a research-based link with the corresponding academic area. Likewise, there will be cognitive areas that are relatively intact if the child demonstrates a pattern of strengths and weaknesses that constitute a SLD.

All contemporary SLD identification approaches require the assessment of exclusionary factors and an exploration of alternative explanations (e.g., attention disorders, motivation, behavior, etc.) to understand the learner and differentially diagnose. With a significant rate of comorbidity of attention disorders and learning disabilities (Jakobson & Kikas, 2007; Raggi & Chronis, 2006), assessment teams should determine to what degree attention difficulties interfere with learning and if clinically significant attention problems are suspected then assessment by a physician will be desired. Comorbidity of learning disabilities and emotional and/or behavioral disorder frequently occur (Billingsley, Scheuermann, & Webber, 2009; Forness, 2005), having diagnostic and educational implications. Since a major feature of a PSW approach is the use multiple sources of data collected over a period of time, a more thorough analysis of these factors can take place to improve diagnostic precision and improve educational outcomes.

State Conceptualizations

Some state educational agencies (e.g., Texas, Idaho) have conceptualized a PSW in both policy and practice which contains the features previously described. Although most states allow the use of PSW (Schultz & Stephens, 2009a; Zirkel & Thomas, 2010), states do not have a consistent description of what constitutes a PSW. Texas regulations (2011) allow RTI as part of the pre-referral process and as part of the SLD evaluation. In addition to RTI, Texas allows agencies to iden-

tify a pattern of strengths and weaknesses and examine specific areas of cognitive processing and link them to areas of achievement as a method of SLD identification. Similar to Texas, Idaho links RTI with the assessment of cognitive processing and a thorough examination of exclusionary factors. Unlike Texas, where the statutory language implies a choice between RTI and PSW, Idaho's special education policy manual requires both RTI and PSW to be used as part of the full individual evaluation. Idaho requires the following information to be included in this evaluation:

> *Evidence of a pattern of strengths and weaknesses in psychological processing skills that impact learning. An assessment of psychological processing skills is linked to the failure to achieve adequately in the academic area(s) of suspected disability and must rely on standardized assessments. These assessments must be conducted by a professional who is qualified to administer and interpret the assessment results. The student's performance on a psychological processing assessment demonstrates a pattern of strengths and weaknesses that help explain why and how the student's learning difficulties occur. Such tests may include measures of memory, phonological skills, processing speed as well as other measures which explicitly test psychological processing* (Idaho Special Education Manual. p56c).

Data Analysis

The similarities between accepted educational research practices and conducting an evaluation are numerous. This evaluation has properties common to both a single-case study and a mixed-method design involving concurrent triangulation and subsequent data collection. McMillan and Schumacher (2010) define this type of design as *…a concurrent triangulation design in which the researcher simultaneously gathers both quantitative and qualitative data analysis methods, and then interprets the results together to provide a better understanding of a phenomenon of interest* (p. 403). This approach implements an integrative data analysis (IDA) (See Curran & Hussong, 2009 for a complete discussion). This type of analysis is defined as *the analysis of multiple data sets that have been pooled into one* (p. 81).

In practice, assessment teams must be confident that the data collectively identify a pattern consistent with the definition of SLD. The validity of a PSW approach is increased when the decisions concerning eligibility, instructional implications, and learner profiles are based on data that have been carefully examined in a way that logical and consistent. Each data source has its unique value and should converge to strengthen decisions (Curran & Hussong, 2009; McMillan & Schumacher, 2010). Conflicting data need to be reconciled within an explanatory framework (Gall, Gall, & Borg, 2005). Sound decisions cannot be made with incomplete or conflicting data that cannot be explained. If the answer does not lie in the data, additional sources of information must be investigated. Professional, (i.e., clinical judgment) is critical in this problem solving method (Schultz & Stephens, 2009b) to make the most appropriate eligibility recommendation through the integrative data analysis. The following techniques of pattern seeking (McMillan & Schumacher, 2010) will be described: Chain of evidence, pattern seeking, triangulation, and cross-analysis.

Chain of Evidence

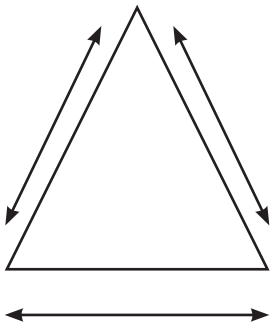
The first link in the chain includes examination of informal assessment data such as attendance records, home language survey, developmental history, school health files, previous test scores, grades and grade history, and records from previous schools, since these sources often provide a wealth of data that are relevant to the referral concern (Salvia, Ysseldyke, & Bolt, 2010). Other informal sources include classroom observations, writing portfolios, classroom work samples, and parent and teacher interviews which often take place informally. Understanding how the teacher and parent view the problem is critical since these individuals know the child best and spend the most time with him or her on a daily basis.

The next link in the chain involves examining the results of non-standardized testing, which holds key information on the student's academic functioning. Most school records provide a plethora of data: results of benchmark testing on grade-level curriculum, curriculum-based testing from end-of-unit tests, progress monitoring data from curriculum-based measures for RTI, classroom running records, reading miscue analyses, and criterion-referenced tests. Criterion-referenced tests provide information on the skills that the child has mastered as well as those where the teacher needs to target instruction. Finally, the chain of evidence for the child's academic problem is joined with the final link of the chain, the results of the formal evaluation.

In summary, the chain of evidence used to analyze a PSW in learners suspected of having a SLD as needs to include all three of the links: archival and extant data, observations, teacher and parent information; information derived from informal assessment such as progress monitoring data and benchmark testing; and results of standardized testing (i.e., cognitive processing) in all areas of suspected disability. Here we look for triangulation of evidence: is the description of the hypothesized academic problem supported by all three levels of evidence? When evaluation teams consider all three levels in students suspected of SLD, they are able to form a more complete picture of the academic problem and then determine more effective intervention strategies (Frijters, et al., 2011).

Figure 1

Interviews, Observations, Extant Information: school health records, previous test scores, grades, developmental history, home language survey



Informal Assessment:
benchmark testing, progress monitoring, curriculum-based measures, running records, work samples, criterion-referenced-tests

Formal Assessment:
Reading Comprehension, Reading Fluency, Basic Reading Skills, Math, Written Expression, Oral Expression, Listening Comprehension, Cognitive Processing

Figure 1 provides a graphic representation of the triangulation process.

Techniques for Pattern Seeking

The method of pattern seeking described in this article is an adaption of a process outlined by McMillan and Schumaker (2010) and is based on mixed-methods research data analysis (see Johnson & Onwuegbuzi, 2004 for a full description). The first step in the pattern matching process is to examine the trustworthiness of the data. For each piece of datum, how much confidence do you as a professional have in it, based on its source and the process involved in obtaining it? For example, were the data for progress monitoring collected with reliability? Was the intervention implemented with fidelity? Did the child exert a good effort during the standardized cognitive and academic testing, or did the student become tired as testing progressed? If there are pieces of data or specific subtests that are not representative of the student's ability, then this information needs to be supplemented so that valid information can be analyzed.

The next step in the process of pattern analysis is triangulation (Leech & Onwuegbuzie, 2007; McMillan and Schumacher, 2010). As stated earlier, triangulation involves the use of multiple methods to determine answers to the hypothesis. When only one method is used to examine a learning problem, the diagnosis could well be incorrect and there is no way of determining this until much later. If assessment teams use only two methods of evaluation, the results may not be consistent; when the third method is added, we expect that two of the three will result in similar answers. When all three answers differ, then we can reject our current hypothesis and re-examine our data to develop a different hypothesis for the academic problem.

The third step in the pattern seeking process is to examine the exclusionary factors that must be ruled out when determining the presence of a learning disability. When determining a disability, we must consider whether or not the academic weakness is due to lack of the English language, lack of educational opportunity, or a different cultural lifestyle. Typically, this information will be derived from school records, the home language survey, and information provided by the parent and teacher. However, this is a recursive process (Sotelo-Dynega, Flanagan, & Alfonso, 2011) and evaluation specialists need to consider these issues at multiple points as they go through the evaluation process. Additionally, there are specific considerations that must be ruled out when determining SLD: a visual, hearing, or motor disability, intellectual disability, or emotional disturbance. The child should have a recent vision and hearing screening, and the IQ or other measure of General Intellectual Ability should be in the normal range to rule out intellectual disability. Additionally, there should be observational data and information from school health records to rule out motor factors as the cause of the academic deficit. For example, if the child has a severe fine motor problem, it can interfere with classroom performance, grades, and some academic test scores. If team members observe this problem during testing, it can be examined and considered along with information from the teacher, classroom observations, and the scores from tests involving fine motor skills.

After testing and observations are completed and extant information is gathered, evaluation personnel will need to analyze the data for a pattern of strengths and weaknesses to determine the presence of SLD (Flanagan, et al., 2010). Here evaluation personnel examine each piece of information and determine if it is a strength, weakness, or neither a strength or weakness. Figure 2 provides criteria to consider when judging scores, observations, interviews, and other data to determine if each is strength, weakness, or neither. These criteria are based on standard deviation units as recommended by Flanagan, et al., 2007. After making these judgments, the individual conducting the analysis circles the appropriate box so that the pattern, if any, can be seen. Strengths and weaknesses can then be recorded at the bottom of the sheet. Each piece of information is then ordered: strength, neither a strength or weakness, or weakness. After ordering and sorting data, assessment personnel can then graph the results. Figure 3 offers assessment personnel a worksheet to assist in analyzing a pat-

Figure 2

Suggested Guidelines for Determining Strengths and Weakness

Assessment Type	Strength	Weakness
Progress monitoring	Meeting / exceeding aimline	Falling below aimline for at least 3 consecutive weeks on most recent tests.
CBM (Benchmark) screening	At 'benchmark' level or above grade-level median score if using local norms.	At 'at-risk' level or below 10%ile if using local norms.
Criterion-referenced assessment	Percentile rank ≥ 84	Percentile rank ≤16
Accountability assessments	By Objectives	By Objective
Norm-referenced tests **(Achievement, IQ)**	Percentile rank ≥ 84 Standard Score≥ 115	Percentile rank ≤ 16 Standard Score ≤ 85
Curriculum assessments	Scores ≥ 80%	Scores ≤ 70%
Grades	A / B or 'meets / exceeds' expectations	D / F or 'does not meet' expectations
Teacher report	Based upon professional judgment of teacher in comparing student to others in classroom.	Based upon professional judgment of teacher in comparing student to others in classroom.
Observations – Academic	Student demonstrates average understanding of academic content in comparison to other students in classroom.	Student demonstrates that s/he does not understand the academic content.
Observations/Interviews/Scales - Functional	Student demonstrates typical functional skills in comparison to other students the same age or in the same grade	Most of the student's functional skills appear to be well below average in comparison to other students the same age or in the same grade.
Cumulative Records Review	Documentation of history typical/strengths in specific academic areas	Documentation of failing/weakness in specific academic areas

tern of strengths and weaknesses. This process of sorting, ordering, and creating a visual representation represents sound data analysis principles (Johnson & Onwuegbuzie, 2007; McMillian & Shumacher, 2010)

The final step in the process is to conduct a logical cross analysis (McMillan and Schumacher, 2010; Onwuegbuzie & Leech, 2006) of the pattern of strengths and weaknesses based on visual inspection of the graphed data. Some questions for assessment personnel to consider at this point include the following: (1) Do academic weaknesses in the referral correlate with the reports, observations, extant data, academic test results, and cognitive testing? (2) Is there a research-based connection between the areas of academic weaknesses and the pattern of strengths and weaknesses derived from cognitive assessment? (3) Are there data that are discrepant that contradict one another and would provide a different explanation of the academic weakness other than SLD? and (4) Does additional information need to be examined? If there is a need for additional information to explain discrepant data, assessment teams may not necessarily need to conduct more testing. They may want to have additional conversations with teachers, re-examine work samples, or scrutinize health or atten-

Figure 3

Pattern Analysis Worksheet

Pattern of Strengths and Weaknesses

Source of Data	***Weakness***	***Normative Neither a Strength or Weakness***	***Strength***
Standard Score	**SS<85 <16%ile**	**SS 85-115 16-84%ile**	**SS>115 >84%ile**
Progress monitoring/ CBM			
Accountability assessments			
In-class tests on grade level curriculum			
Grade Average			
Teacher reports			
Criterion-referenced assessments			
Current work Samples			
Classroom observation			
Achievement Testing: Area of Concern 1			
Achievement Testing: Area of Concern 1			
Achievement Testing: Area of Concern 1			
Listening Comprehension (for RDG & Wr. Exp.)			
Oral Expression (for RDG & Wr. Exp.)			
Crystallized Knowledge (Gc)			
Auditory processing G*a*			
Long-term Retrieval G*lr*			
Short-Term memory G*sm*			
Processing Speed G*s*			
Fluid Reasoning G*f*			
Visual Spatial G*v*			
General Intellectual Ability (IQ)			
Other Data Sources			

dance records more closely. Additionally, examination of the exclusionary factors is recursive in nature (Flanagan, et al., 2007), so these areas need to be considered as well. If the data indeed do confirm a pattern of strengths and weaknesses, we can be more confident in our diagnosis. However, this determination is not made simply be examining test scores. With the process presented in this article, we also conduct a more comprehensive analysis through judging of the trustworthiness of our data, triangulation of data, examination and re-examination of exclusionary factors, categorizing data, visual inspection of graphed data, and logical cross-examination of the information that we have obtained in the evaluation (Johnson & Onwuegbuzie, 2004 ; McMillian & Schumacher, 2010; Onwuegbuzie & Leech, 2006).

Implications for Practice

Although the IEP Committee establishes the presence of a learning disability, this action is based on the recommendations and report from the assessment specialist. This article has described a process that assessment teams can use to integrate multiple sources and methods to develop a more complete picture of the student and the academic problem. When the assessment specialist and the IEP Committee consider teacher and parent information, extant records, RTI data, formal and informal testing, grades, and work samples, they can be more assured their determination of a SLD. Furthermore, the process proposed in this article in which the evaluation occurs over time will assist assessment teams to assess exclusionary factors more thoroughly and explore alternative explanations for student's academic struggles (e.g., attention disorders, motivation, etc.). Assessment teams can follow the process that we have described here to establish a pattern of strengths and weaknesses while considering other sources of data so that they can make accurate recommendations in their reports to the IEP Committee, since these recommendations and deliberations will impact students throughout their school career.

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