SECTION I

PROFESSIONAL ISSUES IN SCHOOL NEUROPSYCHOLOGY

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CHAPTER 1

School Neuropsychology, an Emerging Specialization

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"We believe it is no longer possible for the school psychologist to master all of the areas of knowledge needed to function ethically and effectively in so many domains. The time for the development of specializations in school psychology has come'' (Hynd & Reynolds, 2005, pp. 11–12).

The preceding quote is from George Hynd and Cecil Reynolds, the principal pioneers behind the development of the school neuropsychology specialty. The purpose of this chapter is to provide a rationale for why the time is right for our national school psychology organizations to recognize specialties/subspecialties. The focus of this chapter will be on the need to specifically recognize school neuropsychology as a subspecialty. The chapter will also review the various roles and functions of a school neuropsychologist, review the history of school neuropsychology, and review the common reasons for referral for a school neuropsychological evaluation.

THE NEED FOR PROFESSIONAL ORGANIZATIONS TO RECOGNIZE SPECIALIZATIONS

In this chapter, the term *emerging specialty* or *emerging specialization* will be used in reference to school neuropsychology, which implies that the author believes that the practice of school psychology has matured into a separate and distinct profession from the practice of psychology in general.

For the past forty years there has been a debate between the American Psychological Association (APA) and the National Association of School

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Psychologists (NASP) about how school psychology relates to the broader field of psychology. The question remains whether the practice of school psychology has become a separate profession or remains a recognized specialty within the broader field of psychology. If school psychology were considered a separate and distinct profession from psychology in general, then school neuropsychology would be viewed as an ''emerging specialization/specialty'' within school psychology. In APA, school psychology is already a recognized specialty area within the broader field of psychology. If specializations were recognized within the specialty of school psychology, then school neuropsychology would be viewed as an emerging ''subspecialization or subspecialty.''

Another long-standing controversy in school psychology is the use of the title ''school psychologist.'' Again, this contentious debate has been between APA and NASP. Within APA's Model Act for State Licensure of Psychologists (American Psychological Association, 1987) there has been a long-standing exemption that allows nondoctoral practitioners to use the title ''school psychologist'' if they are state certified for practice. In 2007, APA proposed that the language granting this exemption be removed and the title school psychologist only be reserved for doctoral licensed practitioners. At the time this chapter was written, this issue was still unresolved. In this chapter, the term *school psychologist* will be used to describe specialist-level and doctoral-level practitioners who offer the full array of school psychological services.

The evidence exists to suggest that the days of being a school psychologist generalist are numbered. The term *generalist* implies that a broad array of entry-level knowledge and skills within the field of school psychology are known and demonstrated respectively. Fagan (2002) noted ''that the point has been exceeded where a school psychologist can be trained to perform all roles and functions with competence'' (p. 7). The challenge for trainers and their students has been to remain abreast at the entry-level depth of knowledge and skills required within each domain of practice (Miller, DeOrnellas, & Maricle, 2008).

Miller et al. (2008) and Miller, DeOrnellas, and Maricle (2009) stated that the increase in specialized knowledge within our field has led many school psychology practitioners to choose (voluntarily or through necessity) to specialize within a particular area. It is important to realize that such specialization is a luxury afforded to school districts that have a sizable number of school psychologists. School psychologists working in large school districts, often in urban areas, have opportunities for specialization that are not afforded to those school psychologists working in rural, and often underserved, areas. In rural areas, school psychologists are ''generalists'' by necessity. Therefore, as the profession enters into discussing the merits of

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recognizing specializations within the field of school psychology, the urban versus rural service delivery differences need to be considered.

Another issue that must be weighed is the impact of recognizing specializations on the existing shortage of school psychologists. Curtis, Hunley, and Chesno-Grier (2004) reviewed the potential negative impact of the shortage of school psychologists on service delivery to children. Any time a profession makes credentialing of its practitioners more difficult, the risk increases that there will be fewer practitioners to offer services. Specialization within a profession may be a natural progression that takes place within a profession with specialization being viewed as a sign of organizational maturity (Fagan, 2002; Hynd & Reynolds, 2005; Miller et al., 2008, Miller, DeOrnellas, & Maricle, 2009); however, professional organizations should carefully consider the potential impact of recognizing specializations on the shortage of school psychologists and on rural service delivery.

Miller, Maricle, and DeOrnellas (2009) conducted a random survey of 1,000 regular members of the National Association of School Psychologists (NASP), and 80.9 percent of the respondents were in favor of NASP recognizing subspecialties with school neuropsychology being one of the top ten recommended areas of specialization. Specialization occurs when a school psychologist is either asked, or volunteers through interest, to assume the duties within a narrow range of focus. For example, a school psychologist may be assigned to work on the autism assessment team. While the school psychologist may have some basic training in differential diagnosis in the identification of autism spectrum disorders, he or she is often lacking in the specialized expertise required to expertly perform the required duties. In order to hone professional skills in autism, the ethical practitioner will seek out training, supervision, and professional resources (e.g., books, tests). The question then becomes what ultimately constitutes entry-level competency within a specialization. This question will be discussed in Chapter 2 of this book entitled School Neuropsychology Training and Credentialing.

SCHOOL NEUROPSYCHOLOGY AS A SPECIALTY

The body of specialized school psychology knowledge has grown exponentially in recent years. We truly live in an amazing age of vast information. The training requirements for entry-level school psychology practitioners have increased dramatically since the early 1990s. Trainers of school psychologists do their best to train entry-level and advanced practitioners in a variety of roles and functions, including data-based problem solving, assessment, consultation, counseling, crisis intervention, and research. Most school psychology curriculums at the specialist-level have a class that covers the biological bases of behavior, but there is no in-depth exposure to neuropsychology. School

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psychology trainers often feel that they only have enough time to introduce specialist-level students to the broad array of roles and functions available to them as practitioners. Increased specializations in areas such as school neuropsychology must occur either through organized, competency-based postgraduate certification programs or through doctoral school psychology programs that offer specialization in school neuropsychology.

There are several reasons for recognizing school neuropsychology as a specialty within school psychology, including the following:

- The growing acknowledgment within the medical and education communities of the neurobiological bases of childhood learning and behavioral disorders.
- The influences of federal education laws such as IDEA, which have included traumatic brain injury as a disability and continued to emphasize the identification of processing deficits in specific learning disabled children.
- The increased number of children with medical conditions that affect their school performance.
- The increased use of medications with school-aged children often including multiple medications with unknown combined risks or potential interactions.
- Limited access to neuropsychological services within the schools. There is a tremendous need for school psychologists to receive enhanced training in school neuropsychological practice. When neuropsychological services are provided to the school by outside professionals, the reports are often not useful to the schools in developing educationally relevant interventions (see Miller, 2007, for a review).

THE ROLES AND FUNCTIONS OF A SCHOOL NEUROPSYCHOLOGIST

ASSESSMENT

One of the specialized roles that a school neuropsychologist can perform is specialized assessment. School neuropsychological assessments are more in-depth than traditional psychoeducational or psychological evaluations. School neuropsychological assessments typically measure a wider variety of neurocognitive constructs such as sensory-motor functions, attentional processes, visual-spatial processes, language processes, memory and learning, executive functions, speed and efficiency of cognitive processing, general intellectual ability, academic achievement, and social-emotional functioning (see Miller, 2007, for a review and Chapter 5 in this book, which reviews the best practices in school neuropsychological assessment and intervention).

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Consultation

A school neuropsychologist will have specialized knowledge of brain-behavior relationships and an awareness of how education is affected by impairment of function. School neuropsychologists can assist in the interpretation of neuropsychological findings or medical records from outside agencies. School neuropsychologists can help translate brain research into educational practice by consulting with educators and parents about specific child-related issues and about broader systemic educational issues. See Chapter 9 in this book for a more thorough discussion of the best practices in school neuropsychology collaboration with home, school, and outside professionals.

Agency/School Liaison

An important role of a school neuropsychologist is to monitor interventions and to facilitate re-entry planning for children and youth who are medically incapacitated due to a neurological insult or injury. As an example, a school neuropsychologist should act as a liaison between the hospital and the schools when a child is being treated for a traumatic brain injury. Finding out for the first time about ''Johnny,'' who experienced a head injury six months ago and is now sitting in your office wanting to be educationally served, is not good practice. Miller (2007, pp. 79–80) detailed several activities that a school neuropsychologist can perform as a liaison between the schools and a medical facility. Also see Chapter 10 of this book for a more thorough discussion of the best practices in school reentry for children recovering from neurological conditions.

Educator

School neuropsychologists can conduct inservice trainings for parents and teachers about neuropsychological factors that relate to common childhood disorders. As an example, a school neuropsychologist could offer a workshop on the biological bases of ADHD and discuss how psychopharmacology assists in managing the disability in some cases.

Evidence-Based Researcher

Another important role and function for a school neuropsychologist is to conduct both basic and applied educational research to continually investigate the assessment–intervention linkage and to evaluate the efficacy of neuropsychologically based interventions and consultations (Miller, 2007). In the last two decades, many new assessment instruments and interventions have been made available to school neuropsychologists. As a good consumer

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of new products or techniques, the school neuropsychologist must continually evaluate the quality and the applicability of these new tools. When evaluating a new assessment instrument or a new intervention, the practitioner should always be asking the questions: How does this new assessment offer new insight into the neuropsychological processing of the child compared to established assessment techniques? or What is the effectiveness of this new intervention compared to other established interventions?

The emerging specialty of school neuropsychology has been historically influenced by the disciplines of clinical neuropsychology, school psychology, and education. The state of the art and a review of the history of school neuropsychology are discussed in the next section.

STATE OF THE ART OF SCHOOL NEUROPSYCHOLOGY

In order to appreciate the current state of the art in school neuropsychological assessment, it is important to review some of the historical approaches to neuropsychological assessment. Rourke (1982) labeled three stages to describe the history of clinical neuropsychology: (1) the single-test stage, (2) the test battery/lesion specification stage, and the (3) functional profile stage. Miller (2007) labeled the current state-of-the-art practice in neuropsychology as the integrative and predictive stage.

The **single-test stage** dominated the early years (1900–1950s) of clinical neuropsychology in the United States. As the name of the stage implies, clinicians attempted to use a single test to differentially classify patients with and without brain damage. Clinicians looked for signs of organicity or brain dysfunction in patients using single tests such as the *Bender Visual-Motor Gestalt*, *Benton Visual Retention*, or the *Memory for Designs* tests (Miller, 2007). In current practice, school neuropsychologists may use a few stand-alone tests that have been created to assess specific neurocognitive skills. For example, the *Wisconsin Card Sorting Test* (Heaton, 1981) assesses executive functions, and the *Bender-Gestalt Second Edition* (Brannigan & Decker, 2003) assesses visual perceptual-motor ability. The single-test approach to differentiate brain damage did not work with sufficient validity (Rourke, 1982), so the field progressed to using fixed test batteries.

During the **test battery/lesion specification stage** (1940–1980s), there were several major test batteries that were designed to provide multiple measures of the same neuropsychological constructs, thereby improving the reliability and validity of the tests. In the 1940s, World War II shaped the required role and function of early clinical neuropsychologists, which was to use a battery of tests designed to determine the source of possible brain dysfunction. In 1955, Ralph Reitan published the *Halstead-Reitan Neuropsychological Test Battery* (HRNTB), which became the gold standard in

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clinical neuropsychological assessment. The HRNTB is still used in adult clinical neuropsychology practice today, largely due to updated norms that were developed in the early 1990s (Heaton, Grant, & Matthews, 1991).

Reitan and Davidson (1974) published a downward extension of the HRNTB for children ages 9 to 14 called the *Halstead-Reitan Neuropsychological Test Battery for Older Children* (also see Reitan & Wolfson, 1992). Reitan and Wolfson (1985) also published a version of the HRNTB for young children ages 5 to 8 called the *Reitan-Indiana Neuropsychological Test Battery*. These versions of the HRNTB for children had several limitations, including poor conceptualization of childhood developmental disorders, inadequate norms, covariance with measures of intelligence, an inability to distinguish psychiatric from neuropsychological conditions in children, and the inability to localize dysfunction or predict recovery of function after brain injury (see Teeter & Semrud-Clikeman [1997] for a review).

It is not state-of-the-art practice to use the Halstead-Reitan Batteries to assess neuropsychological functions in children. Unlike the adult versions of the test, which have updated norms, the children's versions of the HRNTB have not been renormed in over fifty years. In current practice, many of the HRNTB tests have been modified and updated and included in more recent neuropsychological test batteries. For example, the *Reitan-Klove Sensory-Perceptual Examination* from the HRNTB has been restandardized, updated, and serves as the foundation for the *Dean-Woodcock Sensory-Motor Battery* (DWSMB; Dean & Woodcock, 2003). One of the advantages of using the DWSMB is the fact that the test is co-normed with the *Woodcock-Johnson III Tests of Cognitive Abilities* (Woodcock, McGrew, & Mather, 2001). As another example, the Trail Making Test (TMT) from the HRNTB has been widely used in isolation by practitioners. An updated version of the TMT was included in the *Delis-Kaplan Executive Function System* (D-KEFS; Delis, Kaplan, & Kramer, 2001). The D-KEFS version of the TMT is co-normed with a battery of other executive function measures, and it includes detailed process assessment information to aid in clinical interpretation.

Another early ''gold standard'' in the practice of adult clinical neuropsychology was the *Luria-Nebraska Neuropsychological Battery* (LNNB) for adults (Golden, Hammeke, & Purish, 1978). The LNNB was an attempt by U.S. neuropsychologists to standardize the largely qualitative approach to clinical neuropsychology used by the Russian neuropsychologist, Alexander Luria. Luria's theory of brain functioning has provided the foundation for many of the more modern neuropsychological assessment instruments used today (e.g., *Cognitive Assessment System* [Naglieri & Das, 1997]; *Kaufman Assessment Battery for Children, 2nd Edition* [Kaufman & Kaufman, 2004]). Golden (1986) also published a children's version of the LNNB for ages 8 to 12 called the *Luria-Nebraska Neuropsychological Battery: Children's Revision*

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(LNNB-CR). Teeter and Semrud-Clikeman (1997) provided an extensive review of the LNNB-CR. They found studies that supported the use of the LNNB-CR for differentiating LD from non-LD children, but there was little evidence that the LNNB-CR was effective in differentiating neurologically impaired from nonclinical groups.

The third major clinical approach that emerged during the test battery/lesion specification stage became known as the process assessment approach. In the 1960s and 1970s, a group of clinicians and researchers (e.g., Norman Geschwind, Harold Goodglass, Nelson Butters, Heinz Warner, Edith Kaplan) investigated variations in cognitive functions across clinical populations, but did not use the typical fixed batteries (e.g., HRNTB or the LNNB) (see Hebben & Milberg, 2002 for a review). The process assessment approach used a flexible, rather than fixed, battery approach and put emphasis on the qualitative aspects of behavior. As clinicians, those trained in the process assessment approach were just as interested in the strategies that an individual used to derive a test score, if not more than the test score itself. The principle of ''testing the limits'' to determine why a particular test was difficult for an individual was developed by these process assessment clinicians.

In current practice, the process assessment approach has been integrated into tests such as the *Cognitive Assessment System* (Naglieri & Das, 1997), the *Wechsler Intelligence Scale for Children, 4th Edition Integrated* (Wechsler, 2004), the *Kaufman Assessment Battery for Children, 2nd Edition* (Kaufman & Kaufman, 2004), the D-KEFS (Delis, Kaplan, & Kramer, 2001), and the NEPSY-II (Korkman, Kirk, & Kemp, 2007).

In summary, the HRNB, the LNNB, and the process assessment approach emerged during the test battery/lesion specification stage, and each has produced a lasting impact upon clinical neuropsychological assessment. However, the need to move beyond assessment only for the sake of diagnosis to a model that links assessment to prescriptive interventions laid the foundation for the next stage in clinical neuropsychology, called the functional profile stage (Miller, 2007).

The **functional profile stage** (1970s–1990s) described the period in clinical neuropsychology and the emerging specialization of school neuropsychology. In the 1970s, there were three major factors that helped to reshape neuropsychology: (1) Neuropsychologists who specialized in working with children started to question the logic of using downward extensions of adult assessment models and applying these to children, (2) neuropsychologists started to question the validity of neuropsychological test batteries to localize brain lesions and predict recovery of functions, and (3) the emergence of noninvasive brain imaging techniques that replaced the need for neuropsychological tests to make inferences regarding the site of brain lesions or dysfunction (Miller, 2007). The focus of neuropsychological testing during

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this period shifted away from localizing lesions to identifying functional strengths and weaknesses that would aid in the remediation of impaired abilities.

Rourke (1982) referred to this *functional profile stage* as the *cognitive stage* because clinicians integrated the principles of cognitive psychology into the practice of neuropsychology. However, despite the call for neuropsychologists to provide more functional assessments of cognitive strengths and weaknesses and for better linkages to prescriptive interventions, the assessment tools available to neuropsychologists did not change until the early 1990s.

The **integrative and predictive stage** was a term used by Miller (2007) to describe the period of neuropsychological assessment from the 1990s to present time. Within the past two decades, there has been a convergence of research on brain–behavior relationships that has influenced school neuropsychology and the assessment tools. School neuropsychology started to emerge as a specialization in earnest in the 1990s. The multidisciplinary influences on school neuropsychology include the development of tests specifically designed for children, advancements in neuroimaging techniques (see Chapter 7 in this book for a review of the best practices in the application of neuroscience to the practice of school neuropsychology), advancements in the theoretical foundations for neuropsychological tests, cross-battery assessment, the process assessment approach, focus on ecological validity, and the emphasis on linking assessment with evidence-based interventions (Miller, 2007).

Table 1.1 presents the major tests of cognitive abilities and school neuropsychological tests published since the 1990s. The tests of cognitive abilities were included in this table because the major tests of cognition have increasingly incorporated neuropsychological constructs (e.g., processing speed, working memory, executive functions). The wealth of theoretically based and psychometrically sound assessment instruments that we as practitioners have at our current disposal is unprecedented in the history of school psychology or the emerging specialization of school neuropsychology. However, many of these neuropsychological constructs now mainstream in assessment require the practitioner to have better training in the biological bases of behavior and understanding of neuropsychological theories. Training issues will be discussed in more depth in Chapter 2 of this book.

WHEN TO REFER FOR A SCHOOL NEUROPSYCHOLOGICAL ASSESSMENT OR CONSULTATION

It would not be prudent or practical to conduct a comprehensive school neuropsychological assessment on every child experiencing learning difficulties. Neuropsychological evaluations are more in-depth than psychoeducational and psychological evaluations because they assess a wider variety of

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Table 1.1
Major School Neuropsychological Tests Published Since 1990

Tests of Cognitive Ability	Neuropsychological Tests
• Cognitive Assessment System (Naglieri & Das, 1997) • Woodcock-Johnson III Tests of Cognitive Abilities (Woodcock, McGrew, & Mather, 2001) • Wechsler Preschool and Primary Scales of Intelligence – Third Edition (Wechsler, 2002) • Stanford-Binet Intelligence Scales: Fifth Edition (Roid, 2003) • Wechsler Intelligence Scale for Children – Fourth Edition (Wechsler, 2003) • Kaufman Assessment Battery for Children – Second Edition (Kaufman & Kaufman, 2004) • Differential Ability Scales – Second Edition (Elliott, 2007).	• Wide Range Assessment of Memory and Learning (WRAML: Sheslow & Adams, 1990) • Test of Memory and Learning (Reynolds & Bigler, 1994) • California Verbal Learning Test: Children's Version (Delis, Kramer, Kaplan, & Ober, 1994) • Children's Memory Scale (Cohen, 1997) • Wechsler Memory Scale – Third Edition (Wechsler, 1997) • NEPSY (Korkman, Kirk, & Kemp, 1998) • WISC-III as a Process Instrument (Kaplan, Fein, Kramer, Delis, & Morris, 1999) • Test of Everyday Attention (Manly, Robertson, Anderson, & Nimmo-Smith, 1999) • Delis-Kaplan Executive Functions System (Delis, Kaplan, & Kramer, 2001) • Dean-Woodcock Neuropsychological Battery (Dean & Woodcock, 2003) • Wide Range Assessment of Memory and Learning – Second Edition (Sheslow & Adams, 2003) • Wechsler Intelligence Scale for Children – Fourth Edition Integrated (Wechsler, 2004) • Test of Memory and Learning – Second Edition (Reynolds & Voress, 2007) • NEPSY-II (Korkman, Kirk, & Kemp, 2007)

constructs (e.g., sensory-motor functions, memory and learning, executive functions, and others). One of the first roles a school neuropsychologist must assume with a school district is to set some policies and procedures for educators and parents about when to refer for a school neuropsychological evaluation.

Table 1.2 lists some of the common reasons for a school neuropsychological assessment.

CHILDREN WITH A KNOWN OR SUSPECTED NEUROPSYCHOLOGICAL DISORDER

This is a broad category of potential referral candidates. It could be argued that all learning and behavior has a neuropsychological basis; however,

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Table 1.2
Common Reasons for a School Neuropsychological Evaluation

- Children with a known or suspected neuropsychological disorder.
- Children with a past or recent history of a head injury who are currently having academic or behavioral problems.
- Children with acquired or congenital brain damage.
- Children with neuromuscular diseases.
- Children with brain tumors.
- Children with a central nervous system infection or compromise.
- Children with neurodevelopmental risk factors.
- Children returning to school after a head injury.
- Children who have rapid declines in academic achievement and behavioral deterioration that cannot be explained by social-emotional or environmental factors.
- Children who have not responded to multiple evidence-based interventions.

Adapted from Miller (2007).

the targeted referral source in this case is more specific. Many school districts are implementing a Response-to-Intervention approach to monitor educational interventions and perhaps lead to more comprehensive diagnosis of a disability. When a child consistently does not respond to a variety of evidence-based interventions, a comprehensive school neuropsychological assessment could help identify a profile of the child's neurocognitive strengths and weaknesses and perhaps an underlying neuropsychological condition. The goal of the school neuropsychological evaluation will be to develop appropriate educational interventions based on the neurocognitive assessment data.

It is important to keep in mind that not all children with known or suspected neuropsychological disorders will be experiencing current academic or behavioral difficulties. Ideally, school neuropsychologists should work with educators in a preventive manner to maximize the learning environment for all children in an effort to minimize future learning and behavioral difficulties. However, if a child with a known or suspected neuropsychological disorder starts to manifest educational problems, appropriate assessments and interventions should be taken to help that child.

Children with Head Injuries Who Are Having Academic or Behavioral Problems

During the early years of development many children have incidences of hitting their heads. Bumps and bruises seem to be a normal process of growing up for most children. However, when a hit to a child's head causes loss of consciousness, the potential adverse impact of that injury dramatically

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increases. It is not uncommon for a child to sustain a head injury and to appear afterward (perhaps for days, weeks, or years) as if there were no side effects, only to have academic or behavioral difficulties surface at a later date that are related to the head injury. At a minimum, school neuropsychologists should monitor those children who have suffered head traumas to make sure there are no lasting effects. A comprehensive school neuropsychological evaluation would provide baseline data about the child's neurocognitive strengths and weaknesses that could aid in intervention planning. See Chapter 30 in this book for a review of the best practices of assessing and intervening with children who have traumatic brain injuries.

CHILDREN WITH ACQUIRED OR CONGENITAL BRAIN DAMAGE

Not all head injuries are caused by traumatic events such as blows to the head. Some head injuries caused by disorders of the brain, such as anoxia or meningitis, can adversely affect some brain functions. A comprehensive school neuropsychological evaluation for children with acquired or congenital brain damage would provide baseline data about the child's neurocognitive strengths and weaknesses that could aid in intervention planning. See Miller (2007, pp. 65–66) and Chapter 27 in this book for a comprehensive review of the best practices of assessing and intervening with children who have chronic illnesses.

CHILDREN WITH NEUROMUSCULAR DISEASES

Children with neuromuscular disorders may or may not have neurocognitive deficits associated with their primary disorder. The very nature of neuromuscular disorders makes traditional assessment methods difficult to apply. An example would be children with cerebral palsy, which prohibits or impairs motor movements, interfering with motor output, including speech and gross and fine motor control. In such as cases, school neuropsychologists will need to collaborate with other specialized practitioners such as occupational and physical therapists when assessing children with neuromuscular diseases. See Miller (2007, pp. 66–72) for a review of cerebral palsy and muscular dystrophy disorders and their potential related neuropsychological deficits.

CHILDREN WITH BRAIN TUMORS

School neuropsychologists will ultimately work with children who have been identified as having a brain tumor or with children who are coming back to school after medical interventions to treat a brain tumor. Brain tumors occur

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in different sizes and locations. Some brain tumors are more readily treatable, while others shorten a child's life considerably. Children with brain tumors and their families and peers will need emotional support while coping with the medical treatment. A school neuropsychologist can play a direct role in providing counseling support services to the child, family, and peers or in acting as a referral agent to facilitate those services. Regardless of how one provides those counseling support services, these services cannot be ignored. A comprehensive school neuropsychological assessment will provide information about which neurocognitive functions are impaired and which ones are spared in a child with a brain tumor. Chapter 28 in this book reviews the best practices of assessing and intervening with children who have brain tumors.

Children with a Central Nervous System Infection or Compromise

Many children in the schools have medical disorders that compromise the central nervous system (CNS) and may lead to transient or chronic neurocognitive deficits. These disorders include, but are not limited to, asthma, HIV/AIDS, hydrocephalus, juvenile diabetes, leukemia, and end-stage renal disease. These disorders and their associated neuropsychological deficits are reviewed by Miller (2007, pp. 68–75), and Chapter 27 of this book reviews the best practices of assessing and intervening with children who have chronic illnesses. School neuropsychological assessments may or may not be warranted with these children who have CNS infections or compromises. Educational need will be the determinant as to when to refer for a school neuropsychological evaluation for these types of children.

Children with Neurodevelopmental Risk Factors

There are a wide variety of neurodevelopmental risk factors that can affect a child's neuropsychological functions. Unfortunately, some of these are preventable such as fetal exposure to drugs and alcohol. Other examples include exposure to environmental toxins (e.g., lead, PCBs, mercury) and low birth weight or prematurity. These disorders and their associated neuropsychological deficits are reviewed by Miller (2007, pp. 75–77), and Chapter 27 of this book reviews the best practices of assessing and intervening with children who have chronic illnesses. If one of these neurodevelopmental risk factors is found in the developmental history of a child, it may be prudent to conduct a school neuropsychological assessment specifically in the areas of known deficits. For example, fetal alcohol exposure has been linked to fine motor deficits, so an assessment that includes a test of visual-motor functioning or fine motor control would be warranted.

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CHILDREN RETURNING TO SCHOOL AFTER EXPERIENCING A NEUROLOGICAL CONDITION

An important role of a school neuropsychologist is to assist in the planning and transition for children who are coming back to school after hospitalization for a neurological condition or a chronic illness. As previously mentioned, it is better to plan for a smooth transition for a child returning to school after a neurological insult rather than to have the child show up at a school without any prior warning or preparation. Sometimes a child comes back to school with a recently completed comprehensive neuropsychological assessment. However, if the child did not receive a neuropsychological assessment while in the hospital or as part of the outpatient care, the school neuropsychologist should conduct an evaluation to establish a functional profile of the child's neurocognitive strengths and weaknesses. Chapter 10 in this book reviews the best practices in school reentry for children recovering from neurological conditions.

CHILDREN WHO HAVE RAPID DECLINES IN ACADEMIC ACHIEVEMENT AND BEHAVIORAL DETERIORATION THAT CANNOT BE EXPLAINED BY SOCIAL-EMOTIONAL OR ENVIRONMENTAL FACTORS

It is important for a school neuropsychologist to recognize the limits of his or her expertise and competency. There will be occasions when a school neuropsychologist will need to refer a child to a neurologist due to a suspected neurological condition such as a brain tumor or severe seizure disorder. School neuropsychologists should be concerned about a child who has a rapid decline in his or her academic performance and or behavioral functioning that cannot be explained by social-emotional or environmental factors. If the condition of the child is not too severe, a comprehensive school neuropsychological evaluation might be helpful to the neurologist to determine the extent of any neuropsychological impairment (Miller, 2007).

SUMMARY

It is an exciting time to specialize in school neuropsychology. Many of the constructs of neuropsychology, such as working memory and executive functions, are becoming part of mainstream assessment. There has never been a time in the history of school neuropsychology that offers practitioners a myriad of choices of theoretically and psychometrically sound assessment instruments to use in evaluating children with special needs. The challenge for school neuropsychology is the same challenge for school psychology—to establish strong evidence-based linkages between assessment and interventions and to broaden our approaches to culturally diverse populations. The remainder of this book will cover many of these topics in greater detail.

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REFERENCES

American Psychological Association. (1987). Model Act for state licensure of psychologists. *American Psychologist*, *42*, 696–703.

Brannigan, G. G., & Decker, S. L. (2003). *Bender-Gestalt II examiner's manual*. Itasca, IL: Riverside Publishing.

Cohen, M. J. (1997). *Children's memory scale*. San Antonio, TX: Harcourt Assessment, Inc.

Curtis, M. J., Hunley, S. A., & Chesno-Grier, J. E. (2004). The status of school psychology: Implications of a major personnel shortage. *Psychology in the Schools*, *41*, 431–442.

Dean, R. S., & Woodcock, R. W. (2003). *Dean-Woodcock neuropsychological battery*. Itasca, IL: Riverside Publishing.

Delis, D., Kaplan, E., & Kramer, J. H. (2001). *Delis-Kaplan executive function system examiner's manual*. San Antonio, TX: The Psychological Corporation.

Delis, D. C., Kramer, J. H., Kaplan, E., & Ober, B. A. (1994). *California verbal learning test: Children's version*. San Antonio, TX: Harcourt Assessment, Inc.

Elliott, C. D. (2007). *Differential ability scales – II*. San Antonio, TX: Harcourt Assessment, Inc.

Fagan, T. K. (2002). School psychology: Recent descriptions, continued expansion, and an ongoing paradox. *School Psychology Review*, *31*, 5–10.

Golden, C. J. (1986). *Manual for the Luria-Nebraska neuropsychological battery: Children's revision*. Los Angeles: Western Psychological Services.

Golden, C. J., Hammeke, T. A., & Purish, A. D. (1978). Diagnostic validity of a standardized neuropsychological battery derived from Luria's neuropsychological tests. *Journal of Consulting and Clinical Psychology*, *46*, 1258–1265.

Heaton, R. K. (1981). *Wisconsin card sorting test manual*. Odessa, FL: Psychological Assessment Resources.

Heaton, R. K., Grant, I., & Matthews, C. G. (1991). *Comprehensive norms for expanded Halstead-Reitan battery: Demographic corrections, research findings, and clinical applications*. Odessa, FL: Psychological Assessment Resources.

Hebben, N., & Milberg, W. (2002). *Essentials of neuropsychological assessment*. New York: John Wiley & Sons.

Hynd, G. W., & Reynolds, C. R. (2005). School neuropsychology: The evolution of a specialty in school psychology. In R. C. D'Amato, E. Fletcher-Janzen, & C. R. Reynolds (Eds.), *Handbook of school neuropsychology* (pp. 3–14). Hoboken, NJ: John Wiley & Sons.

Kaplan, E., Fein, D., Kramer, J., Delis, D., & Morris, R. (1999). *WISC-III PI manual*. San Antonio. TX: The Psychological Corporation.

Kaufman, A. S., & Kaufman, N. L. (2004). *Kaufman assessment battery for children* (2nd ed.). Circle Pines, MN: American Guidance Service Publishing.

Korkman, M., Kirk, U., & Kemp, S. (1998). *NEPSY: A developmental neuropsychological assessment*. San Antonio, TX: The Psychological Corporation.

Korkman, M., Kirk, U., & Kemp, S. (2007). *NEPSY-II: A developmental neuropsychological assessment*. San Antonio, TX: The Psychological Corporation.

Manly, J., Robinson, I. H., Anderson, V., & Nimmo–Smith, I. (1999). *Test of everyday attention for children* (*TEA-Ch*) *manual*. San Antonio, TX: Harcourt Assessment.

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Miller, D. C. (2007). *Essentials of school neuropsychological assessment*. Hoboken, NJ: John Wiley & Sons.

Miller, D. C., DeOrnellas, K., & Maricle, D. (2008). Is it time for our organization to recognize subspecialties within school psychology? *Communiqueé*, *36*(5), 40–41.

Miller, D. C., DeOrnellas, K., & Maricle, D. (2009). What is so special about the specialist degree? In E. García-Vázquez, T. Crespi, and C. Riccio (Eds.), *Handbook of education, training and supervision of school psychologists in school and community—Volume I: Foundations of professional practice*. United Kingdom: Routledge.

Miller, D. C., Maricle, D., & DeOrnellas, K. (2009). Survey: Is it time for our organization to recognize subspecialties within school psychology? *Communiqué*, *37*(5), 23–24.

Nagileri, J., & Das, J. P. (1997). *Das-Naglieri cognitive assessment system*. Itasca, IL: Riverside Publishing Company.

Reitan, R. M. (1955). Discussion: Symposium on the temporal lobe. *Archives of Neurology and Psychiatry*, *74*, 569–570.

Reitan, R. M., & Davidson, L. A. (Eds.). (1974). *Clinical neuropsychology: Current status and applications*. Washington, DC: V. H. Winston & Sons.

Reitan, R. M., & Wolfson, D. (1985). *The Halstead-Reitan neuropsychological test battery: Theory and clinical interpretation*. Tucson, AZ: Neuropsychological Press.

Reitan, R. M., & Wolfson, D. (1992). *Neuropsychological evaluation of older children*. Tucson, AZ: Neuropsychology Press.

Reynolds, C. R., & Bigler, E. D. (1994). *Tests of memory and learning examiner's manual*. Austin, TX: PRO-ED, Inc.

Reynolds, C. R., & Voress, J. K. (2007). *Test of memory and learning* (2nd ed.). Lutz, FL: PAR, Inc.

Roid, G. H. (2003). *Stanford-Binet intelligence scales* (5th ed.). Itasca, IL: Riverside Publishing.

Rourke, B. P. (1982). Central processing deficits in children: Toward a developmental neuropsychological model. *Journal of Clinical Neuropsychology*, *4*, 1–18.

Sheslow, D., & Adams, W. (1990). *Wide range assessment of memory and learning*. Wilmington, DE: Wide Range, Inc.

Sheslow, D., & Adams, W. (2003). *Wide range assessment of memory and learning* (2nd ed.). Wilmington, DE: Wide Range, Inc.

Teeter, P. A., & Semrud-Clikeman, M. (1997). *Child neuropsychology: Assessment and interventions for neurodevelopmental disorders*. New York: Allyn and Bacon.

Wechsler, D. (1997). *Wechsler memory scales* (3rd ed.). San Antonio, TX: Harcourt Assessment, Inc.

Wechsler, D. (2002). *Wechsler preschool and primary scales of intelligence* (3rd ed.). San Antonio, TX: Harcourt Assessment, Inc.

Wechsler, D. (2003). *Wechsler intelligence scale for children* (4th ed.). San Antonio, TX: Harcourt Assessment, Inc.

Wechsler, D. (2004). *WISC-IV integrated*. San Antonio, TX: Harcourt Assessment.

Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson III tests of cognitive abilities*. Itasca, IL: Riverside Publishing.