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PROFESSIONAL PRACTICE ISSUES IN THE ASSESSMENT OF COGNITIVE FUNCTIONING FOR EDUCATIONAL APPLICATIONS

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Research has demonstrated that many children have learning problems related to deficits in specific cognitive processes that are not adequately represented by a single IQ score. The administration of cognitive measures that include narrow abilities is useful in understanding specific learning problems and developing effective interventions. However, school psychology training programs have not readily adopted contemporary assessment practices. This article reviews the historical and legislative factors influencing school psychologists' use of intellectual measures for identifying children with learning and other high-incidence disabilities. Distinctions between contemporary cognitive assessment and traditional IQ testing are reviewed. Specific challenges to incorporating evidence-based assessment practice within school psychology training programs are identified. Guidelines for using alternative research-based procedures that include the use of cognitive measures to assess a child's strengths and weaknesses are provided. Potential directions for the application of cognitive theory in educational settings, professional training in appropriate interpretive strategies, and ethical guidance for the appropriate use of cognitive measures are also discussed. © 2013 Wiley Periodicals, Inc.

Long-standing controversies regarding the use of intelligence testing in school-based practice have become a foremost concern in contemporary school psychology. Historically, school psychologists over-relied on IQ scores when making disability identification decisions, particularly as applied to specific learning disability (SLD). We concur with the large body of research showing that the IQ-achievement discrepancy method, when used as a primary or sole indicator of SLD, is an invalid approach (see Stanovich, 2005, for review). Similarly, we agree that approaches to SLD identification that do not use cognitive assessment as part of the evaluation procedure are not supported by research (see Reynolds & Shaywitz, 2009, for a review). As such, we support contemporary, research-based alternatives to SLD identification, consistent with the third option of the 2006 Federal Regulations (e.g., Hale, Flanagan, & Naglieri, 2008), "because they emanate from the marriage of a collective body of knowledge that has been acquired through research in the fields of neuroscience, pedagogy, assessment, and intervention" (Della Tofallo, 2010, pp. 180–181). Research-based alternative approaches have strongly de-emphasized sole reliance on IQ in favor of theory-based flexible batteries that include measures of cognitive abilities that are predictive of specific academic skills and that yield information relevant for classroom instruction (e.g., Flanagan, Ortiz, & Alfonso, 2013). In this article, we review intellectual assessment within a historical context, provide a rationale for

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using contemporary cognitive assessment and argue for its relevance for intervention, provide an example of a research-based alternative approach to SLD identification, and make recommendations for training future practitioners.

Brief History of Intellectual Assessment in SLD Identification

School psychologists are often asked to make decisions concerning the impact of psychological variables on a child's potential to benefit from academic instruction. To aid in making such decisions, school psychologists have traditionally relied heavily on intellectual measures for obvious reasons—they represent one of the most successful applications of psychological theory and measurement (Sattler, 2008). As such, intelligence tests have been critical tools for identifying and diagnosing certain disabilities. In 1975, Pub. L. 94–142 recognized that SLD was a disorder of basic psychological processes, but it operationalized this definition using a severe discrepancy between a composite intellectual ability score (e.g., IQ) and achievement, consistent with evidence-based research at the time (Bateman, 1965; Rutter & Yule, 1975).

Since its inception, criticisms of the use of intelligence tests as part of an ability-achievement discrepancy procedure have mounted. For example, research demonstrated that the discrepancy method did not discriminate well between children who are low achievers and children with SLD (e.g., Fuchs, Fuchs Mathes, Lipsey, & Roberts, 2001; Kavale, Fuchs, & Scruggs, 1994). Additionally, it was found that the ability-achievement discrepancy method led to overrepresentation of minority groups in special education under the SLD category (e.g., Deno, 1970; Macmillan & Hendrick, 1993). Despite longstanding theoretical and methodological criticisms, recent surveys indicate that most states still permit the ability-achievement discrepancy method for SLD identification (Zirkel & Thomas, 2010).

Although methodological issues were insufficient to justify a professional change in practice, fear of escalating special education costs led to further criticisms of the use of ability-achievement discrepancy. Examining the trend of SLD identification rates, Ysseldyke and Algozzine (1982) estimated that the IQ-achievement method was causing the rate of SLD to increase 3% per year. They predicted that if such an increase continued, the cost of educating children in special education would ultimately lead to the financial collapse of general education (Algozzine, Ysseldyke, & Christenson, 1983; Meredith & Underwood, 1995). Figure 1 demonstrates the increasing rate of SLD between the years 1977 and 1996 and the projected future rate based on data available at that time.

The alarm over escalating SLD identification and associated costs in the late 1990s led to a June 2002 hearing of the House Committee on Education and the Workforce Subcommittee on Education. Consistent with published research, each testimony implicated the use of intelligence tests as the cause of rising SLD rates (e.g., Pasternak, 2002). The congressional hearing was instrumental in changing federal criteria for identifying children with SLD; schools were no longer "required" to use ability-achievement discrepancy, and instead could use a response-to-intervention (RTI) approach to identify SLD. It was also noted in the Individuals with Disabilities Education Act (IDEA; Part B, 2004) in the Federal Register at 71 F. R 46540 that a further costs savings could be obtained by a "reduced need for school psychologists" (p. 46540), which further reflects the financial concerns in adopting SLD policy. Additionally, and less noted, a third option defined as an "alternative research-based approach" emerged in the Federal Regulations (IDEA, 2004) which allowed for an examination of Processing Strengths and Weaknesses (PSW) in the SLD identification process (Hale, Naglieri, Kaufman, & Kavale, 2004; Hale, Flanagan, & Naglieri, 2008). We argue here that this approach, advocated by some of the top scholars in SLD, is the preferred method of SLD identification (Hale et al., 2010).

In retrospect, the historic assumptions implicating intelligence tests as the cause of the escalating special education eligibility rate were largely unfounded. As displayed in Figure 1, based on the National Center for Education Statistics, the projected 3% growth, as estimated from data between the years 1977 and 1996, was not predictive of the future rate of SLD (i.e., 1996 to 2009). The cause of rapid change in SLD rates beginning around 1996 is unknown. Initial increases seen in Figure 1 were likely the result of SLD being a new disability category. Also noteworthy is the fact that while SLD rates were increasing, there was a rapid decline in the identification of intellectual disability (formerly, mental retardation), from a high of 26% among special education children in 1976–1977 to 11.3% in 1990–1991, suggesting that many students with intellectual disability were re-identified as SLD when the category was introduced (Shephard, 2008). In addition, increases in the number of children enrolled in public schools with chronic medical conditions (e.g., Msall et al., 2003) and prenatal exposure to drugs and other neurotoxins (e.g., Reiff-Eldridge et al., 2000), and increases in children referred for special education evaluations overall (e.g., Goodman & Webb, 2006), were also likely contributing factors.

There are a variety of perspectives on how the profession of school psychology should deal with these various changes. For example, some have interpreted these changes as a need for school psychologists to re-specialize as instructional consultants that focus on curriculum progress monitoring (Brown-Chidsey & Steege, 2005; Powers, Hagans, & Busse, 2008; Reschly & Ysseldyke, 2002). While acknowledging the benefits of this approach, clearly a continued need exists for high-quality cognitive assessment training in school psychology graduate programs. Despite changes to federal regulations, de-emphasis on intelligence tests and cognitive assessment in the school psychology literature, and changes to training standards to reduce time spent in diagnostic evaluations, school psychologists continue to spend a majority of their time conducting diagnostic evaluations at levels consistent with historic estimates (Curtis, Castillo & Gelley, 2012; Grier, & Hunley, 2003). Comprehensive evaluations that include cognitive assessments to determine strengths and weaknesses provide important information that is useful for understanding and identifying SLD (and other

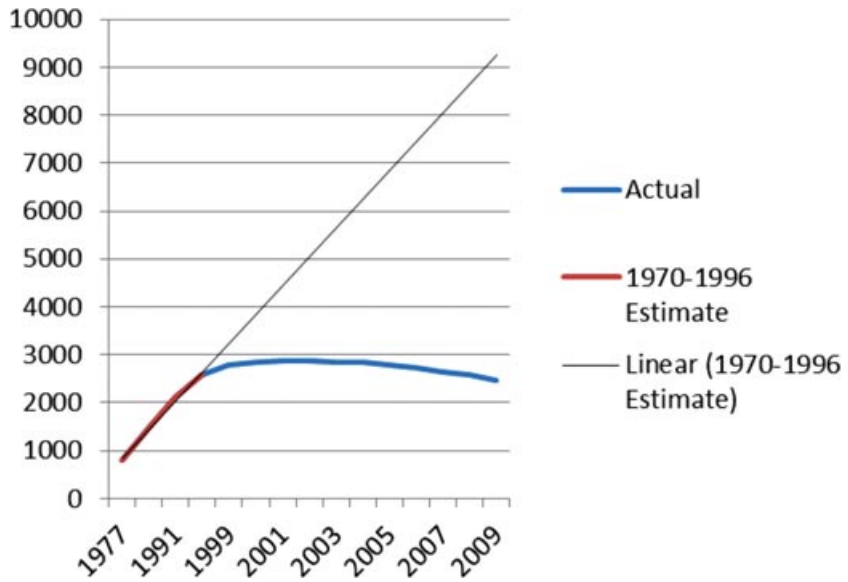

FIGURE 1. Projected and actual specific learning disability rates (in thousands) from 1977 to 1996.

disabilities) and for informing interventions, including recommendations for remedial or compensatory strategies, instructional accommodations, and curricular modifications (see Hale, Fiorello, & Thompson, 2010a; Mascolo, Flanagan, & Alfonso, 2013). Given their utility in examining individual differences in cognitive performance across a variety of abilities and processes and a *lack of evidence* of their *invalidity* for purposes of *informing* diagnosis and individualized educational strategies and interventions, it is our contention that training programs should continue to teach cognitive assessment. Furthermore, training programs may require substantial modifications in their traditional assessment courses to be consistent with contemporary approaches to theory-based interpretation of cognitive measures.

Incorporating Contemporary Approaches to Cognitive Assessment in Training Programs

To guide training programs, we provide three concrete steps that may be taken to prepare preservice school psychologists in contemporary assessment approaches. First, we suggest an emphasis on research-based contemporary models of cognitive assessment as the basis of applied practice, as opposed to a model that focuses on IQ and the ability-achievement discrepancy method. Second, we suggest placing emphasis on the evidence base for linking cognitive assessment with academic assessment. Concretely, use of the cross-battery Cattell-Horn-Carroll (CHC) framework is recommended because this well-researched approach can facilitate understanding of individual learning differences that directly impact academic intervention efficacy (see Decker, 2008; Flanagan & Alfonso, 2011; Flanagan & Harrison, 2012; Hale et al., 2010). Finally, we recommend that training programs include a hypothesis-testing framework for evaluating data and informing diagnostic decisions, such as the Cognitive Hypothesis Testing model (Hale & Fiorello, 2004). Each of these topics is discussed briefly in the following section.

Cognitive Assessment Is Not Synonymous With IQ Testing

Research literature in cognitive science and neuropsychology is replete with evidence to support our understanding of how cognition affects achievement (e.g., Fiorello, Hale, & Wycoff, 2012; Flanagan, Ortiz, Alfonso, & Mascolo, 2006; McGrew & Wendling, 2010). Entire journal issues have been devoted to how cognition and individual differences influence intervention (see Fuchs, Hale, & Kearns, 2011). Indeed, many have already suggested that school psychologists are in a unique position to "take the lead role in the translation of brain research, cognitive neuroscience, and neuropsychological research related to neurodevelopmental disabilities into educational practice" (Maricle, Miller, Hale, & Johnson, 2012, p. 78; see also Decker, 2008; Flanagan & Alfonso, 2011; Flanagan & Harrison, 2012; Fletcher-Janzen & Reynolds, 2008; Hale & Fiorello, 2004; Miller, 2009).

Research has demonstrated that cognitive processes in many academic learning tasks are surprisingly complex. Most academic learning tasks require general cognitive processes such as attention, language, and memory. As such, low scores on any academic task could be the result of numerous factors. Not surprisingly, academic learning often involves numerous cognitive processes as well as cultural learning opportunities. Administering specific narrowly defined cognitive tasks helps to systematically isolate the underlying problem. The purpose of administering the tests is not to get an IQ score, but to help understand learning problems (Woodcock, 1990) and develop effective interventions (Fuchs et al., 2011). This is an important distinction from viewing testing for the purpose of predicting achievement (Glutting, Watkins, Konold, & McDermott, 2006; Watkins, Lei, & Canivez, 2006).

As a concrete example of the importance of attending to specific cognitive strengths and weaknesses over IQ scores, consider two children, both with problems in reading comprehension

Table 1
Example of Importance for Specific Cognitive Scores Over IQ Scores for Understanding Academic Problems

	Reading Comprehension	FSIQ	VCI	PRI	WMI	PSI
Child 1	79	98	79	110	100	105
Child 2	79	98	100	110	79	105

Note: FSIQ = full-scale IQ; VCI = verbal comprehension index; PRI = perceptual reasoning index; WMI = working memory index; PSI = processing speed index.

and both administered a test of intellectual functioning (e.g., the WISC-IV [Wechsler Intelligence Scale for Children: Fourth Edition]) that consists of a single underlying score, but also specific factor scores that tap different cognitive abilities (see Table 1). Cognitive test scores for Child 1 provide empirical evidence that the child has specific language problems (i.e., VCI [Verbal Comprehension Index]). As suggested by research, children with language problems may have problems with reading comprehension (Shaywitz & Shaywitz, 2005). Additionally, as is the case for Child 2, there is evidence of working memory problems (i.e., WMI [Working Memory Index]), which may also result in reading comprehension impairment (Pickering & Gathercole, 2004). However, both children have identical IQ scores. Unlike the full-scale intelligence quotient (FSIQ), specific cognitive abilities reveal important information about the underlying problem. For Child 1, interventions should consider building language processing and competence. For Child 2, intervention and remediation should focus on improving working memory or reducing the working memory load during reading activities (see Feifer, 2008).

Intellectual testing that primarily focuses on obtaining an IQ score maintains prominence in many research studies (e.g., Oh, Glutting, Watkins, Youngstronm, & McDermott, 2004; Canivez & Watkins, 2010). However, much of this work has been shown to be a result of methodological preference, and changing the methodology often changes the conclusions (e.g., Hale, Fiorello, Kavanagh, Holdnack, & Aloe, 2007; Decker, Englund & Roberts, in press). However, it is likely the increased emphasis for assessments to inform intervention, rather than predicting achievement, will lead toward understanding individual differences by examining cognitive strengths and weaknesses rather than IQ.

For example, neuropsychological research reveals why language measures (cognitive) predict reading (academic) achievement (Shaywitz et al., 2004) and why certain reading interventions may be more relevant for one cognitive profile versus another, as in the two cases discussed earlier. Similarly, as is clear in the previous example, FSIQ provides little information in terms of understanding the underlying problem contributing to low academic performance, whereas more specific cognitive factors provide direct links to intervention hypotheses. The conceptual limitations of IQ interpretation focused on FSIQ were noted by neuropsychologists more than 20 years ago (Lezak, 2012). Similarly, school psychologists are now recognizing these limitations.

As a concrete step, training programs should prepare students to interpret the results of cognitive measures beyond the narrow focus on FSIQ. Numerous structured approaches applicable to a wide variety of cognitive tests are available (Decker, 2008, 2012; Feifer & DeFina, 2005; Feifer & Della Toffalo, 2007; Flanagan & Alfonso, 2011; Fletcher, Lyon, Fuchs, Barnes, 2001; Fletcher-Janzen & Reynolds, 2008; Hale & Fiorello, 2004; Miller, 2009). As the focus of assessment evolves to be more intervention focused, assessment of specific cognitive abilities has greater relevance. As an initial step in training, introduction to the CHC model of cognitive abilities is ideal (Decker, 2008). Such models have been directly related to measures frequently used by school psychologists and could be easily adopted in school psychology assessment practice.

Specific Cognitive Abilities Are Directly Related to Academic Skills

Training programs should provide students with a familiarity of the evidence base between specific cognitive abilities and academic achievement. A considerable amount of research has demonstrated an empirical relationship among cognitive abilities, neuropsychological processes, and specific academic skills (see Flanagan et al., 2006; Fletcher et al., 2001; Hale & Fiorello, 2004; and McGrew & Wendling, 2010, for summaries). Much of the recent research on cognitive-academic relationships has been interpreted within the context of the CHC theory of intellectual abilities (e.g., Flanagan, Alfonso, & Mascolo, 2011) and with specific instruments developed from CHC theory (e.g., McGrew & Wendling, 2010). In addition, statistical analyses, such as structural equation modeling, have been used to understand the extent to which specific cognitive abilities explain variance in academic skills above and beyond the variance accounted for by overall IQ (Floyd, McGrew, & Evans, 2008; Juarez, 2012; McGrew, Flanagan, Keith, & Vanderwood, 1997; Vanderwood, McGrew, Flanagan, & Keith, 2002). Finally, many valuable resources summarize the research on cognitive and neurobiological processes associated with specific academic skill deficits (e.g., Feifer, De Fina, Tressler, & Lanham-Brower, 2005; Feifer & Della Toffalo, 2007; Flanagan & Alfonso, 2011; Fletcher et al., 2007; Fletcher-Janzen & Reynolds, 2008; Hale & Fiorello, 2004; Miller, 2009).

According to the CHC-based literature, narrow abilities subsumed by crystallized knowledge (*Gc*; lexical knowledge, language development, listening ability, general information), short-term memory (*Gsm*; memory span, working memory), auditory processing (*Ga*; phonetic coding), long-term storage and retrieval (*Glr*; associative memory, meaningful memory, naming facility), and processing speed (*Gs*; perceptual speed) were found to be significantly and most consistently related to reading achievement. Fluid reasoning (*Gf*) was found to play a moderate role in reading comprehension. Related to *Gf*, the role of executive functions and reading achievement (particularly reading comprehension) has been suggested in the neuropsychology literature (e.g., McCloskey, Whitaker, Murphy, & Rogers, 2012), consistent with neuropsychological evidence (Decker, Hill, & Dean, 2007). Not surprisingly, narrow abilities within these same broad abilities were found to be related to writing achievement (Flanagan, Ortiz, & Alfonso, 2012). Narrow abilities within the areas of *Gf*, *Gc*, *Gsm*, *Glr*, and *Gs* were found to relate significantly to math achievement, with *Gf* showing a stronger relation to this academic area than either reading or writing. It may be concluded from this research that emerging lines of cognitive and neuropsychological evidence speak to the relevance of comprehensive evaluation not only for disability identification purposes, but intervention as well (Fiorello, Hale, Decker, & Coleman, 2009; Fiorello, Hale, Synder, Forrest, & Teodori, 2008; Mascolo et al., 2013).

Cognitive Assessment for Measuring Processing Strengths and Weaknesses: The Third Option for SLD Eligibility

The evidence base for cognitive assessment has direct applications to resolving the assessment problems associated with identifying children with SLD. To understand a child's pattern of performance, school psychologists need training in the "third option," or PSW, approach (Hale, Kaufman, Naglieri, & Kavale, 2006). Similar to the empirical approaches of Naglieri (2011) and Flanagan and colleagues (2002; Flanagan, Ortiz, & Alfonso, 2007 Flanagan et al., 2013), Hale and Fiorello (2004) provide an empirically sound approach for identifying children with SLD and other disorders entitled the Concordance-Discordance Model (C-DM) of SLD identification. In the Hale (2006) model, children who do not respond to interventions should be given a comprehensive evaluation in all areas of suspected disability, consistent with expert consensus (Hale et al., 2010b), school

psychology practitioners (Machek & Nelson, 2010), and U.S. Supreme Court decisions (Dixon, Eusebio, Turton, Wright, & Hale, 2011).

This empirical C-DM approach requires establishing a processing strength, a processing weakness, and an achievement deficit associated with the processing weakness. Children who do not respond in a Response to Intervention (RTI) model and meet C-DM criteria are likely to have a SLD according to the IDEA third-method approach (Hale, Wycoff, & Fiorello, 2010a). Not only does C-DM help identify disability, but understanding processing strengths and weaknesses via this method can lead to differentiated, individualized, and targeted interventions designed to meet each child's individual learning needs (Fiorello, Hale, Decker, & Coleman, 2009; Hale et al., 2010b; Mascolo et al., 2013). This cannot happen if practitioners focus on giving the same interventions to all children (i.e., one-size-fits-all approach), with the idea that increasing intervention intensity is all that is needed for long-term treatment efficacy (e.g., Barnett, Daly, Jones, & Lentz, 2004). We believe that doing the same thing over and over when the child continues to fail is problematic and ultimately detrimental. Children with disabilities need individualized interventions to address cognitive functioning to overcome their difficulties; a processing approach can lead to the differentiated instruction they need (Fiorello, Hale, & Wycoff, 2012).

An idiographic interpretation that focuses on patterns of performance can help practitioners identify a child's cognitive processing strengths and weaknesses and is the key to differential diagnosis and developing targeted interventions for children with all types of disabilities, not just SLD. When we examine *subtypes* of learning disorders, based on processing strengths and weaknesses, the predictive validity of cognitive test scores increases substantially. Understanding psychological processes often requires an idiographic approach to interpretation—one that focuses on a child's cognitive or neuropsychological *pattern of performance* and identifies individual processing strengths and weaknesses (Hale & Fiorello, 2004). With better PSW models for understanding SLD, practitioners have a more informed position from which to develop targeted interventions based on individual needs.

Linking Cognitive Processes to Individualized Interventions

The focus on specific cognitive abilities has implications for interventions. The neuroimaging literature is not only demonstrating the importance of understanding processing differences in identifying disability, but it is also showing that the brain is much more plastic (i.e., malleable) than was previously thought. For example, although a child who presents with a disability will often have a processing difficulty attributable to a specific brain area or brain system, he or she will also often show increased activation/functioning in other brain areas, perhaps as a way to compensate for his or her deficit(s). In addition, neuroimaging has shown that the dysfunctional brain pattern can be overcome with the correct intervention (see Aylard et al., 2003; Shaywitz et al., 2004; Simos et al., 2007), so that the struggling child's brain functioning pattern becomes more like a typical child's pattern. In other words, processing *normalizes* in some cases with the appropriate intervention.

There is a growing body of evidence demonstrating that many cognitive abilities can be changed through intervention (Holmes et al., 2009a, 2009b; Jaeggi, Buschkuehl, Jonides, & Shah, 2011; Klingberg, Forssberg, & Westerberg 2002, Klingberg et al., 2005; Thorell, Lindqvist, Nutley, Bohlin, & Klingber, 2009; Westerberg, Hirvikoski, Forssberg, & Klingberg, 2010). Such research includes constructs measured on most tests used by school psychologists, including working memory (Klingberg, 2010), verbal comprehension (Fey, 1986; Fey, Windsor, & Warren, 1995; McCauley & Fey, 2006; Roberts & Kaiser, 2011; Wallach, 2007), processing speed and academic fluency (Bennett & Cavanaugh, 1998; Dowhower, 1987; Rashotte & Torgesen, 1985; Rasinski, 1990; Shimabukuro, Prater, Jenkins, & Edelen-Smith, 1999), and perceptual visual-spatial skills (Ahissar, 2001; Casey et al., 2008; Rosen, 1966).

Furthermore, some cognitive interventions have been demonstrated to directly affect academic skills. For example, working memory training has been shown to improve reading comprehension (Dahlin, 2011) and mathematics performance (Holmes et al., 2009), and a recent meta-analysis indicated spatial skills, which predict science and mathematics learning (Shea et al., 2001; Benbow, 2009) can be improved through training (Uttal et al., 2012). To date, there are no research studies that have demonstrated intervention efficacy in targeting "g," general intelligence, or behavioral constructs represented by the FSIQ.

Implications for School Psychology Training and Practice

Future Training Needs: Which Scenario Will Emerge?

Differences in perspective in the utility of cognitive measures for identifying children with SLD, ambiguous federal regulations on what should be included in a comprehensive diagnostic evaluation, and the continued need for diagnostic evaluations in applied practice create a dilemma for training programs regarding how intellectual/cognitive assessment should be positioned in their curriculums. Three scenarios that address the dilemma are evident.

In the first scenario, some training programs may drastically reduce or discontinue training on the administration and diagnostic interpretation of intelligence tests. Many training programs have viewed RTI training as a replacement for training in cognitive diagnostic assessment. Despite the benefits inherent in an RTI approach as a method of prevention and intervention (Hale, 2006), emerging evidence suggests RTI does not resolve discrepancy problems and likely creates a host of new problems (Reynolds & Shaywitz, 2009; Seungsoo, Fearrington, & Christ, 2011; Tran, Sanchez, Arellano, & Swanson, 2011).

Many emerging problems with RTI may be the result of the almost nonexistent research base for it in the school psychology literature prior to its inclusion in IDEA in 2004 (Decker, 2012). Some of these problems include a lack of reliable definitions in RTI, which creates significant variation across states (Berkeley, Bender, Peaster, & Saunders, 2009) and objective determination of response or nonresponse (Barth et al., 2008; Brown-Waesche et al., 2011; Fuchs, Fuchs, & Compton, 2006; Speece, 2005). In fact, because RTI is a "diagnosis by default" approach with no true positive to indicate what SLD *is*, Hale et al. (2010) admonished, "we must conclude RTI *can never be a valid method for SLD identification* [italics added], because it is scientifically flawed as a method of disability determination" (p. 486). These, and a host of other technical problems, provide sufficient reasons for school psychology training programs to hesitate before eschewing their cognitive and diagnostic assessment courses in favor of RTI instructional monitoring methods.

The benefits of the first scenario—programs reducing or eliminating intellectual assessment training—have been well represented in professional publications (Castillo et al., 2012; Reschly, 2000; Reschly & Grimes, 2002; Tilly, 2002; Ysseldyke et al., 1997). Less represented are the risks of this scenario. Students from these school psychology programs may be asked to conduct contemporary and valid diagnostic evaluations, depending on internship placement or job responsibilities. Ethical guidelines of practice would limit such students' ability to fulfill such requests. Formally, it is unknown to what extent school psychologists without training in diagnostic evaluations are conducting such evaluations in practice; however, such practice is inevitable, given the demands placed on practitioners.

In the second scenario, some programs may slightly reduce or maintain current training to ensure that school psychology students can administer and score an intelligence test in the event, as we would expect given practice research, the student works in a district that continues to use the ability-achievement discrepancy approach. The second scenario—maintaining the status quo—is unlikely to persist, given the numerous documented problems with ability-achievement discrepancy

approaches (e.g., Stanovich, 2005). This scenario leads to "test and place" practices, which have been decried by those who advocate RTI and contemporary cognitive assessment alike (see Hale et al., 2010), so we believe this scenario is without merit. However, many school psychology programs, aware of the risks of the first scenario and the limitations of this second scenario, are currently looking for guidance on how to revamp their traditional assessment courses.

In the final, preferred scenario, some programs will shift to contemporary approaches of cognitive and neuropsychological assessment and use such approaches to replace ability-achievement discrepancy for SLD identification. This may be accomplished by revising traditional assessment courses and by adding requirements to assessment practica. The third scenario—teaching contemporary approaches to evidence-based cognitive assessment—is an option that is receiving increased attention (Flanagan & Alfonso, 2011). Contemporary assessment approaches not only provide a remedy to the historic issues plaguing SLD assessment practices but also provide insight into understanding individual differences that govern academic performance and psychosocial functioning to serve the needs of diverse learners (e.g., Hale, Wycoff, & Fiorello, 2010b). Although this approach, like others, has advantages and disadvantages, we recommend this option based in part on the accumulated evidence supporting this approach and also on the professional need for evidence-based assessment in schools (e.g., Decker, 2008; Flanagan et al., 2007, 2013; Flanagan et al., 2006).

There are substantial legal issues that must also be taken into consideration that will continually require the use of intellectual testing that goes beyond just obtaining an IQ score. Lawsuits concerning *insufficient* evaluations to identify children with cognitive disabilities have already emerged (Dixon et al., 2010). Furthermore, the Office of Special Education has noted problems in the use of RTI models to block or delay children's access to special education services (Office of Special Education Programs, 2011). IDEA Child Find (2004) requirements indicate that a child must be evaluated in all areas of suspected disability, and cognitive causes of disability are now well documented in the literature (Hale et al., 2010; Miller, 2009). Fulfillment of these mandates by school psychologists requires expertise in assessment beyond measurement of academic achievement alone. Indeed, given the need for diagnostic services beyond those required by federal guidelines (Decker, 2008), if school psychologists are unwilling or insufficiently prepared to provide such services, other professionals will likely fulfill this role (Maricle, Miller, Hale, & Johnson, 2012). Other roles and functions of the school psychologist can be carried out by teaching assistants, special education teachers, intervention specialists, and paraprofessionals (e.g., instruction monitoring; Cook & Cook, 2011; Cummings, Atkins, Allison, & Cole, 2008; Gresham, 1986). Therefore, the costs and benefits firmly argue for school psychology training programs to adopt evidence-based assessment practices consistent with research in contemporary cognitive assessment.

Summary

We have attempted to develop a rationale to support our recommendations for training programs that are trying to navigate the confusing context of preparing students for professional roles as school psychologists. Having outlined our rationale for cognitive and neuropsychological testing for the purpose of identifying and serving children with special learning needs, we are quite confident the process is useful, effective, and makes a difference in the lives of children when used by skillful clinicians. Worthy of note is that the third option of alternative approaches that we referenced and described briefly in this article is *evidence-based* (Della Tofallo, 2010; Flanagan & Alfonso, 2011). However, this does not mean these approaches will be considered by future school psychologists, especially if they are not adequately trained. Therefore, training programs should adopt contemporary cognitive and neuropsychological curricula and methods to ensure that school psychologists have the necessary skills to conduct comprehensive evaluations in all areas of suspected disability, consistent with Federal law (e.g., Dixon et al., 2010).

Clearly, we need to embrace all empirically sound approaches to helping children with learning and behavioral needs. Ideological hostility, denial of science, and resistance to new information has no place in modern school psychology training programs and school-based practice. Best practices would suggest that RTI is useful for prevention of disability and early intervention for children at risk for disability. For children who do not respond to our best attempts at early intervention, a comprehensive evaluation can provide information about individual needs. This information is not only relevant for understanding individual learner differences, but it can lead to targeted, individualized interventions that can help all children succeed, regardless of disability status.

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