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ENHANCING PRACTICE THROUGH APPLICATION OF CATTELL–HORN–CARROLL THEORY AND RESEARCH: A “THIRD METHOD” APPROACH TO SPECIFIC LEARNING DISABILITY IDENTIFICATION

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This article demonstrates how the broad and narrow abilities and processes that comprise Cattell – Horn – Carroll (CHC) theory and their relations to specific academic outcomes have begun to transform our current understanding of the definition of and methods for indentifying specific learning disability (SLD), particularly in the school setting. The manner in which CHC theory has been used to guide evaluation of the academic and cognitive capabilities of students who are suspected of having SLD is described. Current psychometric methods for identifying SLD that have a foundation in CHC theory are highlighted. These newer methods are based on what is known as the “third method,” a provision for SLD identification included in the federal regulations (34 CFR 300.540-543) accompanying the Individuals with Disabilities Education Improvement Act that permits the use of alternative, research-based approaches. A method based on an integration of existing third-method approaches, called the *Hypothesis-Testing CHC Approach* (HT-CHC), was proposed. The HT-CHC method is expected to be carried out within the context of a Response to Intervention (RTI) service delivery model. Benefits of this approach over ability – achievement discrepancy and RTI-only methods and future directions in SLD identification research are discussed.

One of the areas in which the Cattell – Horn – Carroll (CHC) theory holds significant promise for creating positive changes in school psychology lies in the identification of specific learning disability (SLD). Application of CHC theory and its expansive research base has led to improvements in both measurement (e.g., Woodcock, McGrew, & Mather, 2001a) and interpretation of students’ cognitive and academic strengths and weaknesses in specific ability domains (Flanagan, Ortiz, & Alfonso, 2007; Hale & Fiorello, 2004). Furthermore, when interpretations are guided by CHC research, the unique constellation of cognitive and academic abilities of students who demonstrate intractability in the learning process may provide insights into (a) why certain methods of instruction or intervention were not effective; (b) what interventions, compensatory strategies, and accommodations might be more effective; and (c) the most promising means of delivering instruction and implementing intervention (Kavale, Kauffman, Bachmeier, & LeFever, 2008; Schrank 2006; Semrud-Clikeman, 2005; Wendling & Mather, 2009; Wendling, Schrank & Schmitt, 2007). The information about individual differences that may be gleaned from the unique learning needs and CHC cognitive and academic abilities of students who struggle to learn and achieve at grade level may also assist in differentiating SLD from other conditions in children, such as learning more slowly than typically achieving peers (Kavale et al., 2008). Overall, in light of the network of validity evidence in support of CHC theory (Carroll, 1993; Horn & Blankson, 2005; McGrew, 2005), methods of SLD identification that are based, at least in part, on this theory (e.g.,Flanagan, Ortiz, Alfonso, & Mascolo, 2002, 2006;

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Hale & Fiorello, 2004; Kavale & Flanagan, 2007) carry the potential for increased agreement about the validity of SLD classification (Kavale, Holdnack, & Mostert, 2005).

The major components of CHC theory have been described in detail in other articles in this special issue (e.g., Newton & McGrew, 2010) and will not be repeated here. It is our contention that CHC theory may be used as a guide in the SLD identification process for four main reasons. First, CHC theory is based on a more thorough network of validity evidence than are other contemporary multidimensional ability models of intelligence (Carroll, 1993; McGrew, 2009; Messick, 1992). The strength of CHC theory over other theories of cognitive functioning is that it was arrived at “by synthesizing hundreds of factor analyses conducted over decades by independent researchers using many different collections of tests. Never before has a psychometric ability model been so firmly grounded in data” (Daniel, 1997, pp 1042–1043; see also Carroll, 1993).

Second, nearly all major intelligence batteries are either explicitly or implicitly based on CHC theory—the very tests that are deemed by many to be necessary in the process of identifying SLD (see Flanagan & Alfonso, in press). For example, the technical or administration manuals for the Woodcock–Johnson III Tests of Cognitive Ability (WJ III; Woodcock, McGrew & Mather, 2001a), the Stanford–Binet Intelligence Scales, Fifth Edition (SB5; Roid, 2003), the Kaufman Assessment Battery for Children, Second Edition (KABC-II; Kaufman & Kaufman, 2004), and the Differential Ability Scales, Second Edition (DAS-II; Elliot, 2006) all make specific reference to design predicated on CHC theory. The Wechsler Intelligence Scale for Children, Fourth Edition (WISC-IV; Wechsler, 2003) does not specifically mention CHC theory as the basis for its current design; however, the parallels to CHC structure and the overlap in nomenclature are evident (Flanagan & Kaufman, 2009).

Third, many test authors and publishers have classified their intelligence tests according to CHC theory. That is, they have specified what composites measure which CHC broad abilities (e.g., Fluid Reasoning, Crystallized Knowledge) and what subtests measure which CHC narrow abilities (e.g., Induction, General Sequential Reasoning, Lexical Knowledge) (e.g., Kaufman & Kaufman, 2004; Roid, 2003; Woodcock et al., 2001a,b). These CHC ability classifications of intelligence tests were derived from a variety of studies, ranging from confirmatory factor analyses to concurrent and predictive validity investigations. Additionally, hundreds of individual subtests of cognitive ability, cognitive processing, and academic achievement have been classified via content validity or expert consensus studies according to CHC theory (e.g., Flanagan et al., 2006b, 2007). Together, these CHC classifications provide a blueprint for test organization, interpretation, and development as well as continued substantive, structural, and external construct validation research, which is needed to bolster the construct validity evidence for cognitive ability tests, in general (Benson, 1998, Cronbach, 1989), and methods of assessment (e.g., flexible battery assessment),[i] in particular.

Fourth, there is a growing body of research on the relations between CHC cognitive abilities and processes and academic outcomes. These relationships have been examined within the context of CHC theory (see McGrew & Wendling, 2010) as well as information-processing theories (Dehn, 2006; Hale & Fiorello, 2004; Miller, 2007).[ii] Additionally, more than 100 studies that have been

[i] Flexible battery assessment refers to a set of tests chosen for an individual, rather than a standard set of tests (fixed battery). Flexible battery assessment is often preferred to fixed battery assessment because it is typically more time and cost effective (Bornstein, 1990).

[ii] Neuropsychological processing domains may differ from the individual difference variables identified through the factor analytic research that led to CHC theory, as they are composite or complex abilities that combine multiple elementary cognitive abilities. Examples that are important to consider include executive functions, attention, and perceptual-motor integration. Supplemental tests like the NEPSY-II, Process Assessment of the Learner, Second Edition (PAL-II), WISC-IV Integrated, Cognitive Assessment System (CAS), Bender-Gestalt II, Beery Test of Visual-Motor Integration, and the like can provide information about more complex neuropsychological processing.

published in the past 25 years on the relations between ability and achievement have been interpreted within the context of CHC theory (see Flanagan et al., 2006). Knowledge of these relationships assists practitioners in understanding what cognitive abilities and processes may be deficient in a student with specific academic difficulties and, therefore, interfering with the learning process. Such knowledge allows practitioners to more carefully select tests that measure specific cognitive abilities and processes that are related to the academic skill area(s) in question and test hypotheses about whether a student's functioning in that area(s) is within normal limits or not, for example. Although there have been countless arguments both for and against the utility of this type of information (e.g., knowledge of specific CHC cognitive strengths and weaknesses) for identification and treatment of SLD, there is currently no evidence to demonstrate that current cognitive tests are ineffective for either purpose. The interested reader is referred to Flanagan, Kaufman, Kaufman, and Lichtenberger (2008) for a thorough analysis and synthesis of the many controversies that currently surround SLD identification, including the use of cognitive tests for this purpose.

The primary purpose of this article is to demonstrate how the broad and narrow abilities and processes that comprise CHC theory and their relations to specific academic outcomes have begun to transform our current understanding of the definition of and methods for indentifying SLD, particularly in the school setting. Furthermore, this article will discuss the manner in which CHC theory has been used to guide evaluation of the academic and cognitive capabilities of students who are suspected of having SLD. Current psychometric methods for identifying SLD that have a foundation in CHC theory will be highlighted. These newer methods are based largely on what is known as the "third option" or "third method," a provision for SLD identification included in the federal regulations (34 CFR 300.540-543) accompanying the Individuals with Disabilities Education Improvement Act (IDEIA, 2004), which permits the use of alternative, research-based approaches in lieu of (or in addition to) the Response to Intervention (RTI) and traditional ability–achievement discrepancy methods. Finally, this article proposes a framework for SLD identification that is based on an integration of the current third-method approaches of Flanagan, Fiorello, and their colleagues.

Third-Method Approaches to SLD Identification

Whereas the traditional ability–achievement discrepancy approach has been found to be invalid as the sole indicator or criterion for SLD identification (e.g., Aaron, 1997; Ysseldyke, 2005), and whereas RTI has yet to be established as a valid means of SLD identification (e.g., Fletcher-Janzen & Reynolds, 2008; Fuchs & Deschler, 2007; Fuchs, Mock, Morgan, & Young, 2003; Kavale & Flanagan, 2007; Kavale et al., 2008; Reynolds & Shawitz, 2009; Speece & Walker, 2007), little is actually known in the field of school psychology about alternative research-based approaches or the third method (Hale et al., 2008b). The relatively broad and ambiguous wording in the provision of the third method has not helped with its comprehensibility (Lichtenstein & Klotz, 2007). Nevertheless, third-method approaches do exist. In fact, a few of these methods have been presented and refined over the past several years (Flanagan, Ortiz, Alfonso, & Dynda, 2006; Flanagan et al., 2002, 2006a; Hale & Fiorello, 2004; Kavale & Flanagan, 2007; Kavale & Forness, 2000; Kavale et al., 2008; Naglieri, 1999). These approaches are firmly grounded in theory and are examples of the manner in which the practice of SLD identification has changed in recent years.

Perhaps the first alternative research-based (or third-method) approach to surface was the "Discrepancy/Consistency" model described by Naglieri (1999). This method was developed for use with the Cognitive Assessment System (CAS; Naglieri & Das, 1997) and is grounded in the Planning, Attention, Simultaneous, and Successive (PASS) theory. Naglieri's third-method approach focuses on evaluation of whether within-child variability is greater than expected, above and beyond the unreliability of the scores. In his approach to SLD identification, performance is evaluated with the goal of uncovering weaknesses that are consistent with the concept of disorder—that is, performance in one or more processes is weak relative to both the individual and the norm group. Moreover, the child's cognitive processing weakness(es) must be consistent with his or her academic weakness(es), and the child must also demonstrate cognitive processing strengths (i.e., significantly better performance in certain cognitive processes as compared with those that are weak).

Another third-method approach is the "Operational Definition of SLD," developed by Flanagan and colleagues (2002, 2006). Their method consists of three broad levels of evaluation that seek to identify normative strengths and weaknesses in academic and cognitive abilities and processes and to understand the relationships among them. As part of the Flanagan and colleagues definition, "exclusionary factors," delineated partly in the IDEIA, are systematically evaluated to distinguish children with SLD from those whose performance is due to noncognitive factors (e.g., mental disorders, behavior problems, sensorimotor difficulties, cultural and linguistic differences) as well as from those who have more pervasive cognitive and academic difficulties that are not believed to be attributable primarily to a specific learning problem (e.g., intellectual disability [ID], slow learner [SL], developmental disability [DD]) (see also Berninger, in press). The pattern of functioning that is thought to be consistent with SLD is described in the operational definition as a *below average aptitude–achievement consistency within an otherwise normal or average ability profile*. Their notion of consistency is informed by the CHC literature that delineates significant relationships between cognitive and academic abilities and processes. For example, a deficit in phonological processing is *consistent* with, not discrepant from, a deficit in reading decoding.

In 2004, Hale and Fiorello introduced the "Concordance-Discordance" model of SLD determination. Their approach was developed for use in conjunction with a broader "Cognitive Hypothesis Testing" (CHT) approach to the assessment of children suspected of having SLD using a cognitive–neuropsychological processing model. The overall purpose of their model is to collect data from multiple sources using various tools to ensure concurrent, ecological, and treatment validity (Fiorello, Hale, & Snyder, 2006). Much like the operational definition of SLD, a central component of the model is the "concordance" or correlation in performance that exists between identified cognitive and academic deficits. The notion of "discordance" is tied to the idea that individuals with SLD have cognitive strengths such that there is inconsistency between those strengths and their performance in one or more specific academic areas.

All three third-method approaches require identification of specific academic *and* cognitive deficits, as well as average (or better) general ability or intelligence (i.e., cognitive and academic strengths). Furthermore, these approaches require an additional important and unique component that stems in large measure from the research on the relations between cognitive abilities and processes and academic outcomes. That is, the collected data should demonstrate a meaningful and empirically supported relationship between specific cognitive and academic deficits. This component of third-method approaches is not a requirement of the current RTI-only or ability–achievement discrepancy methods of SLD identification, and it was rarely considered by practitioners in school districts throughout the country that followed the traditional discrepancy method prior to the 2004 reauthorization of the Individuals with Disabilities Education Act (IDEA).

Figure 1 provides an illustration of the three common components of third-method approaches to SLD identification. The two bottom ovals depict academic and cognitive weaknesses, and their horizontal alignment indicates that the level of performance in both domains (academic and cognitive) is expected to be similar or consistent. The double-headed arrow between the bottom two ovals indicates that the difference between measured performances in the weak academic area(s) is not significantly different from the performance in the weak cognitive area(s). Again, in children with

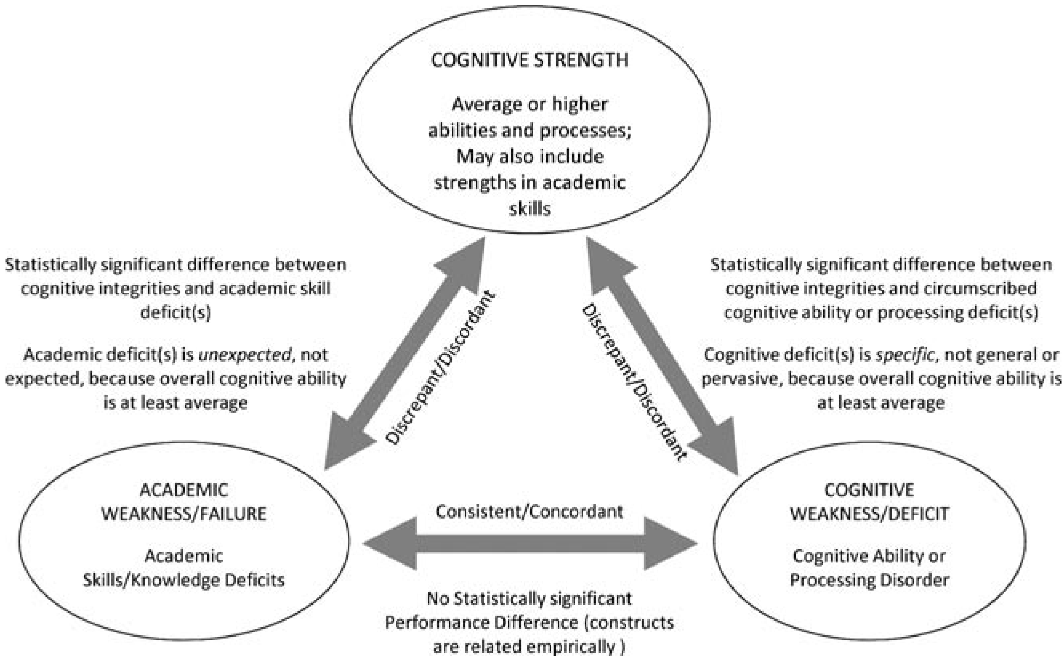

FIGURE 1. Common elements of third-method approaches to SLD identification.

SLD, there exists an empirical or otherwise clearly observable and meaningful relationship between the academic and cognitive deficits, as the cognitive deficit is the presumed cause of the academic deficit. The oval depicted at the top of Figure 1 represents generally average (or better) cognitive functioning. The double-headed arrows between the top oval and the two bottom ovals in the figure indicate the presence of a statistically significant difference in measured performance between general cognitive ability and the areas of academic and cognitive weakness. The pattern of cognitive and academic strengths and weaknesses represented in Figure 1 retains and reflects the concept of *unexpected underachievement* that has historically been synonymous with the SLD construct (Kavale & Forness, 2000). The common components of third-method approaches to SLD identification as they relate to CHC theory are discussed in more detail later.

Deficits in Academic Skill Acquisition or Development

The need to document a deficiency in an academic skill or skills is at the core of any SLD identification process because it establishes that an individual's ability to learn is impaired in some way. Under the IDEIA definition, the student with SLD "does not achieve adequately for the child's age or fails to achieve State-approved grade level standards" (IDEIA, 2004; 34 CFR 300.309). In addition, the IDEIA lists eight specific areas of academic functioning in which SLD may manifest, including oral expression, listening comprehension, written expression, basic reading skill, reading fluency skills, reading comprehension, mathematics calculation, and mathematics problem solving (IDEIA Section 300.309). Many authors and publishers of norm-referenced, standardized tests of achievement have aligned their instruments with these specific academic areas (e.g., The Wechsler Individual Achievement Test, Third Edition [WIAT-III]; Pearson, 2009). The definitions of these academic domains are neither provided in the IDEIA nor based on any particular theoretical formulation, however. As such, they are vague and nonspecific and tend to be defined primarily by the tests that purport to measure them. Because every test that claims to measure reading comprehension, for example, does not do so in the same manner, a student may score average on one measure of this construct and below average on another measure of this construct.

When tests are developed or interpreted from CHC theory, however, the nature of the academic (and cognitive) abilities that are measured by an achievement battery will likely be better understood. For example, there are approximately 20 CHC narrow abilities that appear to be measured by comprehensive achievement batteries, such as the WJ III: Tests of Achievement (see Flanagan et al., 2006b; Wendling et al., 2007), indicating that the eight academic areas listed in the IDEIA appear to be more differentiated than their labels imply. Thus, when evaluating and interpreting academic performance, it seems necessary to use theory, preferably CHC theory, to elucidate the nature of the child's strengths and weaknesses, not just across the eight academic areas but within them.

Deficits in Cognitive Abilities and Processes

Much like the evaluation of specific academic weaknesses, evaluation of cognitive performance is undertaken to illuminate the individual's functioning across a broad range of cognitive abilities and processes. A major purpose for conducting cognitive evaluations in the schools is to determine whether a student who struggles academically has SLD. If in the course of the evaluation cognitive weaknesses are uncovered, they may well provide evidence of a disorder in one or more "basic psychological processes" (IDEIA, 2004). Irrespective of the various notions regarding the identification of SLD (i.e., natural taxonomy vs. social construction; see Meehl, 1973, and Reschly, 1987), there is consensus that some type of cognitive weakness or neuropsychological dysfunction is present in an individual with SLD and that the dysfunction is the presumed reason for the individual's manifest academic difficulties (see, e.g., the SLD definition of the National Joint Committee on Learning Disabilities [NJCLD]). The literature is replete with evidence that learning disabilities are caused by inherent weaknesses in underlying cognitive processes (Fletcher, Taylor, Levin, & Satz, 1995). The problems surrounding SLD determination have always been less about the definition of this condition and more about the methodology used to diagnose it.

In the past, measurement of specific cognitive abilities and processes was difficult because most intelligence tests were either atheoretical or only loosely based on theory. As a result, they fell far short of measuring the breadth of cognitive abilities and processes specified in contemporary psychometric theories of the structure of cognitive abilities (Flanagan & McGrew, 1997; McGrew, 1997; Woodcock, 1990). For example, many intelligence batteries published prior to 2000 did not measure several broad CHC abilities that were (and are) considered important in understanding and predicting school achievement (viz., Auditory Processing [*Ga*], Long-Term Retrieval [*Glr*], Fluid Reasoning [*Gf*], Processing Speed [*Gs*]). In fact, *Gf*, often considered to be the *essence* of intelligence, was not measured adequately by many intelligence batteries published prior to 2000 (Alfonso, Flanagan, & Radwan, 2005; Woodcock, 1990).

The observation (more than a decade ago) that many of the CHC abilities and processes *not typically measured* by intelligence batteries are important in understanding children's learning difficulties was an important reason for developing a flexible battery approach to assessment and interpretation called Cross-Battery Assessment (XBA; Flanagan & Ortiz, 2001; Flanagan et al., 2007; McGrew & Flanagan, 1998). In effect, the XBA approach was developed to systematically fill in the "holes" in intelligence batteries with tests from another battery (or batteries) to allow for a wider and more in-depth range of abilities and processes to be measured in an evaluation as compared to that accomplished by the administration of a fixed or single battery. Despite the fact that many current intelligence tests are based on CHC theory and measure more abilities than did their predecessors, there is often a need to supplement these batteries to gain more information about an individual's cognitive capabilities in specific areas. Indeed, this type of flexible battery assessment is used often in third-method approaches to SLD identification (Flanagan et al., 2006a; Hale & Fiorello, 2004). In general, flexible battery approaches guide practitioners in the selection of tests that together provide measurement of abilities and processes that is considered sufficient in both breadth and depth for the purpose of addressing referral concerns. Better measurement of cognitive abilities and processes via current CHC theory–driven intelligence batteries coupled with a growing body of research on the relations between CHC broad and narrow abilities and processes and academic outcomes have afforded practitioners a unique opportunity to investigate the presumptive underlying causes of learning difficulties in children in a manner that was not available only a decade ago.

Evidence of Average or Better Intellectual Ability

Inherent in third-method approaches is the idea that, although the individual struggles in a specific academic skill(s), s/he possesses at least an average level of general cognitive ability or intelligence. The notion that individuals with SLD are of at least average intelligence is widely acknowledged (see Kaufman, 2008). This idea remains controversial in that it attempts to make a distinction between those who require significantly more time and instruction to acquire academic skills because they have generally lower-than-average intelligence (i.e., SL) versus those who have specific academic learning difficulties due to circumscribed deficits in cognitive abilities or processes related to the academic skill in question. There have been studies suggesting that the learning patterns, instructional needs, and RTI of both groups of individuals are relatively indistinguishable (Shaywitz, Fletcher, Holahan, & Shaywitz, 1992; Steubing et al., 2009). Some have questioned the need for SLD evaluation and the viability of the construct itself, because its identification often seems to rest mostly on socially derived criteria (Ysseldyke, Algozzine, Richey, & Graden, 1982). Conversely, research has demonstrated also that level of IQ mediates responsiveness to intervention, for example, but such effects are often not recognized or discussed (see Fuchs & Young, 2006; Reynolds & Shaywitz, 2009). That debate notwithstanding, to date empirical studies have yet to be conducted that investigate the learning patterns, instructional needs, and RTI of groups of children who have been differentially diagnosed as SLD, SL, or DD *following current third-method approaches*.

Whether those with SLD can be clearly delineated from others with similar academic learning problems, CHC theory continues to provide a suitable framework for evaluating what constitutes average intelligence. In the past, an individual could earn a total test score in the high average range on one measure of intelligence and a score in the below average range on another measure of intelligence, simply because the intelligence batteries measured different constructs (see Alfonso et al., 2005, for a discussion). It is likely that such disparity between total test scores across intelligence batteries is not as common today as it was 10–20 years ago because the factor structures of newer batteries have generally expanded, representing approximately five to seven broad CHC cognitive ability constructs. Therefore, intelligence batteries are more similar today than they were in the past, particularly those that are based explicitly on CHC theory. Nevertheless, specific cognitive ability deficits may manifest differently on tests that purport to measure the same broad (and even narrow) ability constructs, simply because cognitive constructs are measured in different ways (e.g., *memory* tasks can vary in terms of output [vocal or pointing] and content [words or numbers]; *fluid reasoning* tasks can vary in terms of type of visual stimuli [meaningful or nonmeaningful] and type of response [oral or visual-motor]) and successful performance on any subtest is based on multiple processes (see Flanagan, Alfonso, Ortiz, & Dynda, 2010).

With greater breadth of abilities and processes represented on intelligence batteries comes the problem of determining overall intellectual ability in individuals who display significant variability in the scores that make up the total test score. Although statistically significant variation in cognitive performance is commonplace in the general population, particularly when batteries that represent a broad range of cognitive abilities are used, such as the WJ III (Oakley, 2006; see also McGrew & Knopik, 1996), determining whether general intelligence is at least average is made difficult when only certain abilities represent deficits for the individual. This difficulty is caused because specific cognitive deficits have an attenuating effect on the total test score. To date, there is no agreed-upon method of determining whether an individual with circumscribed cognitive deficits is of average intelligence if those deficits attenuated his or her full-scale score significantly. One approach would be to administer an abbreviated intelligence test that did not measure the cognitive areas that were found to be deficient in the individual. Another approach is to use part of an intelligence test to represent overall ability (e.g., use of the WISC-IV General Ability Index [GAI] in place of the Full-Scale IQ for a child who demonstrates weaknesses on the processing speed and memory tests; see Raiford, Weiss, Rolfhus, & Coalson, 2005). Yet another approach is to use a weighting procedure to estimate overall ability after accounting for the attenuating effects on the total test score as a function of the cognitive deficit(s) (e.g., Flanagan et al., 2007). Regardless of the method used to determine whether an individual with specific cognitive deficits also displays generally average intellectual ability, it is clear that the notion of average intelligence is inherent in the concept of SLD. That is, the disability is specific, not general, which is why low achievement is unexpected, not expected (Keogh, 1994; see also Berninger, in press; Geary, Hoard, & Bailey, in press). Whereas there can be debate about the issue of whether SLD and SL should be distinguished, for example, the opportunities to investigate the differences between these groups via the application of CHC theory appear to hold promise for resolving this and other types of conceptual problems that have long plagued SLD evaluations.

A Hypothesis-Testing CHC Third-Method Approach to SLD Identification Within an RTI Service Delivery Model

The pattern of strengths and weaknesses depicted in Figure 1 and described briefly earlier in this chapter is not sufficient by itself to identify SLD. There is a larger context in which any assessment for SLD must be based—the context that allows the practitioner to determine if the pattern is indeed consistent with SLD or the result of other variables or exclusionary factors (e.g., language differences, depression, absenteeism, significant changes at home). To this end, hypotheses must be developed and tested at all levels of an evaluation. Use of a hypothesis-testing approach to SLD evaluation helps to ensure that appropriate questions are asked at each respective level so that the necessary data are collected and interpreted in light of the individual needs of the learner. Such an approach avoids the typical exploratory type of evaluation that is often subject to confirmatory bias (Kamphaus, 1998; Sandoval, 1998). Likewise, compared to unguided or "routine" evaluations, a hypothesis-testing approach is far less likely to lead to the erroneous assignment of apparent meaning to what may in fact be spurious or anomalous findings.

The framework for SLD identification outlined here is called the *Hypothesis-Testing CHC Approach* (HT-CHC) and is based on an integration of the third method approaches of Flanagan and colleagues (2002) and Hale and Fiorello (2004). As such, the HT-CHC approach includes the components depicted in Figure 1, guidelines for generating and testing hypotheses about student performance, and psychometrically sound procedures for organizing and interpreting data from multiple sources. The general process of the HT-CHC approach is illustrated by the flowchart in Figure 2. That is, the specific steps and decision points that form the various components of the model are shown in Figure 2. As may be seen in this figure, the HT-CHC approach encompasses a four-tier, RTI model. Within Tier I, the intent is to assess whether a student is making adequate progress

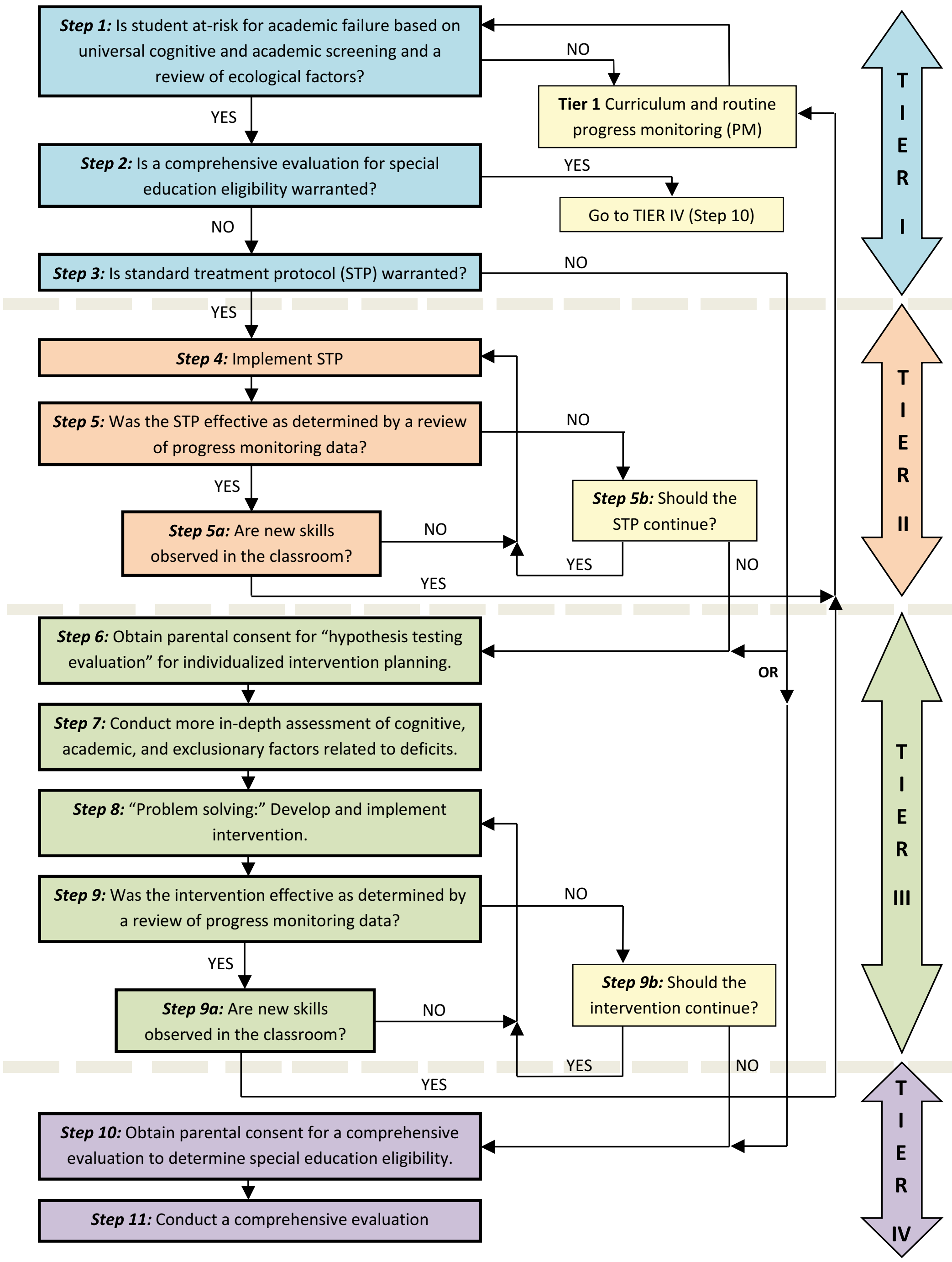

FIGURE 2. The HT-CHC model.

and learning according to expectations. Whenever questions arise regarding possible learning difficulties, functioning is evaluated in light of data gathered from universal screening procedures. Application of CHC theory occurs here so that measurement of academic constructs may be interpreted within the context of the theory's evidential base. Development or acquisition of academic or cognitive skills that are not commensurate with those of classroom peers suggests movement to the second tier.

Within Tier II, a standardized treatment protocol (STP) is applied in an effort to promote better learning. Also, evidence of progress (or lack thereof) is evaluated through data collected periodically at this tier. When the data demonstrate that the targeted academic skills are not being acquired as expected or are not generalizing to the classroom, the process may proceed to the third tier. Within Tier III, parental consent is obtained for the purpose of conducting a "hypothesis-testing evaluation" designed to specifically inform further intervention and instruction. Parental permission at this stage indicates that (a) the student is at risk for academic failure; (b) the student will be receiving *individual* assessment and intervention; and (c) if the information gathered at this tier indicates a possible disability, then it can be used in later eligibility decisions. At this level, cognitive and academic abilities related to the observed difficulties are assessed more carefully (as compared to that which can be accomplished via universal screening alone) with a focus on understanding the nature of the child's deficits. Evaluation at this tier targets specific abilities and processes related to the classroom skills in question, as guided by CHC theory. The data are reviewed through a "problem-solving model" (PSM) that seeks to create specific interventions that are directly responsive to the student's learning needs. As before, the interventions are carefully monitored and evaluated to ascertain progress, or lack thereof, and whether the targeted skills are evident in classroom functioning. In cases where the student continues to demonstrate learning difficulties and the data demonstrate that insufficient progress is being made, the process may move to the final tier. The purpose of Tier IV is to conduct a comprehensive evaluation that examines much more broadly the student's pattern of cognitive and academic strengths and weaknesses to determine whether the student is SLD as defined by the IDEIA.

The following section provides a more detailed description of the HT-CHC approach. There are some issues that merit consideration at this point, however. First, it is recommended that the HT-CHC approach be implemented in schools where an existing RTI program is already in place as part of the general education process. Such an arrangement ensures that there will likely be less testing of students suspected of having a learning disability because those whose learning problems are curriculum related, for example, will be identified and remediated prior to a formal referral. Second, the HT-CHC approach is designed primarily for the evaluation of SLD, not necessarily other types of disabilities. Of course, because the approach involves close examination of ecological factors, and because it specifically rules in or out the presence of SLD, it can certainly indirectly inform identification of other disabilities or conditions. Third, it is recognized that the HT-CHC approach, as presented and described herein, will be most applicable to children who are in the process of academic skills development and acquisition (i.e., in Grades K–3/4). Modifications of this approach may well be needed for students being evaluated at higher grade levels given the developmental nature of learning disabilities and different environmental factors that arise as age, grade, and education proceed.

Tier I: Determining Needs of At-Risk Students

Tier I of an RTI service delivery model encompasses delivering scientifically based instruction to all children in general education, conducting universal screening to identify students who are at risk for academic failure, and determining the educational needs of these students (Fuchs et al., 2003). In collaboration, school psychologists, special educators, and general education teachers administer a variety of assessments to determine who is at risk for academic failure. Ideally, children should be screened in the eight areas that are listed in the federal definition of SLD. In addition, because the HT-CHC approach is based on theory and research, particularly the literature on the relations between cognitive abilities, processes, and academic outcomes, screening at this tier also may include cognitive tests.

The broad and narrow CHC abilities that have been found to be related significantly to academic achievement, particularly in the area of reading in Grades K–3, are summarized in the first column of Table 1. Because some cognitive tests measure abilities that are thought to be more academic than cognitive in nature (e.g., vocabulary knowledge, quantitative reasoning) and some achievement tests measure abilities that are thought to be more cognitive than academic in nature (e.g., retrieval fluency, working memory), rather than relying exclusively on one type of test (cognitive or achievement), we use both throughout the evaluation process, beginning at Tier I. Therefore, Table 1 includes some examples of the cognitive and achievement tests that we have found useful at the various tiers of the HT-CHC approach.

As illustrated in Figure 2, Step 1 of the HT-CHC approach requires that professionals involved in universal screening answer the following question: "Is the student at risk for academic failure based on universal cognitive and academic screening and a review of ecological factors?" The professionals who are involved in answering this question (hereafter referred to as "the HT-CHC team" or simply "the team") have several decisions to make. First, the HT-CHC team needs to identify reliable and valid screening instruments. Table 1 provides examples of tests that may be used in the Tier I screening process, particularly those that are helpful in identifying students who are at risk for failure in basic reading skills. Second, the team needs to determine how "at-risk" will be defined (e.g., students who score below the 16th percentile or 25th percentile on a screening measure; see Compton, 2008, for guidance). It is important to consider both national and local norms when determining at-risk status, as local norms may provide a different outcome as compared to national norms because of the correlation between socioeconomic status (SES) and school performance (Naglieri, 2009). For example, in a high performing school in a high SES area, a student who is reading at an average level compared to his same-age peers from the general population (national norms) may be identified as at risk when compared to the much higher achieving peers in his own school (local norms). Although such a finding may suggest the need for assistance with reading in the student's academic environment, it does not necessarily warrant suspicion of SLD. Third, the team should identify ecological factors that can be systematically tested and ruled out (or in) as the primary causes of academic and learning difficulties. Table 2 provides a list of ecological factors that ought to be considered when determining potential reasons for learning difficulties at Tier I (as well as at all subsequent tiers). It is important for the team to document the manner in which these factors have been evaluated for students who are at risk (e.g., teacher, parent, or child report; records review; classroom observation; child interview; rating scale). Finally, the team should decide how often progress should be monitored for students who are and are not at risk. Students who are progressing well academically and who do not display any evidence of learning or behavioral difficulties may not need to be monitored nearly as frequently as those who are at risk.

If, after consideration of the aforementioned factors, the answer to the question at Step 1 is "no" (meaning that the student is not at risk), then the student remains in the general education program and continues to be monitored at the team's discretion. If the answer to the question is "yes," then the team needs to determine if a comprehensive evaluation for special education eligibility is required (Step 2 in Figure 2) or whether an STP is warranted (Step 3 in Figure 2). For example, a student may display visible signs of distress during seatwork (e.g., crying, complaining of stomach ache) and demonstrate no mastery of concepts learned earlier in the day or week. In addition, the

Table 1
Examples of Academic and Cognitive Measures Used in Screening (Tier I), Hypothesis-Testing Evaluation (Tier III), and Comprehensive Evaluation for Special Education Eligibility (Tier IV) for Students with Basic Reading Skills Difficulties

	Type of Evaluation		
Abilities and Processes Related to Basic Reading	Screening Examples (Tier I)	Hypothesis Testing Examples (Tier III)[a]	Comprehensive Assessment Examples (Tier IV)
Ga-PC	DIBELS Initial Sound Fluency, Phoneme Segmentation Fluency	CTOPP Phonological Awareness Quotient; select tests from intelligence battery	Cognitive and achievement batteries to assess strengths and weaknesses that cover all major CHC areas. Examples: WJ-III Cog and Ach; KABC-II and KTEA-II; DAS-II Core/Diagnostic subtests and WIAT-III; WISC-IV and WIAT-III; supplemental testing for any of the previous suggestions (as may be necessary) with neuropsychological or special use tests via XBA or other flexible battery approaches
Gc-LS, KO, VL	DIBELS Word Usage Fluency (VL)	PPVT-IV, EVT-2; Verbal Scale from intelligence battery	
Glr-NA, MA, MM	DIBELS ReTell Fluency (MM)	CTOPP Rapid Naming Quotient (NA); select tests from intelligence or memory battery	
Gsm	WJ-III Cog Numbers Reversed (MW)	CTOPP Phonological Memory Quotient; select tests from intelligence or memory battery	
Gs-P	DIBELS Oral Reading Fluency (RS)	WISC-IV Coding (P)	
Gf	Raven's or NNAT, group administration	K-BIT 2 Nonverbal Scale; NNAT; select tests from intelligence battery	
Gv orthographic processing	TIWRE; TOSWRF, group administration	PAL-II Reading	
Attention or other behavioral factors	Teacher report	BASC-II BESS	BASC-II, ASEBA, CAB
Screening for developmental delay	BDI-II Screener		BDI-II Comprehensive Evaluation

Note. PPVT-IV: Peabody Picture Vocabulary Test, Fourth Edition; EVT-2: Expressive Vocabulary Test, Second Edition; K-BIT 2: Kaufman Brief Intelligence Test, Second Edition; WASI: Wechsler Abbreviated Scale of Intelligence; WJ III COG: Woodcock–Johnson III Test of Cognitive Abilities, Third Edition; WJ III ACH: Woodcock–Johnson III Test of Achievement, Third Edition; KTEA-II: Kaufman Test of Educational Achievement, Second Edition; Raven's: Raven's Progressive Matrices; NNAT: Naglieri Nonverbal Ability Test, Second Edition; TOSWRF: Test of Silent Word Reading Fluency; TIWRE: Test of Irregular Word Efficiency; PAL-II: Process Assessment of the Learner; BASC-II: Behavioral Assessment System for Children, Second Edition; BESS: Behavioral and Emotional Screening System; ASEBA: Achenbach System of Empirically Based Assessment; CAB: Clinical Assessment of Behavior; XBA: Cross-Battery Assessment; BDI-II: Battelle Developmental Inventory, Second Edition.
[a]When selecting tests from intelligence batteries for a hypothesis-testing evaluation, be sure to use the same battery for as many areas of inquiry as possible to minimize measurement error. Other tests from (or the remaining tests in) the battery may then be administered if the process advances to Tier IV. The battery may be supplemented if necessary to ensure that all areas deemed important have been assessed.

Table 2
Ecological Factors That May Explain or Contribute to Learning Difficulties

Type of Factor	Examples
School-related	Interrupted or inadequate schooling, frequent absences, frequent changes in schools or districts, poor or ineffective instruction, improper intervention or remediation efforts (e.g., retention), inappropriate educational programming (i.e., English as a Second Language vs. bilingual or dual-immersion)
Home	Financial difficulties, family violence, physical abuse, verbal abuse, emotional abuse, neglect, divorce, lack of supervision, significant life changes (e.g., death of a parent or relative)
Health	Malnutrition, medication side effects, allergies, sleep disturbances, inadequate sleep, drug abuse, poor hygiene
Sensorimotor	Vision problems (acuity, astigmatism, convergence insufficiency, strabismus, color-blindness), hearing difficulties (deafness, pure tone loss, discrimination problems, perceptual difficulties, central auditory processing issues), fine motor dysfunction
Culture-language	Language other than English in the home, inconsistent language experiences and exposure, developmental interruption of the heritage language, poor language models, cultural differences, religious beliefs, level of acculturation, lack of familiarity with mainstream U.S. culture

student may begin to refuse to go to school when there is a test scheduled. The type and severity of a student's learning difficulties and behaviors may lead the team to recommend a comprehensive evaluation instead of an STP. When a comprehensive evaluation is deemed necessary at this point, the process moves from Tier I/Step 2 to Tier IV/Step 10 (discussed later in this section). It is likely that many children who are identified as at risk will be provided an STP. Students who are having difficulties in multiple areas, such that more than one intervention would be needed to address concerns effectively, should move immediately to Tier III, the PSM. This latter scenario is depicted in Figure 2 by following the "no" arrow from Step 3 (indicating that an STP is not warranted) to Step 6 (i.e., hypothesis-testing evaluation for individualized intervention planning). In some cases a student may move from Step 3 to Step 10.

Tier II: Implementing STPs and Monitoring Effectiveness

Students who are identified during Tier I screening as having difficulties in an academic or cognitive area that has an identified STP will move to Tier II interventions and progress monitoring (Steps 4 and 5 in Figure 2). In contrast to the *instruction* in Tier I, *intervention* at Tier II is characterized by greater time, greater intensity, and smaller groups. A variety of approaches have been developed to provide intervention in specified areas of deficit, some of which are outlined in Table 3 (see also Mather & Goldstein, 2008 and Wendling & Mather, 2009). Our conception of Tier II is similar to that proposed in the general literature for more intensive small-group intervention (e.g., Fuchs et al., 2003), with the exception that we include universal screening of, and interventions for, known cognitive risk factors in addition to academic weaknesses. For example, students who do poorly on a screening test of working memory might participate in a computerized intervention to improve their working memory skills (e.g., Holmes et al., 2009). Likewise, an STP may be modified for a student with working memory difficulties.

It is important to note that interventions must be closely matched to the student's areas of cognitive and academic deficit. Having one general intervention for reading and one for math, even at Tier II, is likely to prove to be a waste of resources. Universal screening procedures should provide enough information to make preliminary assignments of students to appropriate intervention groups (see Table 3), such as identifying students having difficulty with beginning reading instruction due

Table 3
Examples of STPs for Specific Cognitive and Academic Weaknesses

Area of Weakness	Intervention Protocol	Research Citation
Ga	Fast ForWord	Tallal et al., 1996
Ga-PC	Earobics	Pokorni, et al., 2004
Gc-VL	Vocabulary instruction	McKeown & Beck, 1988
Gs/*Glr*-NA	RAVE-O	Wolf, Miller, & Donnelly, 2000
Gsm-WM	Robomemo/CogMed	Holmes et al., 2009
Basic reading skills	Reading Recovery	Pinnell, 1989
Basic reading skills	Intensive phonics instruction	Torgesen et al., 2001
Reading fluency	Repeated readings	Rashotte & Torgeson, 1985
Basic math skills	Cover, copy, compare	Skinner et al., 1989
Basic math skills	TouchMath	
Math fluency	(Mad Minute)	
Math achievement	Odyssey Math	Brandt et al., 2006

to poor language development as opposed to those whose oral language is good but whose auditory processing is delayed. An intensive phonics intervention is likely to help the second group but not the first.

Implementation of an STP will often be for a set period of time as identified in the research literature, and evaluation of its effectiveness should occur after that period. There are two components to an STP evaluation. First, the HT-CHC team must answer the question: "Was the STP effective as determined by a review of progress-monitoring data (Step 5 in Figure 2)?" If the answer is "yes" to this question, then the team must also determine if the new skills obtained by the student are also observed in the classroom (Step 5a in Figure 2). If the student's skill attainment based on the STP led to an appreciable improvement in classroom performance, the intervention may be discontinued and the student may return to Tier I general education and progress monitoring. The "yes" arrow leading from Step 5a to the Tier I rectangle demonstrates this decision process. If the team determines that the student has made improvement based on the STP but that the new skills have not yet generalized to the classroom, they may decide to continue the intervention to build greater mastery and fluency, and/or to build in specific generalization training. The "no" arrow leading from Step 5a to Step 4 depicts this decision process. If the team determines that the STP did not lead to the expected gains for the student, then they may decide to move the student to Tier III for *individualized* intervention planning through a PSM (see "no" arrow leading from Step 5b to Step 6 in Figure 2).

Tier III: Assessment for Individualized Intervention via a PSM

When the HT-CHC team determines that it is necessary to move a student from a Tier II STP to a more intensive individualized intervention at Tier III, it is recommended that the team obtain parental consent for a "hypothesis-testing evaluation" (Step 6 in Figure 2). Of course, parents will be involved at all tiers, but moving to individual assessment and intervention is a major step, and one that we believe requires explicit informed consent. It is important to recognize that parents are not consenting to a special education evaluation at this tier, but their consent is necessary to ensure that they were informed with regard to the information that will be gathered and how it will or could be used. Examples of tests that might be used to evaluate cognitive, academic, and other factors related to the student's difficulties at Tier III are presented in Table 1. It is recommended that the HT-CHC team develop a consent form that lists the most commonly used tests and procedures that are performed at this tier, including a section where less commonly used tests may be written in by hand as is necessary and appropriate. The consent form should state clearly the intent and purpose of the evaluation.

The purpose of evaluation at Tier III (Step 7 in Figure 2) is not to identify a disability or determine special education eligibility, but to gather more specific information about the area of difficulty to allow an individualized intervention to be developed and implemented. For instance, a student who did poorly on a Dynamic Indicators of Basic Early Literacy Skills (DIBELS) screening of phonological awareness and oral reading fluency, but then did not respond to an intensive phonics intervention as expected, might be given the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte, 1999) to pinpoint the area of difficulty. Administration of the CTOPP would allow the team to investigate hypotheses concerning the student's functioning in phonological awareness, working memory, and rapid automatized naming, for example.

Evaluation components at Tier III (Step 7) might also examine ecological factors in more depth. For example, a child might pass hearing and vision screenings at Tier I, but a more in-depth evaluation might reveal intermittent hearing loss or near vision difficulties that had been missed on screening. A student might seem to have adequate English language skills during screening, but a more thorough language history and testing via Tier III procedures might reveal that the student is demonstrating Basic Interpersonal Communication Skills (BICS) in English, but not Cognitive-Academic Language Proficiency (CALP; Ochoa, 2005). Interventions based on the data gathered at Tier III are typically more individualized and often more multifaceted (targeting more than one area of difficulty) than Tier II STPs.

Interventions at Tier III are developed by the HT-CHC team (Step 8 in Figure 2), which most likely has expanded to include other professionals, such as an interventionist. Frequent progress monitoring is extremely critical at this tier, so that interventions can be adjusted and modified as needed. In addition, because the specific interventions do not have a manualized or standard protocol, collecting single-subject data on effectiveness is necessary (e.g., see Braden & Shaw, 2009; Hale, Wycoff, & Fiorello, in press). The decision-making process at Tier III is similar to that at Tier II. The team must determine if the student is improving in those skills targeted for intervention (Step 9) and if those skills are being generalized to the classroom (Step 9a). If the skills have improved and are carried over to the classroom, Tier III services may be discontinued and the student should return to Tier I where his or her progress should be monitored regularly. The "yes" arrow leading from Step 9a to the Tier I rectangle in Figure 2 demonstrates this decision. If skills have improved but not generalized, the team may decide to continue the intervention and build in generalization training. The "no" arrow leading from Step 9a back to Step 8 demonstrates this decision. If the intervention was not successful, the team may decide to move the student to Tier IV, where a comprehensive evaluation for special education eligibility is conducted. The "no" arrow leading from Step 9b to Step 10 demonstrates this decision.

Tier IV: Comprehensive Evaluation

With the growing popularity of RTI, many professionals assume that failure to respond to quality instruction and intervention is sufficient for SLD identification. This assumption is not supported, however. The final Office of Special Education and Rehabilitative Services (OSERS) regulations state:

> 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 (Federal Register, 2006; p. 46648).

According to Hale and colleagues (2008b), although the final regulations are clear that a comprehensive evaluation is needed to identify a disability, they are admittedly vague about the specific measures to be used. Not surprisingly, the ambiguity has resulted in conflicting opinions within the commentary and regulations. For example, in the "Commentary" section, concerns about the use of cognitive assessment in SLD identification were noted:

> There is no current evidence that such assessments of psychological or cognitive processing should be required in determining whether a child has an SLD (Federal Register, 2006; p. 46651).

Hale and colleagues argue that processing assessments may indeed be necessary, even though they may not be *required*. In support of their contention, the final *regulations* (i.e., §300.304 Evaluation Procedures) specifies that:

> The child is assessed in all areas related to the suspected disability, including, if appropriate, health, vision, hearing, social and emotional status, general intelligence, academic performance, communicative status, and motor abilities (Federal Register, 2006; p. 46785).

This regulatory language implies that comprehensive evaluations may include instruments that assess intellectual functioning, visual processes, auditory processes, communication processes, executive functioning, and sensorimotor processes (Hale et al., 2008b). Comprehensive evaluations that include standardized cognitive, intellectual, and neuropsychological assessment may prove to be the most defensible because practitioners must

> Use technically sound instruments that may assess the relative contribution of cognitive and behavioral factors, in addition to physical or developmental factors (Federal Register, 2006; p. 46785).

At the point of referral to Tier IV, the HT-CHC team suspects the presence of a disability, as it has effectively ruled out lack of appropriate instruction throughout the data collection and monitoring process in earlier tiers. A comprehensive evaluation allows the team to gather the additional data necessary to distinguish SLD from other disorder or conditions. The regulatory language appears consistent with the process of differential diagnosis for SLD in that Section 300.309(a)(2)(ii)

> Permits, but does not require, consideration of a pattern of strengths or weaknesses, or both, relative to intellectual development if the evaluation group considers that information relevant to an identification of SLD (Federal Register, 2006; p. 46651).

To proceed with Tier IV of the HT-CHC model, the team must again obtain parental consent, this time for the purpose of determining special education eligibility (Step 10 in Figure 2). At the time of consent, the team must inform parents of their due process rights. The consent should make explicit the fact that data from all previous tiers may be used, as appropriate, to (a) guide decisions regarding disability identification and eligibility for special education programs and services and (b) lay out what additional information will be collected and how it will be used.

A comprehensive evaluation (Step 11 in Figure 2) must cover all areas of suspected disability. The team should have sufficient information from previous tiers to make informed decisions about what additional areas need to be assessed. Furthermore, for identification of SLD, the team will need to evaluate areas of cognitive *strength* to differentiate SLD from ID and SL (Kavale et al., 2008; Wodrich, Spencer, & Daley, 2006). A broad-based cognitive evaluation of CHC abilities and processes should form the core of this assessment. Tier IV is meant to round out the assessment with measures in areas that were not considered problematic and by evaluating problematic areas in more depth. Through a thorough understanding of the individual's cognitive and academic strengths and weaknesses, the team can determine if the student meets criteria for SLD. For example, cognitive strengths in children who have advanced to this tier in the HT-CHC approach provide support for the notion of unexpected underachievement, whereas consistently low average cognitive performance may be indicative of *expected* underachievement (Keogh, 1994). That is not to say that children with generally low average intelligence cannot learn and achieve. They can. By definition, however, it is likely that their rate of learning and development will remain slower and their level of achievement will remain lower than those of children whose general intelligence is average or better (even with intervention). According to Kavale and colleagues (2008), approximately 14% of the school population may be identified as SL, but these children do not demonstrate unexpected learning failure, but rather an achievement level consistent with their cognitive capabilities. The designation of SL has never been a special education category, and "What should not happen is that a designation of SLD be given to a slow learner" (Kavale, 2005, p. 555; see also Hale, Kaufman, Naglieri & Kavale, 2006 for a discussion).

Conclusions

Neither ability–achievement discrepancy nor RTI, when used as the sole indicator of SLD, can identify this condition reliably and validly because SLD may be present in students with *and without* a significant ability–achievement discrepancy and in students who fail to respond to *and who respond favorably to* scientifically based interventions (Fletcher-Janzen & Reynolds, 2008; Kavale & Flanagan, 2007; Reynolds & Shaywitz, 2009). We believe that the missing components in both of these SLD methods are (a) information on the student's functioning across a broad range of cognitive abilities and processes, particularly those that explain significant variance in academic achievement as described in the CHC and neuropsychology literature; and (b) the presence of generally average or better ability to think and reason. The HT-CHC approach to SLD identification proposed in this article includes these latter two components, is consistent with the definition of SLD in the IDEIA (2004), and is an example of the "third method" for SLD identification as per the federal regulations (34 CFR Part 300).

The HT-CHC approach is grounded in CHC theory and research and is intended to be carried out within an RTI service delivery model. We believe that the HT-CHC approach is necessary to (a) determine whether a processing deficit(s) is the probable cause of a student's academic difficulties; (b) distinguish between SLD and other conditions and disorders, through both inclusionary and exclusionary criteria; and (c) restructure and redirect interventions for nonresponders in an RTI model. Because the HT-CHC approach is informed by the network of validity evidence in support of CHC theory in particular, it has the potential to increase the reliability and validity of SLD classification in the schools. Furthermore, regardless of disability status, it is our contention that, by identifying specific targets for remediation, compensation, accommodation, and/or curriculum modification through the use of the HT-CHC approach, the possibilities for truly individualized intervention are increased significantly (Kavale et al., 2005; Kavale & Flanagan, 2007). The HT-CHC approach, like other third-method approaches, must be studied to determine its reliability and validity for SLD determination.

Keogh (2005) discussed criteria for determining the adequacy and utility of diagnostic systems, such as the ability–achievement discrepancy, RTI, and third-method approaches. The criteria include *homogeneity* (Do category members resemble one another?), *reliability* (Is there agreement about who should be included in the category?), and *validity* (Does category membership provide consistent information?). Keogh suggested that, "LD is real and that it describes problems that are distinct from other conditions subsumed under the broad category of problems in learning and achievement" (p. 101). The question is how to best capture the distinctiveness of SLD. Neither ability–achievement discrepancy nor RTI approaches meet all of Keogh's criteria (homogeneity, reliability, validity) for determining the adequacy and utility of a diagnostic system (Kavale & Flanagan, 2007). Therefore, we offered the HT-CHC approach to SLD identification. Future directions in SLD identification should focus on evaluating this and other third-method approaches following Keogh's criteria.

Until such research is made available, the HT-CHC approach remains a viable and inherently practical alternative to traditional discrepancy and RTI-only approaches because it expands (rather than limits) the methods of assessment that are available to the practitioner, and it culminates in a comprehensive understanding of the child that is clear and of value to all. When commenting on third-method approaches, Kavale and colleagues (2005) stated, "even if a student never enters the special education system, the general education teacher, the student's parents, and the student him- or herself would receive valuable information regarding *why* there was such a struggle in acquiring academic content, to the point of possibly needing special education" (p. 12; emphasis added). Furthermore, it is only when practitioners have such insights into the "underlying proximal and varied root causes" of a child's learning difficulties that interventions may be provided that are "targeted to each student's individual needs" (Reynolds & Shaywitz, 2009, p. 140).

In sum, it is clear that the process of SLD identification remains complex and requires a great deal of empirical and clinical knowledge on the part of school psychologists. The emphasis on rigorous training in CHC theory (as well as other theories), psychometrics, individual differences, clinical assessment, and knowledge of learning disorders and disabilities continues to be necessary in training programs and internships, despite the apparent movement in the field toward a focus on mainly consultation and intervention. Although many children's academic needs can be well served through an RTI model, there continue to be children whose difficulties are neurologically based and who require specially designed instruction to overcome or compensate for their weaknesses or to make appreciable gains academically. Obscuring the differences among slow learners, individuals with general cognitive deficiencies (e.g., ID), and those with SLD does a disservice to all groups of students. A process that more discretely defines SLD and distinguishes it from other groups of low achievers will very likely increase the correspondence between SLD and treatment.

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