

CREATING COMPASSIONATE CLASSROOMS

Understanding the Continuum of Disabilities and Effective Educational Interventions

Nicholas D. Young, Angela Fain and Teresa A. Citro



Creating Compassionate Classrooms: Understanding the Continuum of Disabilities and Effective Educational Interventions

Nicholas D. Young, PhD, EdD Angela Fain, PhD Teresa A. Citro, PhD

Series in Education



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Preface

Creating Compassionate Classrooms: Understanding the Continuum of Disabilities and Effective Educational Interventions was written for pre-service teachers, seasoned teachers, school psychologists, related service providers, school administrators, paraprofessionals, policy-makers, and families of children who have one or more identified disabilities under the categories determined by the federal Individuals with Disabilities Education Act (IDEA) (Center for Parent Information & Resources, 2017). Throughout the chapters of this book, the reader will be introduced to the thirteen disability categories included in IDEA (specific learning disabilities, emotional/behavioral disorders, autism, other health impaired, intellectually disabled, multiple disabilities, speech or language impairments, traumatic brain injury, hearing impairment, deaf/blind, deafness, visual impairment, and orthopedic impairment), using the legally established definitions. Lengthy descriptions of best practices, modifications and accommodations follow, offering a complete picture of each disability and how educators and parents collaboratively can assist the struggling student. This book, then, is meant to be a resource for all those whose path crosses with students in special education.

Our motivation for writing this book comes from several concerns:

- Our belief that students in these disability categories deserve the highest quality education that both schools and educators have to offer, which can only occur when essential information on best practices is shared;
- Our knowledge that there is currently a special education teacher shortage in the District of Columbia and 48 out of 50 states, and that this shortage leads to classrooms where special education students may receive sub-par learning experiences (Carver-Thomas, 2017);
- Our concern that approximately 13% of our student population receives some sort of special education support, preferably in an inclusion classroom, and that not all staff will be ready and able to support these students (Salem, 2018);
- Our interest in sharing strategies and practices that will enhance student outcomes, and these must be taught explicitly to all staff members, not just to special education teachers;

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• Our passion in providing recent and relevant research that will move the discussion forward on how to support our most needy students.

To set the stage, the book begins with chapters that discuss special education in general, response to intervention as an intermediary step in the academic continuum of support, and the individualized education plan process. Subsequent chapters examine each of the thirteen aforementioned IDEA disability categories, which have not been commonly incorporated into one comprehensive resource; however, for the sake of brevity, some disability categories have been combined when doing so did not impact practice implications. Emphasis is placed on effective classroom strategies and interventions associated with each disability category with the intent of providing practitioners and those who support them with the information and tools necessary to support students with identified educational needs. To the extent possible, the primary authors sought to ensure this resource was practical and user-friendly for educators who work directly with students with the range of recognized disabilities.

This book was written by an experienced team whose members, at one time or another, was a special education teacher, licensed psychologist, special education administrator, superintendent of schools, recreation therapist, parent, college professor, department chair, dean of doctoral programs, and international learning disabilities advocate. Collectively, they have over seventy years of experience working with families and students in a variety of settings to include both the general education and substantially separate classrooms, central office, and the college classroom. This wealth of knowledge has made this book possible. In a world where special education is bursting at the seams and staffing is not keeping up with classroom demand, it is imperative that all educators are well-prepared to meet the needs of today's students.

This book demystifies the special education process and disability categories as well as offers educators and their families the tools to help our students, who have one or more disabilities, find life-long success. Ensuring the best for our students with disabilities requires that we first acknowledge and support the hard work and deep commitment of those professionals and parents/guardians who devote their lives to teaching, reaching, mentoring and advocating for those most vulnerable in our classrooms. It is to those individuals, and they know who they are, that we offer our heartfelt thanks and appreciation. In the pages to follow, we trust you will find essential information that will help you in your most noble endeavors.

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Introduction to Special Education

Angela C. Fain, Ph.D., University of West Georgia

Today, more than ever before, many students with disabilities are served in inclusive educational settings alongside their non-disabled peers. Pre-service teachers, school psychologists, related service providers, school administrators, paraprofessionals, policy-makers, and families of children who have one or more identified disabilities determined by the Individuals with Disabilities Education Act (IDEA) all play important roles in special education.

Definition of Special Education

Special education is not a place where students go to get services. Special education is specifically designed instruction, services and supports provided to individual students with disabilities to help them make progress in school. IDEA ensures that all eligible students, ages 3 through 21, are provided a free appropriate public education (FAPE) and receive special education and related services (DoDEA, 2018; American Psychological Association, 2018). To be eligible for special education, a child must have an identified disability, the disability must adversely affect the child's educational performance, and the child must require a specifically designed instructional program (American Psychological Association, 2018). A student must meet the criteria of one of the following 13 identified disabilities categories to include

- 1. Specific learning disability (SLD)
 - a. Dyslexia
 - b. Dysgraphia
 - c. Dyscalculia
 - d. Auditory processing disorder
 - e. Nonverbal learning disability
- 2. Other health impairment (OHI)
- 3. Autism spectrum disorder (ASD or AU)

- 4. Emotional disturbance (ED)
- 5. Speech or language impairment (SLD)
- 6. Visual impairment, including blindness (VI)
- 7. Deafness
- 8. Hearing impairment (HI)
- 9. Deaf-blindness (B/D)
- 10. Orthopedic impairment (OI)
- 11. Intellectual disability (ID)
 - a. Mild intellectual disability (MID)
 - b. Moderate intellectual disability (MOID)
 - c. Severe intellectual disability (SID)
 - d. Profound intellectual disability (PID)
- 12. Traumatic brain injury (TBI)
- 13. Multiple disabilities (MD)

Related, or supplementary, services are provided to students on an individualized basis and may be the only service a student receives. Examples of related services include interpreting services, psychological services, therapeutic recreation, counseling services, occupational and physical therapy, orientation and mobility, medical services, and social work services (Center for Parent Information & Resources, 2017). If a student does not qualify for special education, they may still meet the requirements for related services under Section 504 of the Rehabilitation Act. Section 504 is a federal law that provides services and changes to the learning environment to meet the needs of students (United States Access Board, n.d.). To be eligible for Section 504, a student must have a disability and the disability must interfere with the child's ability to learn in the general education classroom (Understood, 2018). This is a much broader definition than the IDEA definition of disability.

Accommodations and Modifications

Accommodations and modifications are considered and may be provided when a student has a disability. Accommodations are tools or procedures that provide students with disabilities equal access to instruction and assessment (Conderman, Liberty & DeSpain, 2017). Accommodations change how a child learns and can be provided for any student (Strom, 2018). Examples of accommodations include preferential seating, extended time, frequent

breaks, highlighted materials, listening to audio recordings instead of reading a text, using a calculator, and providing guided notes.

Modifications are not the same as accommodations. Modifications are changes to what the student is taught and expected to do in school (Strom, 2018). Assignment modifications include writing shorter papers, completing fewer or different problems than peers, answering fewer or different test questions, and creating alternate assignments, while examples of curriculum modifications include learning different material, being assessed using different standards than peers, and being excused from participating in specific projects or assignments. Only a student with an IEP or 504 Plan can have modifications (Strom, 2018).

Key Vocabulary and Acronyms

Special education has many important terms and acronyms that teachers need to be familiar with. Aside from the acronyms for the disability categories, below are some of the most common acronyms teachers often refer to when discussing students with disabilities.

- IEP Individualized Education Plan
- RTI Response to Intervention
- FAPE- Free Appropriate Public Education
- IDEA Individuals with Disabilities Education Act
- ADA Americans with Disabilities Act
- ESY Extended School Year
- NCLB No Child Left Behind
- ESSA Every Student Succeeds Act
- FBA Functional Behavioral Assessment
- BIP Behavior Intervention Plan
- LRE Least Restrictive Environment

High-Incidence and Low-Incidence Disabilities

High-incidence disabilities occur with a relatively high frequency and include learning disabilities (LD), speech and language disorders (SLD), emotional disturbance (ED), and mild intellectual disabilities (MID) (Gage, Lierheimer, & Goran, 2012). Autism (AU), which is categorized as a low-incidence disability, has seen a dramatic increase in the last couple of decades, as have other health impairments and orthopedic impairments (OI); thus, it is possible that

they may eventually be categorized under high-incidence (Gage et al., 2012). Blindness, deafness, severe intellectual disabilities (SID), and traumatic brain injury (TBI) are considered low-incidence disabilities as they rarely occur (Gage et al., 2012).

Person-First Language

There has been some debate about the person-first language movement. Advocates for person-first language prefer 'person with disabilities' rather than 'disabled person' and 'person with autism' rather than 'autistic person' (Collier, 2012). These advocates believe a person should not be defined by a disability and want people to look past the wheelchair or the guide dog; however, disability rights supporters argue that putting the person before the disability ignores the disability or means that the disability makes someone less of a person. This group of individuals argue that using person-first language implies that being a person means being able-bodied (Collier, 2012).

History of Special Education

Special education can be traced back to the beginning roots of an early French physician, Jean-Marc-Gaspard Itard (1774-1838), who studied diseases of the ear and children who were deaf (Encyclopaedia Britannica, 2018). In the early 1900s, Itard began educating a young boy around the age of 12 he found wandering in the forests of France naked and wild. Itard made great progress in dramatically improving the wild boy's behavior (Itard, 1962), helping to form the foundation of many practices in special education today (Encyclopaedia Britannica, 2018). Other European physicians, Philippe Pinel (1745-1826) and Édouard Séguin, and United States physician Samuel Gridley Howe (1801-1876) and minister Thomas Hopkins Gallaudet (1787-1851) made early contributions in the field that impact the practices today as well (Encyclopaedia Britannica, 2018).

Prior to the late 1700s, disabilities and differences were viewed with fear and superstition. Over time, some religious groups decided that society should be more accepting and care for its less fortunate individuals. Large institutions were built to house individuals who did not fit in with society and were different. These asylums were generally overcrowded and unsanitary (U.S. Department of Education, 2007). The residents received little food, clothing, or care. The first schools in the United States for children with disabilities were boarding and residential schools.

From 1850-1920, there was a rapid increase in the number of residential schools. Day school programs were established in cities and special education classes were created in local schools (Encyclopaedia Britannica, 2018). The

residential and day schools were operated by state and private schools and were typically the only educational options for students with special needs. Attitudes towards individuals with disabilities changed drastically in the 1940s and 1950s when parents began to form local, state, and national groups and organizations. In the 1960s, programs segregated students with disabilities in separate or self-contained classrooms, while the 1970s proved to be one of the most significant decades in terms of improving the lives of special education students (U.S. Department of Education, Office of Special Education and Rehabilitative Services, 2010). The Rehabilitation Act of 1973 ensured that the civil rights of all disabled people were protected and required all schools receiving federal funds to provide students with disabilities accommodations in school (United States Access Board, n.d.). When the Education for All Handicapped Children Act (EHA) was passed in 1975, all students with disabilities were ensured FAPE in the least restrictive environment (LRE) appropriate for their academic learning needs (U.S. Department of Education, Office of Special Education and Rehabilitative Services, 2010).

The 20th century brought about great change for individuals with disabilities that focused on normalization and deinstitutionalization. Large institutions and asylums were closed and students with disabilities were included in the general education classrooms. Children and adults with intellectual disabilities (ID) were moved out of institutions and placed in settings with closer contact with other members of the community. In 1997, EHA became known as the IDEA. IDEA emphasized the individualized education plan (IEP), transition plan, and research-based practices.

The No Child Left Behind Act (Klein, 2015) aligned with IDEA and provided further accountability to schools for results, evidence-based practices, expanded parental control, and expanded local control and flexibility. NCLB held schools and school districts accountable for all student achievement through reading/language arts and math assessments (Klein, 2015). In 2015, Every Student Succeeds Act (ESSA) reauthorized the 50-year-old Elementary and Secondary Education Act (ESEA), upholding the nation's commitment to equal opportunity for all students (U.S. Department of Education, n.d.). ESSA replaced NCLB, which many believe was largely responsible for a culture of over-testing (Hani, 2016).

What is Inclusion?

One of the most controversial issues to come out of normalization in the 20th century is inclusion. IDEA requires public schools in the United States to provide all children with disabilities a free appropriate public education in the LRE for their individual needs (Webster, 2018). Students are included in

the general education classrooms to the maximum extent possible that is appropriate for their academic and social needs. In the past decades, education in the United States has seen a major shift towards inclusive classrooms that integrate students with disabilities into the general education program and provide support and assistance within the general education classroom (Webster, 2018).

Placement Options

When professionals consider the least restrictive environment for a student, there are different increasingly restrictive placement options for students with disabilities (Obiakor, Harris, Mutua, Rotatori, & Algozzine, 2012). It may be necessary to remove students from part or all of the general education to provide special support and supplementary services (IDEA, 2004).

- Inclusion, or regular classroom, is considered the least restrictive environment, where students participate with their non-disabled peers fully in the general education curriculum.
- A resource classroom provides services to students with disabilities outside the general education classroom for at least 21 percent but not more than 60 percent of the school day.
- A separate classroom provides services to students who need more specialized instruction and services in a separate, self-contained classroom for more than 60 percent of the school day.
- A separate school provides special education and related services in a separate day school for students with disabilities for more than 50 percent of the school day.
- A residential facility is a public or private residential facility, at public
 expense, that provides special education and related services for
 students with disabilities for more than 50 percent of the school day.
- A homebound/hospital environment is considered the most restrictive environment. Special education services are provided to students with disabilities in hospital and homebound programs.

(Obiakor et al., 2012)

Students with disabilities should be given every opportunity to participate in educational, nonacademic, and extracurricular programs and services with their non-disabled peers.

Points to Remember

- Special education is not a place; it is specially designed instruction to meet unique learning needs of students with a disability.
- There are 13 identified disability categories recognized under IDEA.
- Accommodations can be made for any student and are alterations to the way tasks are presented to students that allow them to complete the same assignments as their non-disabled peers.
- Modifications can only be provided for students with an IEP or 504 Plan and alter what the student is expected to learn and do.
- The Education for All Handicapped Children Act (EHA) was passed in 1975, all students with disabilities were ensured a free and appropriate public education (FAPE) in the least restrictive environment (LRE) appropriate for their academic learning needs.
- The 20th century brought about great change for individuals with disabilities that focused on normalization and deinstitutionalization.
- In 2015, ESSA reauthorized the 50-year-old ESEA giving the states and school districts more power over decision making and replaced NCLB, considered largely responsible for creating a test-driven education system.

Major Organizations/Resources

Organizations for parents and advocates:

- Advocating Change Together (ACT)
- Autism Society of America
- National Alliance for the Mentally Ill
- Parent Educational Advocacy Training Center (PEATC)
- The Association for Persons with Severe Handicaps (TASH)
- World Associations of Persons with Disabilities (WAPD)

Organization for administrators and teachers:

Council for Exceptional Children (CEC) International Dyslexia Association (IDA) National Association of Special Education Teachers (NASET) National Center to Improve Practice in Special Education National Organization on Disabilities

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The Potency of the Response to Intervention Framework

Nicholas D. Young, PhD, EdD, American International College, Kara Johnson, MEd, Endicott College

Since the reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004, educators and policy makers have increased efforts to make schools and classrooms more responsive to the instructional needs of students. Through a systematic model of preventative and supplemental services, the implementation of evidence-based practices through Response to Intervention (RtI) has shown to reduce the prevalence rate of at-risk students dropping out of school (Bernhardt & Hébert, 2017; Wood, Kiperman, Esch, Leroux, & Truscott, 2017). The RtI framework specifically addresses areas of social/emotional, academic, and behavioral needs of students (Maggin, Wehby, Farmer, & Brooks, 2016).

RtI is a culturally responsive and evidence-based framework that uses assessment and intervention in a prevention system with multiple levels that are based on the intensity of student needs (Bernhardt & Hébert, 2017). This tiered system is designed to maximize student achievement and reduce behavioral problems for all students in order to promote success and positive long-term outcomes in school. At the center of a successful RtI practice and implementation, schools use quantitative data to drive the decision-making process (Crone, Carlson, & Haack, 2015). The practice of evidence-based decision-making assists schools in identifying students who fall within a range that indicates a projection of poor learning outcomes. Utilizing data also allows educators to monitor progress and adjust the intensity and frequency of leveled interventions contingent upon student responsiveness (Crone, Carlson, & Haack, 2015; Daly, Neugebauer, Chafouleas, & Skinner, 2015).

RtI is not special education; yet, these two practices are not mutually exclusive. The purpose of RtI is not to prevent special education, rather, it is

meant to provide early and leveled interventions that meet the needs of all learners (Bernhardt & Hébert, 2017). Students who do not respond positively to intensive interventions may become candidates for special education services (Bernhardt & Hébert, 2017). Data-driven decision-making within RtI can also be used to ensure appropriate identification of students with disabilities as well as reduce the likelihood that students are wrongly identified as having a disability (Bernhardt & Hébert, 2017).

Legal Mandates for Response to Intervention

RtI emerged from decades of legal requirements for special education referrals and evaluations, in addition to over identification and mislabeling of students (Martin, 2018). In previous years, school districts within the United States utilized reactive models where students were moved from general education directly to special education and the learning gap widened (Martin, 2018). Recent policies at the federal, state, and district levels encouraged schools to improve student achievement, instructional programs, and teaching practices, as well as student outcomes in order to measure overall school success (U.S. Department of Education, Office of State Support, 2016). The RtI framework moves away from reactive models to one that emphasizes early and high-quality research-based interventions while the student remains in the general education setting (Martin, 2018).

Individuals with Disabilities Education Act

According to IDEA (2004), a specific learning disability (SLD) is a disorder that manifests itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. As a part of the original publication of IDEA in 1975, a discrepancy model was developed to help identify students with SLD (Searle, 2010). The discrepancy formula was used to determine whether a student's actual achievement was significantly different from his or her predicted achievement based upon their IQ score (Searle, 2010). The formula quickly proved to be ineffective and created the "wait-to-fail" approach to intervention where educators were forced to delay services to students (Reynolds & Shaywitz, 2009). While using this formula, the needs of students were often overlooked or not calculated, resulting in a much larger gap in learning and students receiving services much later, thus becoming less effective (Otabia, Wagner, & Miller, 2014). The discrepancy formula mislabeled students who underperformed due to their culturally and linguistically diverse backgrounds; therefore these students received a greater amount of support than needed to be successful (Searle, 2010).

During the reauthorization of IDEA in 2004, the concept of RtI is mentioned as an alternative approach to the discrepancy model (IDEA, 2004). The act

also required that students both with and without disabilities be provided with proactive and supplemental support immediately following a potential difficulty in learning and/or behavior. The RtI process is able to meet this requirement and decrease misidentification by providing options that are more direct and less intensive than placement in a special education program (Searle, 2010; Hudson & McKenzie, 2016).

Child Find Law

IDEA 2004 mandates that students with disabilities receive a free appropriate and public education (FAPE) and requires that the necessary services are in place to meet the needs of students with disabilities in either a special education placement or in the general education setting (U.S. Department of Education, Office of Civil Rights, 2010). IDEA (2004) also requires states to develop a comprehensive and coordinated multidisciplinary system of Early Intervention Services (EIS) for infants and toddlers with disabilities. School districts within a state have a legal duty to "find" children, from birth through age 21, who may have a disability and are in need of special education services (Wright & Wright, 2018). This law includes private and public school students, migrant children, homeless children, and children who are wards of the state (IDEA, 2004). In order to receive special education services through the special education process, students must be lacking effective progress or demonstrate serious educational deficits (IDEA, 2004). Schools cannot put the onus on parents to report that a child is not making adequate progress.

Two Models of Response to Intervention

According to Fuchs, Mock, Morgan, and Young (2003), there are two models commonly used for implementing RtI in schools to include the standard protocol model and the problem-solving model. The standard-protocol model requires a methodical analysis of student skills and targets problem areas if they fall below a predetermined benchmark (Fuchs et al., 2003; Searle, 2010). The resulting interventions would be applied broadly to any students that fall within this range.

The standard-protocol model differs from the problem-solving model by solely relying on a team of highly qualified individuals to design intervention plans to meet the needs of individual learners (Fuchs et al., 2003; Searle, 2010). Although these models are often viewed as separate entities, Hoover, Baca, Wexler-Love, and Saenz (2008) recommend that they are used in tandem in order for students to achieve the highest learning outcomes possible. Both models seek to reduce or eliminate the barriers to academic and behavioral learning by utilizing different problem-solving techniques that offer complimentary benefits (Hoover et al., 2008). In order for schools to

successfully implement RtI, a blended approach of both models should be used.

Multiple Tiers of Support

Although the term "tier" is used in schools to describe the RtI model, the National Center on Response to Intervention (2010) uses the terms Primary, Secondary, and Tertiary levels to avoid the common misconception that students are physically removed from a setting. Within each of the three levels, there can be more than one intervention. There are likely to be differences in the number and types of interventions used in each of the levels due to how individual schools, districts, and states create and access RtI (National Center on Response to Intervention, 2010).

Primary Level

At the primary level, teachers provide poignant and standards-based curricula that are delivered with evidence-based, differentiated, and targeted instruction (Bernhardt & Hébert (2017). Within this level, students are explicitly taught expectations, procedures, and routines. According to Bernhardt & Hébert (2017), the high-quality core instruction will meet the needs of approximately 80% of the student population. The exceptions are schools with a higher at-risk population, as these schools would require more intensive intervention practices to meet the needs of the larger populations of struggling learners (Bernhardt & Hébert (2017). During primary level instruction, instructional goals are established, and regular progress monitoring of student performance takes place.

Students who perform above the school and/or district's established criterion, typically with standard scores of 90 or above, are considered responsive to the primary level and, therefore, continue receiving instruction at the primary level (McKenzie, 2009; Hudson & McKenzie, 2016). Modifications and accommodations are provided at this level to help a struggling student; however, if a child continues to demonstrate difficulty with these interventions, he or she should be referred to the secondary level intervention approach (Hoover, 2011). Even when a child is referred to the secondary or tertiary level, they never stop receiving the primary level instruction.

Secondary Level

The secondary level builds upon the primary prevention level and utilizes the same evidence-based interventions but at a more moderate intensity. These interventions are mostly delivered in small groups within the general education setting, and the intervention methods and measurements are tailored to the individual child. The classroom teacher delivers instruction with support from resource, instructional, and/or behavioral specialists depending on the areas of concern (Bernhardt & Hébert, 2017).

Tertiary Level

The tertiary level interventions are delivered individually with increased intensity for students who showed minimal response to secondary prevention. According to Bernhardt and Hébert (2017), less than 5% of students require this level of intervention. Specialists or special education teachers typically provide individual instruction or very small group instruction for academics and behavior. Students who provoke behavior concerns at the tertiary level will most likely have a Functional Behavior Assessment (FBA) conducted to determine the function of behavior or why a student would be engaging in a certain behavior (Cipani, 2017). According to Cipani (2017), individuals engage in maladaptive behaviors usually to access a tangible or escape something deemed undesirable. Should a student require more in-depth services than what is offered in this tier of RtI in order to meet his or her needs, the special education referral process ensues.

How to Implement Response to Intervention

Implementation of the RtI framework in a school requires careful consideration and planning. RtI will look different across each school and district, yet there are general guidelines that ensure successful student learning outcomes (McKenzie & Hudson, 2016). According to Bernhardt and Hébert (2017), there are five essential stages every school should consider prior to the start and throughout the implementation of RtI in order to have the greatest amount of success possible to include

- Stage 1: Study and Commit
- Stage 2: Plan
- Stage 3: Build Capacity
- Stage 4: Implement and Monitor
- Stage 5: Continuously Improve

Stage 1: Study and Commit

The essence of the first stage is to explain to educators why RtI is needed, how it will be designed, and how it will be implemented so that it meets the needs for the population of students (Bernhardt & Hébert, 2017). Administrators should assist educators in reviewing literature and data to deepen their

understanding of RtI as a whole, understanding their individual roles and responsibilities in carrying out RtI, and exploring structures that should be implemented in their school (Bergstrom, 2017). Bernhardt and Hébert (2017) argue that schools should obtain staff acceptance in this phase in order to implement the RtI framework. It is imperative that effective leaders are able to present information about RtI in a manner that conveys understanding and illustrates the requirement of such a framework (Bergstrom, 2017; Bernhardt & Hébert, 2017). Preparing and educating teachers, in the beginning, will save districts a lot of time in the long-term and reduce misunderstandings about the values and mission of the school in supporting students learning needs.

Stage 2: Plan

Clear processes and procedures in the planning stage help schools achieve desired outcomes when implementing RtI. Overall planning at this level reduces frustration among administration and staff, effectively allocates resources and time management, leads to effective implementation of RtI in schools, and positively impacts student learning outcomes (Bernhardt & Hébert, 2017). When a clear plan is created, it allows schools to troubleshoot areas before they become problematic and supports a framework that is proactive in nature, rather than reactive. It also allows for educators to work in a collaborative manner.

Stage 3: Build Capacity

This stage helps educators embrace the RtI framework as they achieve understanding for the implementation of the system and how it fits into the existing manner in which the school operates (Bernhardt & Hébert, 2017). It ensures that educators are implementing the RtI framework with coherence and decorum in each classroom (Hoover & Sarris, 2014). Learning at this stage continues to be ongoing for educators and schools should establish staff expectations to carryout RtI with fidelity as well as clarify and develop roles and responsibilities for all staff (RTI Action Network, n.d.). Districts, at this time, should be transparent with parents, community members, and other stakeholders about the overall plan for the implementation of RtI and inform them of the benefits of this framework (Bernhardt & Hébert, 2017).

Each school should establish an RtI team that is comprised of staff who are familiar with student needs and effective intervention techniques (Dia & Rafael, 2017). This team would collaborate to assist in supporting educators and students in the RtI process by alleviating time constraints and providing additional resources for students with more intensive needs (RTI Action Network, n.d.). The RtI team is most successful when the staff has experience

and knowledge that can assist an educator with decision-making and identifying important markers.

Stage 4: Implement and Monitor

RtI integrates assessment data and resources to provide more support options for every type of learner. This systematic way of connecting the instructional components that are already in place allows educators to identify students' strengths and weaknesses while reducing the length of time students wait to receive necessary instruction and intervention (Searle, 2010; Hoover & Sarris, 2014). RtI also requires that general and special education classrooms share the responsibility to ensure that all students receive the additional supports when the data indicates such necessity. Educators should work together to closely monitor and document student progress on research-based instruction in the general education classroom (Hoover & Sarris, 2014). Using data to drive the decision-making process ensures that schools are not overidentifying students with disabilities.

Universal screening. Academic universal screening is used to predict learning outcomes for students who may be at risk for learning or behavioral problems. Universal screening measures are administered to all students frequently, at minimum three times throughout the year, and should be brief, reliable, and valid (Searle, 2010; Bernhardt & Hébert, 2017).

Progress monitoring. Progress monitoring is used to assess how a student is performing and responding to an intervention by quantifying the rate of improvement (Bernhardt & Hébert, 2017). Progress monitoring assists educators in making data-based decisions in regard to the intervention, such as adjusting the intensity and frequency of the intervention or changing the intervention altogether based on a student's response. Like universal screening, progress monitoring should be brief, valid, and reliable (Crone, Carlson, & Haack, 2015).

Progress monitoring is administered more frequently than universal screening measures, at minimum weekly, and should take no more than 15 minutes in length to administer (Bernhardt & Hébert, 2017). Given the frequency that progress-monitoring tools are administered to students, it assists educators with short and long-term data in regard to student success, which is often graphed to help determine if students are making substantial, sufficient, questionable, or poor progress (McKenzie, 2009; Bernhardt & Hébert, 2017).

Curriculum-based measurements. According to Stecker, Lembke, and Foegen (2008), progress monitoring within RtI should be able to show student change, be educationally meaningful and require minimal time investment.

Curriculum-based measurements (CBMs) is an assessment tool used to measure the progress a student is making toward learning predetermined outcomes, such as the curriculum (Hosp, Hosp, & Howell, 2016). Using different types of CBMs across the academic content areas are essential for all students when determining progress as it allows teachers to make better-informed instructional decisions (Greenfield, Rinaldi, Proctor, & Cardarelli, 2010).

Stage 5: Continuous Improvement

The final stage encourages schools to conduct ongoing evaluations on the implementation of RtI within a school. During this stage, schools may adjust teaching practices and activities to meet the evolving needs of learners (Crone et al., 2015). Schools are frequently conducting and evaluating overall progress to assess the sustainability of RtI within a school. This stage requires schools to use and reflect upon the data collected to determine whether the current practices of RtI are working and furthering student learning outcomes (Crone et al., 2015; Bernhardt & Hébert, 2017).

Final Thoughts

There is an increased responsibility placed upon schools from the district, state, and federal levels to improve student achievement. Although RtI was originally developed to meet the federal reform requirements of IDEA of 2004, it has provided educators with a systematic method of preventative and supplemental services to meet the needs of learners. Successful RtI implementation and practice begins with educators understanding the concept of RtI, how it will be used to improve student-learning outcomes and agreeing on the potential benefits for their schools.

As a deliberate process, RtI provides the framework for educators to be able to adjust teaching practices and interventions based on data. Teachers who use the data from RtI make more informed decisions to guide student learning. By using available resources and adjusting teaching practices, schools are able to develop a culture that is proactive in meeting the needs of all learners, including those who are at-risk for poor learning.

Points to Remember

 RtI is an evidence-based tiered system that uses assessment and intervention to meet the needs of all students based on individual academic and behavioral needs.

- RtI meets the requirements of IDEA of 2004 as an alternative to the mandated IQ-Discrepancy Model for identifying students with specific learning disabilities.
- Schools or districts must design and implement their own versions of RtI based on their specific student population.
- For successful implementation, the RtI framework should first be accepted, thoroughly planned, and appropriately resourced. In order to maintain success, the framework should be continuously monitored and adapted to maximize student achievement.
- RtI uses collected data to drive the decision-making process in a way that appropriately allocates support, minimizes the delay in providing interventions, and prevents over-identification of students with SLD in special education.

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Creating Meaningful and Measurable Individualized Education Plans

Nicholas D. Young, PhD, EdD., American International College, Michaela F. Rice, MEd, Endicott College

All students who qualify and receive special education and related services have a detailed and legal written description of the student's educational program (Project IDEAL, 2013). This formal document is called an Individualized Education Plan, or IEP, and this is the foundation of a quality education for students with disabilities. Each IEP is individualized with each student's specific needs in mind and ensures that those with disabilities receive appropriate teaching and modifications and accommodations to instruction necessary to ensure positive results (U.S. Department of Education, 2010)

Although the format, design and presentation of an IEP can differ from district to district and state to state, specific content items are mandated, including a student's present level of academic achievement and functional performance; measurable annual goals; a description of all services to include special education, related services, and supplemental aid services; general education curriculum participation; progress monitoring strategies; participation consideration in state and district assessments; and transition services (DeBettencourt & Howard, 2017). An IEP provides the IEP team, which includes the family of the student in question, with a guide for the teaching and learning of a student with disabilities that is consistent with state and federal laws (DeBettencourt & Howard, 2017).

An IEP is not intended as an individual lesson plan but instead should provide a vision of the student's current abilities and needs, which are identified through goals and objectives that provide the direction and focus of the student's learning throughout the IEP period. When written correctly an IEP serves as a vehicle for improving the educational experience and

outcomes of students with disabilities (Massachusetts Department of Education, 2001).

Eligibility

The Individuals with Disabilities Education Act (IDEA, 2004) requires public schools to provide special education and related services to eligible students. A parent, caregiver, or professional can request a special education evaluation to be completed if there is concern about the student's academic, social, or behavioral development and/or if the caregiver suspects the student requires special education services. Assessment in special education is the process used to determine a student's specific strengths and weaknesses and to determine if the student is eligible for special education services (McMillian, 2013). The evaluation is a problem-solving process that involves collecting information about a student in many different ways to base instructional and intervention decisions (National Association of Special Education Teachers, 2007).

There are thirteen categories that qualify infants, toddlers, preschoolers, and young adults to receive a free appropriate public education (FAPE) through special education services (U.S. Department of Education, 2010). To qualify for special education, students must show a deficit that substantially affects the ability to access the curriculum based on one of the thirteen categories to include specific learning disability (SLD), other health impairment (OHI), autism spectrum disorder (ASD or AU), emotional disturbance (ED), speech or language impairment (SLD), visual impairment, including blindness (VI), deafness, hearing impairment (HI), deaf-blindness (B/D), orthopedic impairment (OI), intellectual disability (ID), traumatic brain injury (TBI), and multiple disabilities (MD) (American Psychological Association, 2018).

Developing Meaningful Measurable Objectives

An IEP includes annual goals for students that are measurable statements that identify what knowledge, skills, or behaviors a student is expected to be able to demonstrate within a period of time, which begins with the time of IEP implementation until the next scheduled IEP review (National Association of Special Education Teachers, 2007). Annual goals are created to meet the student's needs, which are identified by the present level of performance.

Present Level of Performance

The Individuals Disabilities Act (IDEA, 2004) requires each IEP to include a statement of present levels of academic and functional performance. Specific

and accurate information on a student's current performance is essential to the determination of a student's current level of achievement and necessary supports. Present level of performance can be collected through evaluation such as initial evaluation, or three-year evaluation, teacher observation, work samples and classroom data (Bateman & Herr, 2011). Present level of achievement assists the IEP team in deciding appropriate accommodations, supplementary aids and services, and support for the student (Burton, 2018).

A statement of present level of academic achievement and functional performance should be connected with each annual goal provided (Burton, 2017). Academic achievement is performance in academic areas such as writing, math, or reading, and relates to the skills the student is expected to master. If a student has math, written language, and decoding goals, for example, there should be a present level of performance stated for each of the separate objectives. Functional performance is the context of routine activities that include everyday living such as social, behavioral, and mobility skills, which are typically utilized for students with more significant disabilities.

Measurable Goals

Annual goals are measurable statements that identify what knowledge, behaviors, or skills a student is expected to be able to demonstrate within the period of time, which will begin when the IEP is first implemented until the next annual scheduled review (Center for Parent Information & Resources, 2017). Measurable goals and short-term objectives are critical to the strategic planning used to develop and implement IEPs (Center for Parent Information & Resources, 2017). The process of creating annual goals should not start until accurate and detailed present levels of performance are identified since the annual goals should be based on the present levels of performance.

The goals and objectives determined for individual students create a pathway for the IEP team to determine if the student is making adequate progress in the special education environment, the general education classroom and the appropriateness of the placement (Hall, Quinn & Gollnick, 2018). Meaningful, measurable goals help students reach their vision by setting the general direction for instruction, experiences and skills that the student requires.

General goals and objectives are not helpful for teachers to keep appropriate data to assess the progress of students in their current placement. IEP goals should always be SMART, which stands for specific, measurable, attainable, relevant and realistic, and time-limited (Bateman & Herr, 2011).

Specific. Well-written goals should make it clear on exactly what is being measured. Goals should have a corresponding measure in the present level of performance section on the IEP as there should always be a starting point for data collection (Pierangelo & Giuliani, 2007). Without a specific point of present level of performance, the IEP team will not know if the student has made progress towards the goal or objective.

Measurable. All goals must be measurable to allow the IEP team to assess what progress the student made after each measured performance. Without measurable terms, progress cannot be monitored, and goals are no longer meaningful (Burton, 2017). A goal must have specific criteria to know if the goal was achieved. A well-written goal explicitly describes what is being measured and how it is being achieved with a note of observable performance. Observable outcomes should be labeled as an action such as repeat, label, draw, or write that can specifically be noted that a student has achieved. Actions such as improving knowing or enjoying are not actions that can be specifically observed by a teacher.

When observing actions, the expectations of the condition should be specifically included to stay consistent. A student might be provided with a number line, a multiplication chart, or a calculator as a condition for a mathematics goal or objective, for example. Each goal should also include the criteria to know if the student has reached the goal (Burton, 2017). The achievement can be measured through speed, quality of work, accuracy, or fluency. Objective criteria should include what must be completed, and to what level to reach the goal.

Attainable. When creating goals, the IEP team should start from the student's current level of performance. Knowing the present level of performance will allow the team to create realistic goals that will be achievable for the student to work towards and achieve within the IEP term (Burton, 2017). Goals should not be long-term in the sense that it will take the student multiple years and grades to master.

Relevant. All goals should be individualized to meet the student's specific needs as resulted from disability and relevant to the present level of performance (Burton, 2017). Goals should not be based on district curriculum, assessments, or external standards.

Time Limited. Providing a length of time that the student has to achieve the goal, objective, or demonstrate mastery of the skill or behavior enables the team to monitor progress at regular intervals (Burton, 2017).

Least Restrictive Environment

When writing an IEP, the least restrictive environment should always be considered, as federal legislation mandates that services be provided to students in the least restrictive environment (Rothstein & Johnson, 2013). For the majority of students, this is the general education classroom. For students who are unable to access full inclusion, the student should be educated in the setting that most closely mirrors the general education setting while meeting the individualized needs of the student. Students should only be removed from the general education classroom when the severity of the disability prevents the student from achieving appropriate results even with supports and services in place (Friend, 2018).

Accommodations and Modifications

Accommodations and modifications are necessary on an individual basis for students to successfully participate in the general education curriculum (Strom, 2018). A modification is an adjustment that changes the standard or what is measured and is only available to students on IEPs. Modifications change the expectations, assignment, or activity (Strom, 2018). Modifications might include allowing students to provide a writing outline instead of an essay, give alternative project options, or continue working on multiplication of fractions while the class moves on to the next standard.

Unlike modifications, accommodations allow students to complete the same assignment as students in the general education setting without altering what is being measured in any significant way (Strom, 2018). Accommodations make minor changes to the timing, formatting, setting, scheduling, response or presentation of the assignment or assessment. Accommodations listed on IEPs are typically grouped in the category of presentation, response, timing, and setting (Strom, 2018). Accommodations include additional time for assessments, frequent breaks, the use of sensory tools, receive work with larger print size, and listen to audiobooks instead of reading text silently (Strom, 2018). Accommodations can be provided to students with or without disabilities.

When deciphering what accommodations and modifications are necessary for student success, the present level of performance, strengths and weaknesses, and individual needs must be considered (Strom, 2018). Providing the appropriate accommodations and modifications will allow each student to have a successful experience in the least restrictive environment (University of Washington, 2017). Evaluating the effectiveness of accommodations is a team effort and an ongoing process. Accommodations and modifications should not be carried over from year to year without examining present levels of performance as they may have changed or no

longer be relevant or student needs may have shifted. The entire team should be included in the conversation of appropriate accommodations and modifications for each student as team members may have different viewpoints and specialty (University of Washington, 2017).

Progress Monitoring

Progress monitoring is a scientifically-based practice used to assess students' progress and evaluate the effectiveness of the placement and instruction (Gargiulo & Metcalf, 2017). Progress monitoring informs the team of the student's rate of improvement or lack of adequate progress. Monitoring this periodically allows the team to alter instruction, curriculum, and supports to better meet the needs of the students and improve the students' overall success (Tomlinson, 2014).

A progress monitoring plan should be explicitly noted in each student's IEP, which states how progress will be measured towards each annual goal that should be decided on by the team when the IEP is developed (Jones, 2017). The plan should include the specific goals and objectives being monitored, determine which member of the team will be responsible for monitoring progress, and where and how often the data will be collected (Jones, 2017). It is important to establish a frequency that will provide valuable information on student progress (Salvia, Ysseldyke & Witmer, 2013). If the student's progress is only measured once in an IEP term, the information will not assist the team throughout the IEP term to make appropriate changes or include enough information to make sound educational decisions.

Progress monitoring is the responsibility of the entire IEP team, but individual members of the team that are responsible for the instruction of the specific IEP goals should be responsible for monitoring progress towards those goals (Lerner & Johns, 2014). The speech pathologist, for example, would monitor progress for the expressive language goals. Although paraprofessionals and teacher aides can assist with data collection for progress monitoring, they should not be responsible for determining if the child's progress is sufficient and that should be the responsibility of the special education teacher or related service provider listed on the service delivery grid (Lerner & Johns, 2014).

Progress monitoring provides service providers with ongoing data to base education decisions on and provides summative evidence for the IEP team to determine if the student has made sufficient or insufficient progress towards individual goals (Lerner & Johns, 2014). Ongoing progress monitoring is important as it helps the IEP team address a lack of expected progress towards annual goals and makes appropriate changes to the curriculum delivery prior to the IEP term ending (Hoover & Patton, 2017). Progress

monitoring is vital in determining the appropriateness of placement, curriculum, and teaching strategies used and, when used correctly, can improve the educational success of students with disabilities.

Final Thoughts

The IEP defines and mandates an effective process that engages the IEP team in meaningful discussions of the student's educational needs (Pierangelo & Giuliani, 2007). The collaborative team effort includes the special education teachers, general education teachers, related service providers, the parents, and when appropriate the student. Each member of the team has an important perspective of the student that can provide useful information to include in the development of the student's IEP and collaboration between teachers contributes to school improvement and student success (Sindelar, McCray & Brownell, 2014). The completed IEP should be the product of successful collaboration between the school staff and parents in equal participation which identifies the student's unique needs and appropriate services (Pierangelo & Giuliani, 2007).

Points to Remember

- All students who qualify and receive special education and related services have an Individualized Education Plan (IEP). An IEP is a legal, detailed written description of the student's educational program that is the foundation of a quality education for students with disabilities.
- An IEP includes annual goals for students which are measurable statements that identify what knowledge, skills, or behaviors a student is expected to be able to demonstrate within a period of time.
- Progress monitoring provides service providers with ongoing data to base education decisions on and provides summative evidence for the IEP team to determine if the student has made sufficient or insufficient progress towards individual goals.
- Providing the appropriate accommodations and modifications will allow students to have a successful experience in the least restrictive environment.

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Emotional Disturbance

Angela C. Fain, PhD, *University of West Georgia*

As a teacher of more than 30 fourth-grade students, Mr. Diaz has his hands full this year. Thankfully, his co-teacher, Mrs. Smith, will be by his side to help him manage the diverse group of students' individual academic and behavioral needs. One of the biggest challenges this year will be to ensure that the students who are struggling with emotional disturbances (ED) are identified and behavioral and academic supports and interventions are planned and implemented. It will be important for Mr. Diaz and Mrs. Smith to ensure that all of the students are receiving high-quality teaching using evidence-based instructional strategies. Mr. Diaz and Mrs. Smith will differentiate instruction as needed, based on data collected through progress monitoring. The data will help determine whether students need to transition to Tier 2.

Terminology/Definition

Terms that have been used to describe children who have extreme social-interpersonal and/or intrapersonal problems include emotionally disturbed (ED), seriously emotionally disturbed (SED), emotionally handicapped, emotionally impaired, behaviorally impaired, socially/emotionally handicapped, emotionally conflicted, seriously behaviorally disabled, and emotionally and behaviorally disordered (EBD) (Center for Parent Information & Resources, 2017). Emotional disturbance is defined as

a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance:

- (A) An inability to learn that cannot be explained by intellectual, sensory, or other health factors.
- (B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
- (C) Inappropriate types of behavior or feeling under normal circumstances.

- (D) A general pervasive mood of unhappiness or depression.
- (E) A tendency to develop physical symptoms or fears associated with personal or school problems.

As defined by IDEA, emotional disturbance includes schizophrenia but does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance (Center for Parent Information & Resources, 2017, n.p.).

Much controversy has arisen over the use of the term maladjusted children and many claim the definition is not clear when it comes to academic performance. "As an umbrella term, ED represents children who range in severity with a wide array of specific mental disorders including childhood onset schizophrenia, bipolar disorder, selective mutism, anxiety disorder, conduct disorder, eating disorders, obsessive compulsive disorder, and psychotic disorder" (Center for Parent Information & Resources, 2017, n.p.).

Classification

Emotional disturbances can affect a person's physical, social, or cognitive skills. Children with ED often exhibit specific behaviors and characteristics to include

hyperactivity (impulsiveness, short attention span), aggression or self-injurious behavior (such as acting or fighting), withdrawal (depression, anxiety), immaturity (tantrums, poor coping skills), and learning difficulties (performing below grade level). Children with more serious emotional disorders (SED) may exhibit excessive anxiety, bizarre motor acts, distorted thinking, and abnormal mood swings. Some children may exhibit these behaviors at various times during their development; however, children with ED continue to display these behaviors over long periods of time (Center for Parent Information & Resources, 2017, n.p.).

Two broad categories of behaviors have been identified to include externalizing and internalizing behaviors (Ogundele, 2018). Externalizing behaviors include aggression, disruption, and hyperactivity. Internalizing behaviors include depression, social withdrawal, and obsessive-compulsive behaviors (Ogundele, 2018). Children may exhibit characteristics of both dimensions with any degree of intensity or severity as the dimensions are not mutually exclusive (Ogundele, 2018). Comorbidity, the co-occurrence of two or more conditions in the same individual, is common for children with this disorder.

A child with emotional and behavioral disorder who exhibits externalizing behaviors such as aggressive hitting, fighting, teasing, crying, destructiveness, and yelling, often refusing to comply with requests, is likely to earn the label 'disturbed' (Rader, 2016). Other children may exhibit the same behaviors a child with EBD does, but not as often and as impulsively. Children with EBD are not popular with their peers and cause distractions for adults. When this type of aggression is combined with school failure, it is essential that the needs of the child are addressed and met (Kauffman & Landrum, 2018). A child who exhibits internalizing behaviors such as immaturity and withdrawal or depression may also have difficulty developing friendships and meeting the demands of everyday life. The school environment will cause anxiety and distress for these individuals and cause them to be withdrawn (Seely, Severson, & Fixsen, 2014).

Prevalence

While less than 1% of school-aged children are identified with ED and served in special education (U.S. Department of Education, 2018), the number of students who present symptoms of ED have been estimated to be much greater (Forness, Kim & Walker, 2012). Reports suggest that prevalence estimates range from 2% to 20% of school-age children experience some form of ED (Forness, Freeman, Paparella, Kauffman, & Walker, 2012; Kauffman & Landrum, 2009). Students with ED who receive special education services most often exhibit externalizing behaviors (acting out, aggression, disruption). Boys exhibit aggression more often than girls and outnumber girls by a ratio of five to one.

Causes

To date, no one factor has been found to be the cause of behavioral or emotional problems. Factors such as heredity, brain disorder, diet, stress, and family environment have all been thoroughly researched. Research does not indicate that any one of these factors is directly responsible; however, it is believed some factors may predispose a child to problem behavior. Examples of factors that may contribute to ED include poverty, abuse, neglect, violence, defiance of adults, aggression towards peers, social rejection, truancy, drug use, gang membership, and adult criminality (Garner, Kauffman, & Elliott, 2014; Mash & Barkley, 2014).

Characteristics

Children with ED vary greatly in intelligence, academic performance, and emotional and behavioral characteristics. The average student with ED performs in the dull-normal IQ range (around 90). Students with ED

consistently exhibit poor academic outcomes and it is widely accepted that students with ED perform below grade level in reading, spelling, and mathematics for a variety of reasons (Gage, Lewis, & Adamson, 2010; Nelson, Benner, & Bohaty, 2014; Yakimowski, Faggella-Luby, Kim, & Wei, 2016). Students with ED perform more than one year below their non-disabled peers in these areas and achieve well below national averages in both reading and mathematics (Anderson, Kutash, & Duchnowski, 2001). Academically, these students often have difficulty attending to tasks, completing tasks in a timely manner, staying on-task, and completing tasks independently (Cancio, West, & Young, 2004).

Behaviorally, students with ED exhibit inappropriate classroom behaviors during academic tasks; they may be anxious and nervous (Ashcraft, Krause, & Hopko, 2007; Liaupsin, Jolivette, & Scott, 2007), non-compliant (Osher et al., 2007), and/or verbally or physically aggressive to divert attention from their academic difficulties and/or escape task demands (Osher et al., 2007). Task difficulty can impact how these students respond, as often times they display disruptive or noncompliant behaviors in an effort to escape task demands (Mayer, 2001). These inappropriate behaviors often result in lower teacher expectations, removal from a desired task, or removal from the educational setting (Colvin, 2004).

These students often display poor social skills that can affect their ability to complete academic tasks (Sutherland, Lewis-Palmer, Stichter, & Morgan, 2008). Social skill deficits in students with ED include misreading social cues from peers and teachers, inappropriately responding to directives, and the inability to maintain appropriate peer and adult relationships (IDEA, 2004). Students with ED have difficulty taking turns, appropriately seeking teacher attention, maintaining appropriate peer interactions, and responding appropriately in social situations (Cook et al., 2008).

Educational Settings

Students with ED may be educated in a variety of settings including the general education classroom, resource, self-contained classrooms, self-contained schools, and residential settings. According to IDEA (2004) and No Child Left Behind (Klein, 2015), all students are entitled to have access to the general education curriculum within a least restrictive environment (LRE) to the maximum extent appropriate with those who are not disabled. Only when a student is considered to have a disability in which the nature or severity of the disability is such that education in a general education class with supplementary aids and services will not satisfactorily meet the needs of the student is the student considered for placement in an alternative setting such as a special class or separate school.

Identification

Students with ED are most often identified by their teachers. Teachers should include an assessment of emotional and behavioral strengths, as well as deficits (Lane, Menzies, Oakes, & Germer, 2014). Most often, students with conduct disorder are identified as their behavior is often disruptive and easy to identify. Systematic screeners provide teachers with effective ways to gather data that can be helpful in identifying potential issues, validate concerns, and catch students who otherwise might go unnoticed.

Providing Academic and Behavioral Supports Within the RtI Model

Several intervention models such as the comprehensive, integrated, three-tiered (CI3T) model of prevention and the multi-tiered systems of support (Rosen, 2018; Harlacher, Sakelaris, & Kattelman, 2013) resemble practices of Response to Intervention (RTI Action Network, (n.d.); Fuchs & Fuchs, 2006) model and Positive Behavior Interventions and Supports (Positive Behavioral Interventions and Supports; 2018; Sugai & Horner, 2009) model. The RtI model identifies and responds to academic and behavioral needs of students based on a four-tiered system while PBIS focuses on students' behavioral and social skill needs. The following examples show how Mr. Diaz and Mrs. Smith might address possible academic and behavioral needs of the students in the classroom.

Response to Intervention (RtI) model

All teachers are required to provide research-based instruction and environments that will promote learning. Given the movement to more inclusive classrooms, teachers are required to manage more disruptive behaviors in the general education classroom. At Tier 1, Mr. Diaz and Mrs. Smith should already be implementing evidence-based strategies that engage all students and support academic and behavioral outcomes. High student engagement strategies include choral responding, response cards, peer tutoring, high expectations, established routines and procedures, and/or teacher modeling of positive behaviors (Sayeski & Brown, 2011).

Tier 2 strategies and interventions for students who continue to demonstrate challenging behaviors, Mr. Diaz and Mrs. Smith need to consider making changes to academic instruction such as tutoring or remedial interventions, provide contingency plans, positive reinforcement systems, token economies, and/or behavior contracts.

For Tier 3, the most intensive, individualized interventions should be utilized to support students. Mr. Diaz and Mrs. Smith should consider implementing Functional Behavioral Assessments (FBAs), Behavioral

Intervention Plans (BIPs), self-monitoring strategies, daily student evaluations, and/or social skills instruction.

Multi-Tiered Systems of Support (MTSS) model

With the growing support for MTSS and similar models in school settings, there is a need for universal interventions delivered at each tier of support for behavioral and academic support. For behavioral support at the 1st Tier, Mr. Diaz and Mrs. Smith should consider including a universal program used to reinforce appropriate social and classroom behaviors such as The Good Behavior Game (GBG). The GBG is primarily used in elementary school settings. Classrooms are divided into teams and teams can earn points/rewards if the entire team is in compliance with specified teacher expectations. Research shows that the GBG helps to significantly reduce disruptive behavior and increase academic engagement (Coombes, Chan, Allen, & Foxcroft, 2016; McDaniel, Bruhn, & Troughton; 2017

As a 2nd Tier Option, Check In/Check Out (CICO) is an evidence-based intervention that provides frequent and timely feedback to students regarding their behavior throughout the day. CICO uses a Daily Progress Report (DPR) card that students carry with them throughout the day to obtain feedback regarding their behavior and to earn points towards a reward. The students have a morning check-in with a school staff member who provides them with the DPR, positive adult attention, and encouragement to meet the daily behavioral expectations. Each student is provided with structured teacher feedback at the end of each class using the DPR. At the end of the day, students meet with a school staff member to determine the total points earned and discuss the progress of the goals. Students take the DPR home to share with guardians and have signed and return it the following day. Researchers have found CICO to be effective for 65-76% of students who participate in the program (Lane, Capizzi, Fisher, & Ennis, 2012).

Comprehensive, Integrated, Three-Tiered (CI3T) model

The CI3T model of prevention combines practices of RtI and PBIS, using behavioral and academic data to support students across Tier 2 and Tier 3. At Tier 2, students who are in need of additional support are identified using academic and behavioral measurements such as curriculum-based measurements, formative assessments, report cards, attendance, screeners, and office discipline referrals (Whisman, & Chapman, 2013; Oakes, Lane, Cox, Magrane, Jenkins, & Hankins, 2012). Tier 2 interventions may be school-level supports such as tutoring or peer-supported learning and can often be delivered by the general education teachers. Tier 2 interventions may require additional resources like intensive reading programs or CICO. Tier 3, or

tertiary, supports are the most intensive supports available to students. They can be delivered through one-on-one instruction, counseling, or small groups. Students receiving tertiary supports may experience interventions in higher frequency or longer duration than in Tier 2.

Educational Considerations: Strategies That Work

The best way to ensure that all students are on-task and exhibiting positive behaviors in class is to provide engaging academic lessons. When students are actively engaged in class, they are less likely to be off-task and misbehaving. Some strategies that have been proven to be most successful for students with ED are (Ryan, Pierce, Mooney, 2008):

- Explicit instruction: systematic, direct instruction that provides students with clear guidelines
- Positive Behavioral Intervention Supports (PBIS): a behaviorallybased support system for all students within schools focused on creating and sustaining tiered supports that make desired behavior more functional.
- Progress monitoring: used to assess student academic performance, respond to interventions and evaluate effectiveness of interventions
- Time for practice and rehearsal: essential for mastery of skills
- Cooperative learning: students of varying academic levels of ability are put in small groups to work together to improve their understanding of the material.
- Peer tutoring: students of varying levels of ability are paired together to serve as tutors and tutees to learn academic and behavioral concepts.
- Self-monitoring: student measures and records progress of their own behavior and measures that behavior with a pre-determined standard.
- Modeling: model appropriate behavior for students.
- Frequent and timely feedback: provide frequent and timely feedback to students.
- Mnemonics: used to help remember a large amount of information

Functional Behavioral Assessment/Behavioral Intervention Plan

Functional behavioral assessments (FBAs) are effective in reducing problem behaviors and increasing desirable behaviors of students (Jones, Greenwood,

& Dunn, 2016). FBA identify target behaviors, define the purpose of the behavior, and why the behavior is interfering with learning (Jones et al., 2016). Oftentimes, an FBA is used as the basis of a behavioral intervention plan (BIP) for specific disciplinary actions when the student is placed in alternative settings or if the conduct of the student has been determined to be a manifestation of the student's disability. A BIP, on the other hand, is the culmination of an FBA, where the student is taught replacement behaviors for those identified in the FBA (Jones et al., 2016).

Final Thoughts

Students with EBD present some of the most complex academic and behavioral challenges for teachers. Due to the severe behavioral problems many students exhibit, students with EBD experience academic difficulties as well. Teachers and other educational and health professionals are faced with the challenges of promoting positive social, emotional, academic, and behavioral growth for these students.

Points to Remember

- Common characteristics and behaviors seen in children with ED include hyperactivity (impulsiveness, short attention span), aggression or self-injurious behavior (such as acting or fighting), withdrawal (depression, anxiety), immaturity (tantrums, poor coping skills), and learning difficulties (performing below grade level).
- Two broad categories of behaviors have been identified: externalizing and internalizing behaviors.
- Examples of factors that contribute to ED include poverty, abuse, neglect, violence, defiance of adults, aggression towards peers, social rejection, truancy, drug use, gang membership, and adult criminality.
- Students with ED may be educated in a variety of settings including the general education classroom, resource, self-contained classrooms, self-contained schools, and residential settings.
- The best way to ensure that all students are on-task and exhibiting positive behaviors in class is to provide engaging academic lessons.
- Functional behavioral assessments (FBAs) are effective in reducing problem behaviors and increasing desirable behaviors of students.

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Autism Spectrum Disorder

Nicholas D. Young, PhD, EdD, American International College, Elizabeth Jean, EdD, Endicott College

Autism spectrum disorder (ASD) is one of the fastest growing disability categories of the 21st century. Boys are more likely than girls to develop autism by a margin of four to one (National Alliance on Mental Illness, 2015). In the last six years alone, the statistics have risen from 1 in 68 children in 2012 to 1 in 59 children in 2018 (Centers for Disease Control and Prevention, 2018).

Although the cause of ASD is unknown, researchers and families whose children have this disorder believe it may be due to environmental factors or genetics (LaBarbera, 2019; National Alliance on Mental Illness, 2015). Researchers have ruled out a link to childhood vaccinations, long believed to be the starting point of ASD related symptoms (Jain, Buikema, Bancroft, Kelly, & Newschaffer, 2015).

What makes this disorder even more complex is the range of impairment possible as this neurodevelopmental disorder affects communication, social interactions, and movement (American Psychiatric Association, 2013a). Many individuals with ASD perseverate on toys, topics, and books and, equally discouraging, often have difficulty with repetitive and stereotyped movements (American Psychiatric Association, 2013a). Despite these issues, students with ASD are being taught in the inclusion setting as often as possible as required by the Individuals with Disabilities Act, otherwise referred to as IDEA (IDEA: Individuals with Disabilities Act, n.d.).

Within the general education settings, students with ASD and typically developing peers should be taught side-by-side using a variety of methods of differentiation. This learning environment has produced positive results for many students with ASD to include improved social connections and greater academic outcomes (Zagona, Kurth, & MacFarland, 2017). It is important, therefore, for both special education and general education teachers to

understand the myriad options for differentiation and specific learning tools that will advance the learning for students with ASD.

Understanding Autism

The most recent fact sheet from the American Psychiatric Association's DSM-5 (2013b) describes ASD as any individual who, from a very young age, has persistent deficits in communication, is "overly dependent on routines, highly sensitive to changes in their environment, or intensely focused on inappropriate items" (p. 1). It is important to understand that the degree to which these appear is highly dependent on the severity of the disorder.

In order to diagnose ASD, individuals must exhibit persistent deficits, although the degree to which each symptom is seen differs. Deficits in social communication and interactions may be manifested in struggles with nonverbal exchanges to include body language, gestures, and lack of eye contact; an inability or limited ability to read social cues accurately; and difficulty in making friendships (Centers for Disease Control and Prevention, US Department of Health & Human Services, 2018).

Individuals with ASD will exhibit restricted and/or repetitive actions, behaviors, or activities such as motor activities that are repetitive such as making lines of blocks or toys, inflexible thinking and sameness of routine, transitions and changes are difficult, reactivity to sensory input (Centers for Disease Control and Prevention, US Department of Health & Human Services, 2018). These are often referred to as stereotyped behaviors as they fall "invariably into the same pattern or form" (Merriam-Webster, 2018).

The impairment of the above deficits and restrictive patterns cause "clinically significant impairment in social, occupational, or other important areas of current functioning" (Centers for Disease Control and Prevention, US Department of Health & Human Services, 2018, n.p.). It is vital, then, to ensure that these deficits are not due to other disabilities such as global developmental delay or an intellectual developmental disorder (Centers for Disease Control and Prevention, US Department of Health & Human Services, 2018).

The determination and severity of ASD is also set along a continuum. High functioning individuals may require minimal accommodations or modifications to school structures and academics, while those with more severe cases will require myriad modifications to academics and life skills (Ousley & Cermak, 2014). Once a diagnosis is confirmed, and the severity defined, educators and other stakeholders can create an Individualized Education Plan (IEP) that addresses the needs of the student.

Treatment of ASD must be specific to each individual and address the current level of need (National Alliance on Mental Illness, 2015). Using a four-pronged approach will likely yield the best results, allowing individuals with ASD to be most successful in life. According to the National Alliance on Mental Illness (2015), this four-pronged approach includes

- Education and development, including specialized classes and skills training, time with therapists and other specialists
- Behavioral treatments, such as applied behavior analysis (ABA)
- Medication for co-occurring symptoms, combined with therapy
- Complementary and alternative medicine (CAM), such as supplements and changes in diet
 (p. 2).

Defining Autism-Associated Traits

Children who develop ASD generally struggle with "the give-and-take of everyday human interactions" (National Alliance on Mental Illness, 2015, p. 1). The traits of autism are usually divided into three distinct areas to include social interactions, communication, and movement (Centers for Disease Control and Prevention, US Department of Health & Human Services, 2018). Each exists on the ASD continuum and may manifest itself in different ways in each individual, from severely challenged to gifted (National Alliance on Mental Illness, 2015).

Social interactions. This category refers to a child's ability to be involved in social interactions as well as share emotions and interests with friends and acquaintances (American Psychiatric Association, 2013a). When these activities occur naturally, it is referred to as social reciprocity. Social reciprocity deficits in children may include an inability to identify emotions in others (LaBarbera, 2019). Additional struggles include making and keeping friendships as they are often unable to change their behaviors in different situations or lack the ability to read facial expressions (Zager, Wehmeyer, & Simpson, 2012).

Communication. Children who struggle with social conversations may not be able to communicate their feelings or understand things very literally (LaBarbera, 2019). Communication deficits are the most common characteristic for individuals with ASD (Webber & Scheuermann, 2008). Again, social reciprocity, or a lack of, is at play here. It is not uncommon for these individuals to avoid conversations and instead, move towards more individualized activities that do not require verbal interactions (American Psychiatric Association, 2013a). Additional struggles occur when an individual

with ASD does not pick up on body language and social cues that would be commonplace to a non-affected peer (LaBarbera, 2019).

Movement. Individuals with ASD experience at least two of five different issues with movement to include fixated interests; stereotyped movements such as hand and arm flapping, whirling, or rocking back and forth; hyperactivity to sensory input; specific interest in environmental sensory inputs; and unnatural need for predicable schedules (American Psychiatric Association, 2013a).

The History of Inclusion

Several court battles brought inclusion into the limelight of education; yet it was not an issue of disability that first occurred. Brown v. the Board of Education guaranteed that students were not segregated by virtue of race, and that separate but equal was a farce was decided in 1954 (A&E Network, 2018). The Civil Rights Act of 1964 in part delineated that all persons, regardless of race, gender, or ethnicity, should be treated equally under the law if they receive federal financial aid (University of Kansas-School of Education, 2018).

The 1971 case of Pennsylvania Association of Retarded Children (PARC) v. the Commonwealth of Pennsylvania and the 1972 case of Mills v. the Board of Education of the District of Columbia were perhaps the two most influential lawsuits that brought the inclusion of students with disabilities to the forefront. The PARC lawsuit guaranteed that students with diagnosed learning and intellectual disabilities should be taught in public schools with their peers, in the least restrictive environment possible (Young, Jean, & Mead, 2018). The Mills case broadened the scope of inclusion with a decision that included all students with disabilities, not just those with mental deficiencies, be given educational opportunities that were the same as those granted to non-disabled peers.

Soon after PARC and Mills were decided, the federal government passed the Education for All Handicapped Children Act in 1975, which protected students with exceptionalities and gave further guidance to schools (Lee, 2018). Perhaps the most important part of this act was to guarantee "free, appropriate public education (FAPE) to each child with a disability in every state and locality across the country" (U.S. Department of Education, 2007). This law has gone through several upgrades and iterations and eventually became known as the Individuals with Disabilities Act (Lee, 2018; Young, Jean, & Mead, 2018).

The Case for Inclusive Classrooms and Schools

Inclusion is not a place, rather, it is a way of teaching that honors all students and seeks to include all learning styles in one classroom (Pratt, 1997). Inclusive education is beneficial for all students, especially those with disabilities, and offers myriad benefits to include higher academic achievement, social skills acquisition, relationship-building with non-disabled peers, and higher rates of graduation (Hehir et al., 2016).

In schools where inclusion is valued, educators share responsibilities and collaborate so that all students can learn in the general education setting (Olson, Leko & Roberts, 2016). It is this type of school culture where staff, students with disabilities, and their non-disabled peers are able to learn from each other and where services and supports are offered across all school settings – both academic and social (Olson et al., 2016).

Academic Benefits

While some critics of inclusion insist that this method is distracting to nondisabled peers, the majority of research indicates that everyone benefits from this model of instruction (Hehir et al., 2016; Dessemontet & Bless, 2013). Educators who plan for inclusion tend to use more differentiation, more oneon-one teaching time, and non-disabled peers to support students with autism (as well as other disabilities), all of which lead to higher scores on achievement tests as compared to their autistic peers in self-contained classrooms (National Council on Disability, 2018; Kurth & Mastergeorge, 2010).

Social Benefits

Autistic students who are placed in inclusion classrooms tend to have better behavioral and social abilities as they spend more time with their non-autistic peers to include expressive language gains, social competence, increased student engagement especially with non-disabled peers, more diverse friendships for students with autism (National Council on Disability, 2018; Reagan, 2012). A longitudinal study completed in 2006 (National Center for Special Education Research) proved that regardless of the disability, students who spent more time in an inclusion setting were likely to attend school more often, have fewer behavior issues, and have better outcomes after high school graduation.

Interestingly, Tonnsen and Hahn (2015) suggest that inclusion settings offer non-disabled peers the opportunity to improve their self-esteem, develop personal principles and morals, increase their understanding and comfort level of individual differences between peers, and exhibit more pro-social

awareness. This is especially important as students with and without disabilities recognized a stronger sense of belonging in inclusive schools and classrooms (University of Kansas - School of Education, 2016).

Knowing that inclusive classrooms offer the best possible setting in which students with ASD can learn, teachers must thoughtfully identify and implement evidence-based strategies to promote positive outcomes for all students (Kurth, Lyon, & Shogren, 2015).

Preparing to Teach Students Using Evidence-Based Practices

The use of evidence-based strategies and practices benefit all students, yet students with disabilities, and especially those with ASD, find the most success when these strategies are paired with the general education setting. Evidence-based practices are those that have withstood scrutiny and repeated testing through research and demonstrate successful outcomes in one or more domains to include social, academic, or behavioral (Graham, Harris, & Chambers, 2016). Both the Every Student Succeeds Act of 2015 and the Individuals with Disabilities Education Improvement Act of 2004 mandate the use of evidence-based strategies in teaching students with documented disabilities (Klein, 2016, Lee, 2018).

Criteria for Evidence-Based Practices

The Institute of Educational Sciences and the Council for Exceptional Children, or CES, (2014) have both created similar documents that define the criteria for evidence-based practices using specific indicators in a number of areas. Using a continuum to track effectiveness strategies are classified as having insufficient evidence, negative effects, mixed effects, potentially evidence-based practices, and evidence-based practices (Council for Exceptional Children, 2014).

In addition to the classifications, quality indicators were assigned to further support the use of evidence-based practices to include context and setting, participants, intervention agent, description of practice, fidelity of implementation, internal validity, outcome measures and dependent variable, and data analysis (Council for Exceptional Children, 2014).

Planning for Educational Success

 The first job of the teacher is to consider overarching educational programming components that provide the basis for success for students with ASD (Dunlap et al., 2012). Teachers are advised to put these practices into regular practice within their classroom.

- Systematic instruction: Data collection leads to meaningful goals and explicit instruction that create student opportunities.
- Individualized supports and services: Tailored to student need and consideration given to the family.
- Logical and structured learning environment: Expectations are clear to staff and students and the environment supports the development of essential skills.
- Specialized curriculum focus: Importance is placed on student need and areas of deficit using a variety of specific supports such as prompting strategies, applied behavioral analysis, discrete trials, visual environment supports, and others.
- Positive behavioral supports: Using reinforcements to increase positive behaviors, such as Positive Behavioral Incentives and Supports (PBIS) (Positive Behavioral Interventions and Supports, 2018).
- Family involvement: Engaging families to be co-contributors in student learning, which leads to more positive outcomes.

(Dunlap et al., 2010)

The next step in preparing to teach students with ASD includes understanding the needs of the students before them. With this in mind, Westling, Fox, and Carter (2014) described twelve specific educational practices that are vital planning tools for any teacher who works with students with ASD.

- Plan instruction carefully considering the characteristics of students with ASD;
- Manage instructional time, create structure, be consistent;
- Manage student behaviors through behavior plans and reinforcements;
- Meet the learning needs of all students using well-thought-out groupings and peer mentors;
- Consider learning styles when presenting new material;
- Establish classroom routines and procedures that lend themselves to a positive learning environment;
- Use a process of feedback that builds confidence;
- Spiral learning so that students have multiple chances at mastery;
- Integrate college and career readiness skills;

- Set challenging yet realistic expectations for students; and
- Create positive interactions for students to increase pro-social behaviors.

(Westling, Fox, & Carter, 2014)

With the overarching programming components and the teaching strategies in place, it is time to investigate strategies that differentiate instruction and offer students with ASD an entry point into the general education academic setting.

Evidence-Based Strategies that Promote Learning

The next step in teaching students with ASD is to include evidence-based strategies based on student deficit. While applied behavior analysis and discrete trial are two very common practices for teaching students with ASD, they are not generally taught in the general education inclusion classroom as they are more a more specific means of changing behaviors and abilities (Zager et al., 2012).

Once a student is able to be in the general education classroom, however, differentiating instruction will provide specific strategies that lead to student success. Some evidence-based practices include prompting, visual environment supports, social skills development, and universal design for learning (CAST, 2018; Ault & Griffen, 2013; Crosland & Dunlap, 2012; Texas Statewide Leadership for Austin, 2013).

Prompting Strategies

Prompting strategies assist the student with ASD in attaining a chosen behavior. The teacher prompts the student until the desired behavior has been achieved, then the prompts fade over time until the student can independently perform the behavior or activity (Ault & Griffen, 2013). Prompts that support students with ASD to commonplace routines within the general education setting can be given by teachers, paraprofessionals, and/or students (Wong et al., 2015).

Using a system of least prompts (SLP), the smallest amount of prompting is given first, and it can be increased if necessary (Ault & Griffen, 2013). A 'natural cue' is the first step on the prompting hierarchy followed by a gesture, a verbal/picture cue, and then modeling the preferred task (Mims, n.d.). The most indiscreet prompts include a partial physical cue, and a full physical cue, both of which require a hands-on approach (Mims, n.d.). The teacher implementing a prompting strategy would first decide where to begin in the hierarchy, provide specific direction and wait a few seconds for a response. If

the student is successful, the prompt would be lessened the next time; whereas, if the student needs further direction, the prompt may be increased in the future (Mims, n.d.).

Visual Environment Supports

Students with ASD are challenged by differences in how they interact in social situations, their behavior and communication abilities, and sensory processing issues (Texas Statewide Leadership for Austin, 2013). Each student has different needs and, as such, a number of environmental supports exist to assist students in accessing the curriculum as well as completing day-to-day tasks. These might include visual schedules and task cards, social stories, people locators, boundary settings, labels and lists, graphic organizers, travel cards, and a home base card (Texas Statewide Leadership for Austin, 2013).

Visual schedules and task cards. Students with ASD may need assistance understanding the daily schedule or may not be able to transition between activities. A visual schedule or task cards communicate next steps in pictures and words; thus, it increases a level of independence available to a student (Crosland & Dunlap, 2012). Visual schedules may include first/then, full day schedules, or choice boards, to name a few.

People locators. Students with ASD thrive on predictability and often perseverate on knowing where people are, especially those important to them. People locators offer the student a visual representation of where each person is during the day. Using either photos of faces or written names of these individuals, they are posted on a card made with the locations of each person; for example, if mom or a sibling are usually at home during the day, there would be a picture of the child's house and then the appropriate picture underneath it (Texas Statewide Leadership for Austin, 2013). Similarly, if the child needs to know where the science teacher is, perhaps there would be a picture of the science teacher at her classroom door.

Boundary settings. Using furniture, color coding, and labeling to make specific spaces more obvious is helpful to students with ASD. Teachers must first define the need, such as a student who presents with a safety concern, and then they define the boundary using furniture, tables, and partitions if available (Smith & Collet-Klingenberg, 2009). Once these steps are established, it is time to teach the student the boundary and expectations using modeling, positive reinforcement, and corrective feedback (Smith & Collet-Klingenberg, 2009). Above all else, it is vital that there is consistency in all aspects of visual boundaries (Smith & Collet-Klingenberg, 2009).

Labels and lists. These two strategies provide visual supports that students can access easily within the classroom; yet they often need to be taught first

to "recognize and understand the information" (Texas Schoolwide Leadership for Austin, 2013). Often, labels are found on shelves, cubbies, items such as crayons and pencils, the book corner, a water or sand table, and many other items, while lists provide information that is often not represented otherwise, such as the steps to checking out a book from the library. Number lists or checklists are but two of the ways in which lists might be written for students (Texas Schoolwide Leadership for Austin, 2013).

Graphic organizers. This tool organizes academic information for students that makes the task of learning easier to comprehend. Venn diagrams, outlines, charts, and semantic maps all offer the students with ASD a visual representation of information that might be given orally such as ideas or facts (Knight, Spooner, Browder, Smith & Wood, 2013). When paired with explicit instruction, graphic organizers have the ability to improve student vocabulary and comprehension (Knight et al., 2013).

Travel cards. Used to improve targeted behaviors, travel cards are given to students with ASD who then carry the card from room to room. Teachers must sign off each time the student brings the card to class and engages in pre-specified target behaviors (Texas Schoolwide Leadership for Austin, 2013). The card has the potential to "increase productive behavior across multiple environments...[and]...facilitates teacher collaboration and improves school-home communication (Texas Schoolwide Leadership for Austin, 2013).

Home base card. This is equivalent to a take-a-break spot in the classroom and allows students with ASD a chance to breathe, unwind, and pull themselves back together (Texas Schoolwide Leadership for Austin, 2013). Other benefits include a space for ASD students to go when they are "overwhelmed by sounds, movement, and lighting" (Texas Schoolwide Leadership for Austin, 2013).

Social Skills Development

Individuals with ASD have difficulty in making and maintaining eye contact, making requests, expressing appropriate behaviors, and an inability to play with toys in the way intended; yet, learning to do so correctly is extremely difficult (Thompson, 2017; Wilkinson, 2014). Using discrete trials and modeling provides an entry point into teaching students appropriate social cues (Wilkinson, 2014). While there are many strategies that can be used, some of which are boxed programs, peer-mediated interventions and social stories are easy to prepare and well-received by students.

Peer-mediated interventions. This evidence-based strategy teaches younger students with ASD how to play and share, using their typically

developing classmates as mentor or tutors to facilitate appropriate play (Wilkinson, 2014). In older students, peer-mediated teaching focuses on social interactions and the acceptance of differences in people. In both age groups, typically developing peers are the mentors that are trained to work with their disabled counterparts.

Social stories. Some students will find it confusing or difficult to change their behavior, adjust to new routines, or understand a social situation. This may lead to greater anxiety; however, short narratives, or social stories, can help to quell fears (Oakley, n.d.). Stories can include topics such as transitioning from home to school, daily routines, asking questions, and anything else a student is struggling with (Oakley, n.d.). Once the teacher decides on a topic, a story is written and often it is accompanied by photos or pictures. Once the story has been put together, it is important to read it to the student in a quiet place when he or she is calm (Oakley, n.d.). Social stories are meant to be read repeatedly as that is how the student will best understand and learn.

Universal Design for Learning (UDL)

Universal design for learning, commonly called UDL, is a three-part framework that is used to "optimize teaching and learning for all people based on scientific insights into how humans learn" (CAST, 2018, n.p.). Based on brain research, the theory behind ULD states that students "can access and participate in challenging learning opportunities" (CAST, 2018, n.d.). Requiring multiple means of learning, the UDL guidelines encompass engagement (the 'what' of learning), representation (the 'how' of learning), and action and expression (the 'why' of learning) and offer staff and students a variety of tools that can be further broken down into smaller sections with designated checkpoints (CAST, 2018).

On the CASST (2018) website, the guidelines are set up within a table where subsequent rows explain how to (1) increase access to learning through recruiting interest, perception, and physical action, (2) build or develop effort and persistence, language and symbols, and/or expression and communication and, (3) helps learners to internalize the learning through self-regulation, comprehension, and executive function skills (CAST, 2018). When taken in totality, the goal of this matrix is to "develop 'expert learners' who are...purposeful and motivated, resourceful and knowledgeable, and strategic and self-directed" (CAST, 2018, n.p.).

Dependent on student goals, educators may choose a variety of aspects, and/or use this knowledge to inform the IEP among other ways. These guidelines, when used as a supportive tool, aid in the development of shared language in the designing of goals and the assessment of materials and

methods, which "lead to accessible, meaningful, and challenging learning experiences..." (CAST, 2018, n.p.). UDL believes in proactive planning that changes the environment to meet student needs rather than changing the student (Buyrn & Stowe, 2018).

When looking specifically at students with ASD, universal design for learning can be beneficial as it offers a wide range of options for teaching (Zehner, Chen, & Aladsani, 2017). All students, therefore, have the potential to learn more than expected as the teacher can differentiate to meet specific needs (Zehner et al., 2017). This change in curriculum design and instructional delivery is beneficial for everyone and UDL guidelines offer new models of teaching students with ASD (Domings, Crevecoeur, & Ralabate. 2014).

Final Thoughts

With statistics rising at an alarming rate, autism spectrum disorder is the fastest growing developmental issue in the 21st century (Centers for Disease Control and Prevention, 2018). Individuals with ASD present in numerous ways as the disorder exists on a continuum where students may be high-functioning or severely restricted in abilities. This neurological disorder impacts social interactions, communication, and movement.

Students with ASD require accommodations that allow them to be successful in the general education classroom where they can interact with typically developing peers. In order to provide an inclusive setting, teachers are tasked with providing differentiated lessons and activities that appeal to a wide variety of students and their learning styles and abilities. It is also suggested that these classrooms have predicable schedules, routines, and procedures so that students with ASD are more comfortable.

School culture is the first step in creating an inclusionary school where all students are valued and the expectations for learning are clear. Using an inclusion model, students with ASD and their typically developing peers benefit from learning through collaboration, peer mentoring, one-on-one teaching and conferencing as needed, and engagement in positive social interactions, to name just a few.

Evidence-based teaching practices used within the general education setting offer students learning methods that have been proven over time and through research; thus, students will be more successful. The federal government has mandated the use of evidence-based practices as part of both ESSA and IDEA, making them the strategies of choice; however, teachers must know what to use and when to use it appropriately. The use of prompts and fading, for example, will help a struggling student who needs only

minimal help, while UDL guidelines make it possible for educators to pinpoint learning entry points and activities for students individually. Students with ASD, when placed in an inclusion setting, have the potential to make substantial gains as compared to their ASD peers who are in self-contained classrooms. Equally important, typically developing peers make academic gains but also tend to become more compassionate and understanding of students with disabilities.

Points to Remember

- Autism spectrum disorder has no known cause at this time, although current research in the field tends to favor a genetic or environmental link.
- Individuals with ASD are highly sensitive to environmental changes and noises, perseverates on toys and subjects of interest, and dependent on routines.
- Evidence-based practices are those strategies that have been tested over time through research and demonstrate successful outcomes in one or more domains.
- Several organizations have created indicators and guidelines to help track the effectiveness of a strategy. While the organizations differ, the categories range from insufficient evidence and negative effects to evidence-based practices
- Evidence-based practices are mandated by the federal government as a tool for teaching students who may need additional help, although these strategies benefit all students.

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Speech and Language Impairments

Katherine B. Green, Ph.D., *University of West Georgia*

Jacob is a second grader at Chestnut Elementary School. He has always interacted well with peers, is at grade level in math and science, yet below grade level in language arts and reading. His teacher has noticed that when she gives the class directions, Jacob does not always follow the directions appropriately. He struggles more than most students in correcting sentences with mistakes and speaks and writes with incorrect grammar. Additionally, Jacob has sound substitutions that are affecting his spelling and his communication. He says and writes /f/ for "th," such as "fum" for "thumb." Jacob's teacher spoke with the administration regarding these concerns and they suggested the teacher begin the Response to Intervention (RtI) process, and to include a speech-language pathologist on the RtI team.

Communication is a skill that many individuals take for granted. Communicating thoughts, ideas, wants, and needs is natural for the majority of the population; however, there is a percentage of the population who do not acquire appropriate communication skills instinctively. Some individuals may have had typical communication skills prior to an accident, episode, or event in their lives. Communication is not simply verbal speech; it includes comprehension of speech, an understanding of rules of language, motor-speech control, and the use of language, including body language (State of Queensland [Queensland Health], 2017). Speech and language impairments can exist in voice quality or voice disorders, the fluency of speech, receptive forms of speech, signs, and gestures (Prelock, Hutchins, & Glascoe, 2008).

Students who have difficulty expressing their wants or needs, or have difficulty understanding others, may qualify for treatment of speech and language impairments (American Speech-Language-Hearing Association [ASHA], 2016). Students who may demonstrate speech and language impairments are evaluated and treated in school by speech-language pathologists. A speech-language pathologist is a professional who specializes

in the assessment and treatment of individuals with speech-language impairments (American Speech-Language-Hearing Association [ASHA], n.d.).

Terminology/Definition

Under the federal law of the Individuals with Disabilities Education Act (IDEA), communication disorders are labeled as Speech or Language Impairment. Speech or language impairment is defined as a "communication disorder such as stuttering, impaired articulation, impaired language use and understanding, or a voice impairment, that adversely affects a child's educational performance" (Special Education Guide, 2018, n.p.). Students are determined to be eligible for a speech or language impairment by an evaluation completed by a speech-language pathologist (Power-de Fur, 2011).

Classification

Communication disorders are classified on etiology, or presumed causes, to include age of onset, and different components of communication such as voice, articulation, language, fluency, and hearing (Prelock et al., 2008). An individual's etiology may be due to a defect in a neurophysiological mechanism and may present as aphasia, a disorder directly related to brain damage, or a child born with deafness or a cleft palate.

Communication disorders may also be classified by the age of onset to include congenital disorders (i.e., at time of birth or shortly thereafter) and acquired disorders (i.e., those who have experienced normal communication, but later has communication difficulties) (Rosenbaum & Simon, 2016). Congenital disorders include a cleft lip or cleft palate, while a child who is communicating fluently until the age of 7, and then the child begins stuttering is an example of an acquired disorder. Another example might be when an adult has normal hearing and then experiences hearing loss around the age of 60 or 70. Communication disorders may be described by five major components or categories of communication: voice, articulation, language, fluency, and hearing (Rosenbaum & Simon, 2016).

Voice. Voice is a necessary component of verbal language; yet it is important to note that an individual can communicate without voice, such as through gestures, signs, and symbols (Rosenbaum & Simon, 2016). Humans make a wide range of vocal sounds, characterized by various levels of pitch, loudness, as well as tone. The larynx, located in the neck, is the foundation of oral communication. The larynx contains vocal folds, a pair of thin muscles and tissue that vibrate when air from the lungs passes over them. Those vibrations of the vocal folds are the source of the human voice. When the vocal folds

have irregularities, such as polyps, the voice may sound disordered (Rosenbaum & Simon, 2016).

Articulation. Articulation is the movement of the tongue, lips, and palate, which all come together to make a variety of sounds (Perlock et al., 2008). The study of sounds and sound patterns is called phonology. A phoneme is a single speech sound, such as the production of /p/ (Merriam-Webster, 2018a). Multiple productions of a single phoneme produce phonemes, which is a group of speech sounds. Phonemes are combined to form syllables and words.

Language. Language is a system of codes and symbols that, when produced verbally, is called oral language (Rosenbaum & Simon, 2016). Language can exist without verbalization. When language is produced non-orally, such as through signs, symbols, and gestures, it is called non-verbal or non-oral language (Rosenbaum & Simon, 2016). Language is characterized by expressive language, which is produced or expressed through a means of oral communication, signs, symbols, or written words and receptive language, which is information received or understood by the listener (Prelock et al., 2008).

Linguists have described several components of language to include morphology, syntax, semantics, and pragmatics.

- Morphology is the study of word and sound structure.
- Syntax is the arrangement of words to make meaning.
- Semantics is the meaning of language, the meaning that words, phrases, and sentences convey, while pragmatics is the study of rules that govern the use of language in social situations.
- Pragmatics may also be called social communication. Children with difficulties in social skills may have difficulties in pragmatics or the rules of conversation (e.g., turn taking, listening, maintaining eye contact).

(Rosenbaum & Simon, 2016)

Fluency. Fluency is the ease and flow of speech and is characterized by the variations in rate, pitch, stress, and intonation (Perlock et al., 2008). If a speaker is fluent, then the speech feels or seems effortless, while nonfluent speech is characterized by abrupt stops, prolongations, repetitions, interjections, and revisions, or the inability to form effortless communication, such as stuttering (Rosenbaum & Simon, 2016). Dysfluencies do not always mean a person has a communication disorder; for example, when learning another language, the speaker may temporarily become dysfluent. When young children learn language at a fast rate, the child may become

temporarily dysfluent. Constant or consistent dysfluencies, however, may require a referral to a speech-language pathologist.

Hearing. The final component of communication disorders is hearing. Similar to the voice, an individual can communicate even when the hearing is impaired; however, hearing is typically required for acquiring clear verbal language. There are three parts to the ear to include the outer ear, the middle ear, and the inner ear. The outer, or external, ear picks up sound, amplifies it, and moves the sound to the eardrum (i.e., tympanic membrane), which vibrates and transfers sound waves to the three small bones in the middle ear (Stanford Children's Hospital, 2018). The vibrations of those bones cause movement in the fluids of the inner ear, which stimulate the structures within the cochlea. The cochlea stimulates the nerve that carries the sound from the inner ear to the brain where it is then interpreted as the meaning of the sound (Stanford Children's Hospital, 2018). If a child cannot perceive speech through hearing, then acquiring speech can be difficult, as hearing the sound can be a critical component of monitoring one's speech production (Rosenbaum & Simon, 2016).

Prevalence

In United States public schools, approximately 2.6% of enrolled students were served for speech-language impairments, the second highest percentage of students served with disabilities, after specific learning disabilities (Snyder, de Brey, & Dillow, 2018). While it is unclear the exact number of individuals in the United States with communication disorders, it is estimated that the prevalence is at least 17% of the U.S. population. According to the National Institute on Deafness and Other Communication Disorders [NIDOCD] (2016), approximately 1 in 12 children (7.7%) has had a voice, speech, language, or swallowing disorder. Boys are more likely have a communication disorder, and communication disorders are more common for children ages 3 to 6 (11%), compared to children ages 11 to 17 (4.9%) (NIDOCD, 2016). The most common communication disorder in children is articulation disorders, followed by language disorders; while nearly one in 10, or 9.6 percent, of black children (ages 3-17) has a voice, speech, language, or swallowing disorder, compared to 7.8 percent of white children and 6.9 percent of Hispanic children (Black, Vahratian, & Hoffman, 2012).

Causes

The cause or etiology of a communication disorder can be described by organic disorders or functional disorders. An organic disorder means that the cause is a defect in the neurophysiological mechanism of speech. An example of an organic disorder is aphasia, where brain damage has caused difficulties

in formulating, expressing, and understanding language (National Aphasia Association, n.d.). A functional or idiopathic disorder, meaning there is not a clear cause or origin, may be due to environment, emotional issues, habits, faulty learning, or another unknown cause (National Aphasia Association, n.d.). An example of a functional disorder is if a child starts stuttering around at the age of seven and had typical communication prior to the stuttering onset.

Characteristics

Voice disorders. A voice disorder occurs when there is a problem with the pitch, tone and quality of a voice that does not appropriately reflect the gender or the age of that person (ASHA, 2018a). Characteristics of voice disorders include raspy, breathy, or another unusual quality to an individual's voice. There are three ways to classify voice disorders to include organic, functional, and neurological (ASHA, 2018a). Voice disorders may be temporary or permanent. Temporary voice disorders can come from yelling too loud or being in a smoky room for too long, while permanent voice disorders can come from damage or growths on the larynx. Voice disorders can also be characterized into aphonia and dysphonia. Aphonia is described as the inability to produce a sound, or a loss of voice, and is caused by a splitting of a muscle nerve in the larynx (ASHA, 2018a). Dysphonia is a spasm of the vocal cords which causes the voice quality to break up or sound strained (ASHA, 2018a).

Articulation disorders. In regard to communication disorders, articulation is the movement of the speech mechanisms to produce the sounds of speech. This includes the way the lips, tongue, teeth, and soft palate all work together to produce words. There are two types of articulation disorders to include phonological disorder and motor-speech disorder (ASHA, 2018b). A phonological disorder is characterized when an individual has difficulty with certain patterns of sounds persisting past when it is developmentally appropriate. This individual may have trouble with leaving off the beginning or ending sounds in words, such as saying "pider" for "spider." Some of the most common phonological disorders include:

- Cluster reduction: "pider" for "spider"
- Initial consonant deletion: "at" for "pat"
- Final consonant deletion: "ca" for "cat"
- Syllable deletion: "nana" for "banana"
- Backing: "gog" for "dog"
- Fronting: "tootie" for "cookie"

- Gliding: "wabbit" for "rabbit"
- Stopping: "pan" for "fan"

Speech is a difficult process and there are many steps to producing speech. First, the brain has to plan and coordinate what it wants the mouth to say. Then the muscles in the mouth (jaw, lips, tongue, larynx, and vocal cords) have to respond and form the word or words to say. A motor speech disorder is the inability to produce speech because there is a problem with the range of motion of muscles in the mouth due to neurological damage (ASHA, 2018b).

The two main types of motor speech disorders are apraxia and dysarthria. Apraxia is a motor speech disorder in which children have difficulty saying sounds or words due to the brain's inability to plan and coordinate the mouth to move (ASHA, 2018b). Apraxia can be developmental or acquired. People with apraxia normally have trouble with expressing their wants and needs. Dysarthria is considered a motor communication problem due to weakness, slowness, or lack of coordination in speech production (ASHA, 2018b). An individual with an articulation disorder may experience difficulties with producing one or more sounds. While an individual may be able to produce /f/ in isolation, they may have difficulty combining /f/ with other sounds in a word, such as "fish" or "puffy."

Language disorders. Individuals with language disorders can exhibit a wide range of characteristics. The most common language disorders include morphological deficits, syntactic deficits, semantic deficits, and pragmatic deficits (American Psychological Association, 2013). Teachers must remember that children develop and learn the language over time; thus, a five-year-old who shows deficits in language may be experiencing developmentally appropriate language, while a twelve-year-old with the same language patterns as the five-year-old may have a language disorder.

Students may exhibit morphological deficits when they have difficulty comprehending or using grammatical morphemes. Morphemes are the smallest grammatical unit. Examples of morphological deficits would be leaving off a tense marker (e.g., "Jack walk yesterday," rather than "Jack walked yesterday), or a plural marker (e.g., "the gum was 10 cent," rather than "the gum was 10 cents"). Syntactic deficits are demonstrated when an individual has difficulty stringing words together to organize a grammatically correct phrase, clause, or sentence American Psychological Association, 2013). Students may demonstrate difficulty in oral and/or written communication. Students with syntactic deficits may express themselves with fewer words in a sentence than their peers, and have difficulty using complex sentences. Finding grammatical errors within sentences is difficult for students with syntactic deficits (Montgomery, Evans, & Gillam, 2018).

Students who exhibit semantic deficits have difficulties with word knowledge, word meaning, and sentence meaning. Students with these deficits will have difficulty with comprehension of verbal and written language, as well as word finding skills (Storkel & Krueger, 2016). They may acquire words at a later date, and have difficulty understanding and answering questions. Students with semantic deficits may also have difficulty using and comprehending synonyms, antonyms, and figurative language (Lowe, Henry, Müller, & Joffe, 2018).

Students with pragmatic deficits may present with difficulties in social situations. Often, students with pragmatic deficits have difficulty with attending to conversational rules, such as turn-taking and eye contact (Bishop, 2001). Students may not understand when it is appropriate to speak in class, and when not to speak in class. Classroom discussions can be challenging in keeping to the relevant topic, turn-taking, and self-monitoring. Students who exhibit difficulty with pragmatics will often find making or keeping friends challenging, as they may be perceived as less mature than their peers and may have difficulty understanding others (Bishop, 2001).

Fluency disorders. Normal fluency of speech, especially when a child is learning to talk, sometimes includes some types of hesitations, repetitions, or pauses in between speech (ASHA, 2018c). Fluency in speech is characterized by the continuity, rate, and smoothness of speech; therefore, a fluency disorder is defined as an interruption in the flow of speaking (ASHA, 2018c). Characteristics of fluency disorders include repetitions of sounds, syllables, words, and phrases, sound prolongations, blocks, revisions, and interjections.

Stuttering and cluttering are the two most common fluency disorders. Stuttering is a continuous disfluency in speech and is characterized by repeated words or syllables, word blocking, silent pauses, and uneven rate of speech (ASHA, 2018c). Some examples of stuttering include:

- Phrase repetitions ("what are you-what are you doing?")
- Interjection word/nonword filters ("Pink is my uh favorite color")
- Whole word repetitions ("I said-said I like to play")
- Part-word repetitions ("L-l-let's go play")
- Prolongations ("I hhhhhhhhhad so much fun").

Cluttering is similar to stuttering in that there are continuous disfluencies. A child with a cluttering fluency disorder speaks very rapidly, irregularly, and has an excessive number of disfluencies (ASHA, 2018c). Speech comes out in rapid bursts with random pauses throughout, and the words um, well, and uh are used frequently. These individuals also use final sound repetitions such as

heat-eat or treat-eat. Fluency disorders can be very frustrating and can cause a fear of speaking in general (Rasinski, Blachoqicz, & Lems, 2012).

Hearing disorders. Hearing impairment is another aspect that can affect speech. There are three main hearing disorders that speech pathologists work with to include conductive, sensorineural, and mixed hearing loss (ASHA, 2018d). Hearing disorders are determined by what part of the ear the interference comes from as that prevents sound from being conducted correctly.

Conductive hearing loss is due to an impairment coming from the ear canal, eardrum, and middle ear. Conductive hearing loss is typically mild to moderate and can sometimes be treated with medicine or surgery, while mixed is a combination of the two previous types (ASHA, 2018d). A sensorineural hearing loss refers to a problem in the inner ear, is generally severe to profound, and is usually permanent (ASHA, 2018d). There are a few problems that can occur alongside of sensorineural hearing loss to include sound distortions, balance problems, and roaring or ringing in the ears (ASHA, 2018d). Sensorineural hearing loss can be treated with hearing aids or cochlear implants.

Identification

Individuals are identified with speech and language disorders by assessments conducted by speech-language pathologists. Often, school districts may use an RTI model to investigate if the student will respond to teacher or parent-provided interventions, rather than an immediate referral for special education or speech services (Ehren, Montgomery, Rudebusch, & Whitmire, 2018). If the student responds to the interventions and does not require further intervention, the student may not be deemed eligible for speech services; however, if the RTI interventions do not improve the speech challenges, or if the student requires small group or individual assistance, then the student may be referred for speech services (Ehren et al., 2018).

It is important to note that sometimes a communication difference can sound like a speech or language impairment, when it is developmentally appropriate; for instance, it can be developmentally normal for a 4-year-old to say /w/ for /r/ or for a 5-year-old to say /f/ for /th/. Individuals with a particular dialect or culture may sound as if they have a communication disorder (Hendricks & Adlof, 2017). Importantly, if it is determined that the communication difference is due to a dialect or cultural influences, the student will not be eligible for speech services (Hendricks & Adlof, 2017).

Jacob's teacher consulted with the RTI team, which consisted of school administration, a special educator, a speech-language pathologist (SLP),

the school counselor, and Jacob's mother. The SLP suggested various strategies to improve Jacob's syntax, semantics, and articulation. The classroom teacher and his mother tried the strategies within the classroom for eight weeks and collected data and work samples. After eight weeks, the team met again to review all data. While Jacob made some progress in his articulation with modeling and extra opportunities to practice, he was still well behind peers in language arts and reading. The team determined Jacob required a speech-language evaluation.

Strategies to Assist Students with Communication Disorders

As communication disorders differ greatly by type, characteristics, time of onset, and severity, the strategies and treatment of communication disorders will differ greatly as well. Each child is unique; thus, every strategy may not work with all students. Classroom teachers should consult with the speech-language pathologists to learn the exact strategies to best assist the student with disabilities (Kuder, 2017). General strategies for working with individuals with communication disorders include modeling the appropriate response, providing opportunities for practice of targeted responses, and providing prompts to the individual prior to the opportunities for practice (Kuder, 2017). Oftentimes, these strategies can be used for the whole class and can help students who do not have documented communication disorders.

Modeling the Appropriate Response

Teachers should always model appropriate grammar, social skills, and language with their students; however, teachers may be more cognizant of modeling when working with a child with a communication disorder (Kuder, 2017). An example of providing a model would be when the student asks to sharpen his "encil" instead of his "pencil," the teacher would repeat, "yes, you may sharpen your pencil." If the child needs practice with proper grammar or language, modeling a sentence would be similar to: child: "I runned on the playground yesterday," teacher: "Oh, you ran on the playground yesterday." For a student with social communication difficulties, it is important that the teacher model proper pronunciation and grammar when communicating with others, along with responding appropriately to gestural cues and body language (Kuder, 2017).

Providing Opportunities for Practice

Providing opportunities to practice means that the teacher would increase the student's ability to see or hear a specific phoneme that needs practice. If the

child is working on language or grammar, the educator would provide opportunities within daily work to fix or reorganize sentences. For a student working on social communication skills, and/or pragmatics, providing opportunities to practice social skills with peers can help the student apply the social skills he or she is learning in the speech therapy classroom (Kuder, 2017). For students who have difficulty with fluency, or stuttering, provide practice reading and speaking aloud in class; however, it is imperative to allow them to finish their sentence if they begin to stutter - do not finish their sentence for them and give them time to complete their thoughts (Chmela & Johnson, 2018).

Providing Prompts or Cues

To provide a child with prompts or cues, the educator sets up a signal so that the child knows he or she is being called upon. Providing that signal can help individuals with any communication disorder, particularly fluency, language, and articulation; for example, for a student who stutters, the teacher can tap the student on the shoulder before it is time to read aloud (Rasinski, Blachoqicz, & Lems, 2012). The educator can let the student know that s/he will be listening for one particular sound. If the child has difficulty following oral directions, then written directions or gestures can be used as a prompt. A visual schedule can also work for students who have difficulty transitioning from one activity to another (Spriggs, Knight, & Sherrow, 2015). For a student who is working on vocabulary skills, the vocabulary words can be sent home ahead of time.

It is important that the teacher not embarrass the child with the communication disorder with the strategies provided by the speech-language pathologist. The strategies should be built into the classroom routine and the child should not be singled out (Kuder, 2017). Any non-verbal strategies, such as providing prompts or cues, should be discussed quietly with the child in advance.

After the previous RTI meeting, Jacob was evaluated for a speech or language impairment by the school speech-language pathologist. It was determined that he qualified for a language disorder, particularly in receptive and expressive syntax and semantics. Jacob still exhibited some articulation difficulties, yet, he was making improvements with extra supports from his teacher and mother.

Final Thoughts

Research suggests that the first 6 months of life are the most crucial to a child's development of language skills. For a person to become fully

competent in any language, exposure must begin as early as possible, preferably before school age (Kuhl, 1994; Yeung & Werker, 2009). Speech-language impairment is a broad category consisting of children who have difficulties with language, articulation, voice, fluency, and/or stuttering. It's the second most prevalent disability category in United States schools. While certified speech-language pathologists service individuals who have speech or language impairments, the classroom teacher, special education teacher, and other school personnel can have a great impact on the success of children with communication disorders.

Points to Remember

- Speech or language impairment means a communication disorder, such as stuttering, impaired articulation, impaired language use and understanding, or a voice impairment, that adversely affects a child's educational performance.
- Communication disorders are classified on etiology (i.e., presumed causes), age of onset, and different components of communication (e.g., voice, articulation, language, fluency, and hearing).
- A voice disorder occurs when there is a problem with the pitch, tone and quality of a voice that does not appropriately reflect the gender or the age of that person.
- A phonological disorder (articulation disorder) is characterized when an individual has difficulty with certain patterns of sounds persisting past when it is developmentally appropriate.
- A motor speech disorder (articulation disorder) is the inability to produce speech because there is a problem with the range of motion of muscles in the mouth due to neurological damage.
- The most common language disorders include: morphological deficits, syntactic deficits, semantic deficits, and pragmatic deficits.
- A fluency disorder is defined as an interruption in the flow of speaking.
- General strategies for working with individuals with communication disorders include modeling the appropriate response, providing opportunities for practice of targeted responses, and providing prompts to the individual prior to the opportunities for practice.
- Teachers should always model appropriate grammar, social skills, and language with their students.

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Intellectual Disabilities

Jessica L. Bucholz, Ph.D., Sarasota County Public Schools, FL, Janet I. Goodman, Ph.D., Haralson Public Schools, GA

The American Association on Intellectual and Developmental Disabilities [AAIDD] (2018) defines Intellectual disability as being "characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social, and practical adaptive skills. This disability originates before age 18." (AAIDD, 2018, n.p.). A significant limitation in intellectual functioning is defined as an IQ of approximately 70 or below, which is approximately 2% of the population (AAIDD, 2018). According to Westling, Fox, and Carter (2015), several levels of intellectual disability: mild, moderate, severe, and profound are used in most schools and the IQ ranges are as follows:

- Mild intellectual disabilities: IQ range is typically between 55 and 70.
- Moderate intellectual disabilities: IQ range is typically between 35-50,
- Severe intellectual disabilities: IQ range is typically between 20-35, and
- Profound intellectual disabilities: IQ range below 20-25.

Students with intellectual disabilities also display deficits in adaptive behavior skills, which are conceptual, social, and practical skills (AAIDD, 2018). Some examples of these skills include activities related to language, money, time, daily living, social/personal interactions, safety, and problem-solving.

To be identified as having intellectual disabilities the final determination must be based on multiple assessments and sources of information (McNicholas, Floyd, Woods Jr., Singh, Manugno, & Maki, 2018). Multiple assessments may include IQ and achievement tests, classroom performance, structured observations and reports, and adaptive behavior assessments that are normed on the general population (Schalock et al., 2010). School

psychologists need to consider contextual factors when identifying students with an intellectual disability (McNicholas et al., 2018). Confounding factors such as limited English proficiency; visual, hearing, or motor disabilities; emotional disorders; cultural, environmental or economic factors; interrupted or lack of instruction may result in a lower IQ score (McNicholas et al., 2018).

Characteristics of Students with Mild Intellectual Disabilities

Students with mild intellectual disabilities often spend much of their day in an inclusive setting and may have some of their instruction delivered in a special education classroom. These students typically look, act, and use language much like their peers who are typically developing. Their language and social skills may be somewhat delayed, but this is not easily recognized in casual interactions; these delays appear more often in academic or higher-order problem-solving activities (Smith, Polloway, Doughty, Patton, & Dowdy, 2016). Deficits also may appear in social interactions that require decision-making skills; for example, they may be easily swayed to get involved in inappropriate social activities because they may not think through to all the possible consequences of their actions (Smith et al., 2016).

In academic activities, students with mild intellectual disabilities typically have low achievement across all academic areas, deficits in memory and motivation, and are often inattentive and distractible (Smith et al., 2016). These students may find upper-level vocabulary hard to grasp, have difficulty applying skills to novel situations, and struggle with abstract concepts. The interventions and strategies that these students need to be successful in the general education curriculum typically focus on helping them to make the connection between concrete and abstract concepts and making sense of content-specific vocabulary and language (Smith et al., 2016).

Using Evidence-Based Strategies and Interventions in the RTI Process

The need to implement evidence-based interventions and strategies for all students in K-12 schools is outlined in both the Every Student Succeeds Act (ESSA) (ESSA, 2016) and the Individuals with Disabilities Education Act (IDEA) (IDEA, 2004) through the RTI process, and requires that all teachers use evidence-based interventions to support student achievement. There are several resources available that identify the research behind many interventions. Some of these resources include the What Works Clearinghouse (n.d.) and the Center for Research and Reform in Education (2018). Many interventions are researched using different populations of students and the results can be examined based on the age, disability, and ethnicity of different student populations.

Academic Interventions

Direct instruction. Direct Instruction (DI) is an explicit, teacher-directed model of effective instruction that was developed by Siegfried Engelmann in the 1960s through his efforts to teach his own two sons, and further with his research with Bereiter (Adams & Englemann, 1996). Together they formed the Bereiter-Engelmann preschool, where they would begin using and testing direct instruction techniques. It was during this time that Engelmann developed the central philosophy of DI; which is, if a student has not learned the material, it is not the student's fault; rather, it is due to poor instruction (Adams & Englemann 1996; National Institute on Direct Instruction, n.d.).

The goal of DI is to accelerate student learning by controlling the variables of the curriculum and instructional delivery that impact the performance of children (Adams & Englemann, 1996; Hollingsworth & Ybarra, 2017). There are three main components to the delivery of DI programs; (1) program design, (2) how instruction is organized, and (3) interactions between the teacher and student (Marchand-Martella, Slocum, & Martella, 2004). While more than 60 DI programs have been developed, the first was a series for reading and math called DISTAR, which stands for Direct Instruction System for Teaching Arithmetic and Reading (Adams & Englemann, 1996). SRA Direct Instruction has been shown to significantly increase reading achievement of students with reading disabilities (Young, 2014).

Repeated Readings. LaBerge and Samuels (1974) emphasized the importance of automaticity in successful reading. Automaticity in reading is the ability of the reader to automatically, with little thought or effort, read the words in the text. One strategy that has been used to support the development of automaticity is repeated readings. The repeated reading method requires students to reread a short passage several times until a pre-identified level of fluency is reached (Samuels, 1979). In his seminal article, Samuels (1979) conducted a case study to evaluate the effectiveness of repeated readings on reading fluency. The one participant in the study increased fluency levels and decreased reading errors with repeated reading of each passage.

To implement the repeated reading strategy, a teacher should sit with a student, if possible in a quiet location. It is important for the teacher to hold the book in a way that allows them both to read the text. The teacher should select a short passage of about 50 to 200 words and have the student read through the passage. If the student misreads a word or hesitates for longer than 5 seconds, the teacher should read the word aloud for the student and then have the student repeat the word before continuing to read the passage. The student should reread the passage approximately four times or until the

student can read at a predetermined rate of frequency (Therrien, & Kubina 2006, What Works Clearinghouse, n.d.). As a guideline, by the end of first-grade students should read at a rate of 60 words correct per minute (WCPM) (Rasinski, Blachowicz, & Lems, 2012). By the end of second-grade students should read at approximately 90-100 WCPM and by the end of third grade 114 WCPM (Rasinski et al., 2012).

Reciprocal teaching. Reciprocal teaching is a cooperative learning strategy to improve students' comprehension of the text they are reading (Oczkus, 2018; Okkinga, van Steensel, van Gelderen, & Sleegers, 2018). With the reciprocal teaching method, students are taught to make sense of what they are reading by using four strategies: predicting, question generating, summarizing, and clarifying. For the predicting strategy, students are taught to make educated guesses about future content based on context cues in what they have previously read and their prior knowledge of the topic (Okkinga et al., 2018).

The goal of this strategy is to give students a purpose for their reading, which is to look for information in the text that proves or disproves their prediction (Oczkus, 2018). The question generating strategy requires students to ask questions while they are reading and then continue to read in order to answer the questions they have generated. When summarizing, students are taught to synthesize important information or the main ideas from the text. Finally, the clarifying strategy requires students to clarify any words that may be confusing or unknown (Oczkus, 2018).

It is important for the teacher to first model each of the four strategies for students and to provide guided practice before students engage in these strategies independently (Oczkus, 2018). Once students are able to use each strategy independently, they work in small groups to use those strategies to read and comprehend assigned texts. During this process, one student takes on the role of leader or teacher for a section of the passage. The role of leader or teacher then passes to other members of the group as the reading continues.

Peer-assisted learning strategies. Peer-Assisted Learning Strategies (PALS) is an evidence-based intervention that can be provided through the RTI process. PALS Reading is a peer tutoring program that was developed for students in grades 2 through 6 but has been used in elementary through high school classrooms to improve students' proficiency in reading (Fuchs, Fuchs, Mathes, & Simmons, 1997; What Works Clearinghouse, n.d). To use PALS Reading, teachers instruct students to use specific strategies when reading. These strategies include passage reading with a partner, paragraph shrinking (summarizing the main idea), and prediction relay.

Students are placed into mixed ability pairs and those students alternate between being the tutor and the tutee. Within this partnership, students read aloud, listen to their partner read, use the strategies they have learned, and provide feedback to one another. PALS for reading focuses on the development of important reading skills such as phonemic awareness, decoding, reading fluency, comprehension, and summarizing. PALS Reading does not require any specialized materials and can be used with both fiction and non-fiction. PALS Reading has been used successfully with elementary and high school students who are racially or linguistically diverse and have learning disabilities (Thorius, & Santamaría Graff, 2018; Völlinger, Supanc, & Brunstein, 2018; Josephs & Jolivette 2016).

PALS has also been used to help students with learning mathematics where students of differing ability levels are paired together, and one student starts off as the coach and the other the player (Powell & Fuchs, 2015). These students switch roles throughout the work session. Together the students work through the necessary steps of solving the assigned grade-level math problems (Powell & Fuchs, 2015). To start, the students are taught specific steps and are provided with specific questions to use when working in their assigned peer partnerships. The students use these strategies and questions as they work through the assigned math problems during each PALS Math session.

PALS Math has been used successfully to help elementary-aged students as well as high school students, both of whom have disabilities (Baker, Gersten, Dimino, & Griffiths, 2004; Calhoon, & Fuchs, 2003).

TouchMath. Touch Math (Bullock, 2005) is a multisensory math program for students in the elementary grades. This teaching method uses multi-modality strategies for helping students to understand numbers and operations. Every number from one through nine has visual points on the actual number that represent the value for that number. These points are called "TouchPoints" and learners use these points when solving mathematical equations. Some numbers have single TouchPoints (numbers 1-5), some have double TouchPoints (numbers 6 and 8), while others have a combination of single and double TouchPoints (numbers 7 and 9). These are represented by dots for the single TouchPoints and a dot surrounded by a circle for the double TouchPoints.

Initially, students are taught to drawn in the Touch Points on each number and then to touch each point on the number while counting aloud; for example, the number 3 would have three dots and a student would touch each dot on the number and count out loud as he or she touches those dots (Bullock, 2005). Eventually, students transition to simply touching where the

points would be drawn and counting as needed (Bullock, 2005). Students are taught to use the TouchPoints to add, subtract, multiply, and divide (Calik, & Kargin, 2010; Yikms, 2016). TouchMath has been shown to be effective for students with intellectual disabilities (Calik & Kargin, 2010; Fletcher, Boon, & Cihak, 2010) as well as students with autism (Yikms, 2016), and students with learning disabilities (Simon & Hanrahan, 2004).

Concrete-representational-abstract. Concrete-Representational-Abstract (CRA) is an intervention for mathematics instruction that can improve students' conceptual knowledge and their ability to solve mathematical equations (Bouck, Park, & Nickell, 2017; Flores, 2010). CRA is a three-part strategy where each step or part builds on the previous step(s). The three steps in the CRA process are concrete, representational, and abstract.

Concrete level instruction involves the teacher modeling each mathematical concept using concrete materials or manipulatives (Bouck et al., 2017). These manipulatives may include chips, colored bears or blocks, base-ten blocks, fraction bars, or geometric figures. The teacher models how to manipulate the concrete items in order to solve the math skill/concept being taught. The teacher then guides the students in the use of manipulatives by providing prompts while the students demonstrate their understanding of the skill/concept (Bouck et al., 2017). Finally, students independently use the manipulatives.

During the representational stage the teacher transitions to using a representational or semi-concrete item such as drawing circles or tally marks or making pictures to illustrate the skills/concepts being taught (Bouck et al., 2017). Instruction proceeds as it did during the concrete stage with the teacher first modeling the strategy and then providing guidance to students as they first use the strategy and then students using the strategy independently. In this stage, the illustrations represent the concrete items that had been used during the previous stage; for example, tally marks would represent colored blocks that had been used for counting.

Finally, in the abstract stage, the teacher models the skills/concepts for students at a symbolic level where only numerals and mathematical symbols are used to represent the concrete and semi-concrete items that had been used previously (Flores, 2010). Bouck et al. (2017) used CRA to teach middle school students with intellectual disabilities to solve making change problems. All four students were educated in a self-contained mathematics class and all four learned to accurately solve the change making problems using the CRA method.

Self-regulated strategy development. Self-Regulated Strategy Development (SRSD) is a six-step process that incorporates academic strategies and self-

regulation skills to help students improve their academic skills (Harris, Graham, & Adkins, 2015). These steps are important to help students, especially those with disabilities, to accurately use strategies to master academic content. The SRSD model involves six stages to include developing background knowledge, discussing it, modeling it, memorizing it, supporting it, and establishing independent practice (Harris et al., 2015). To begin, the teacher models the six steps for the students. This means that the teacher would provide the students with background knowledge, discuss the strategy with the students, model the use of the strategy, help the students memorize the strategy, and help the students practice the use of the strategy independently.

When initially learning a strategy, there is a high level of direct instruction through modeling and think aloud by the teacher. With time and practice, however, students are able to use the strategy independently. This intervention includes the process of teaching self-regulation skills including goal-setting, self-monitoring, self-talk, and self-reinforcement. The goal of the self-regulation piece is to help students learn to apply the strategy without continued support and guidance (Harris et al., 2015).

Social/Emotional Interventions

Functional behavioral assessment-based interventions. A functional behavioral assessment (FBA) is an individualized process for identifying the function of a student's problem behavior (von Ravensberg, & Blakely, 2015). The FBA process involves collecting information about the environmental conditions that precede the problem behavior and the subsequent rewards that reinforce the behavior. According to Chandler and Dahlquist (2015), the FBA and intervention selection process is based on a set of core assumptions to include

- Challenging behavior and appropriate behavior are supported by the current environment.
- Behavior serves a function.
- Challenging behavior can be changed using positive intervention strategies that address the function of behavior.
- Functional assessment should be a team-based process (p. 32).

The information that is gathered as part of the FBA process is used to generate a hypothesis as to the function of the problem behavior and to identify an intervention that will meet the student's needs but in a more appropriate manner (von Ravensberg & Blakely, 2015). Essentially, the goal is to reduce the need for the problem behavior by increasing a more positive

behavior that serves the same function for the student (Chandler & Dahlquist, 2015).

Check & connect. Check & connect is an intervention used with students in grades K through 12. The goal of check & connect is to help build a relationship between the student and a caring adult mentor or monitor at the school (Sinclair, Christenson, Evelo, & Hurley, 1998). The primary goal of the monitor or mentor is "to keep education a salient issue for the student, his or her family members, and teachers, and to reduce and prevent the occurrence of absenteeism, suspensions, failing grades and other warning signs of school withdrawal" (Sinclair et al., 1998, p. 10). The check part of the check & connect process involves the mentor systematically checking in with the student and monitoring the student's performance; while the goal is to continuously monitor the student's engagement in school (Sinclair et al., 1998).

Monitoring may include watching for absences from school and/or specific classes, behavioral referrals, and grades (Maynard, Kjellstrand, & Thompson, 2014). The connect portion of the check & connect intervention refers to the mentor working with the student to provide support and guidance to help the student build skills and acquire strategies to help him or her be more successful (Maynard et al., 2014).

In addition to building positive relationships with the student, the mentor also establishes positive relationships with the students' family (Maynard et al., 2014; What Works Clearinghouse, n.d.). Sinclair and colleagues (1998) explained the need for two levels of connect interventions, basic and intensive. Basic interventions are provided to all students in the check & connect process at least once a month. Intensive interventions are provided to those students that were displaying behaviors that put them at greater risk for school failure or dropping out (Sinclair et al., 1998).

Final Thoughts

Some students, regardless of their motivation, past instruction, and knowledge prior to starting school, may demonstrate issues with learning academic concepts including recalling basic facts, solving problems with concrete to abstract concepts, and applying knowledge to real-world problems. In order for all students to succeed in school, teachers must use data to inform instruction and provide high-quality, evidence-based strategies that are aligned to all students' needs. The RTI process is a framework for providing different levels of support using student progress data.

An explicit focus on academic and behavioral evidence-based interventions that support students who may be identified with mild intellectual disabilities

ensures that students will be provided with strategies to target their specific needs. Several of these strategies include moving from concrete to abstract reasoning skills, problem-solving skills, hands-on learning, and visual and auditory approaches to allow all students to succeed in mastering the curriculum. Through the RTI process, many students will show progress towards mastering the curriculum through the use of these strategies, while others may need specially designed instruction which would occur through a special education placement if they are identified as a student with a mild intellectual disability.

Points to Remember

- Students with intellectual disabilities have a wide range of educational needs.
- Students with mild intellectual disabilities typically struggle with academic concepts across the curriculum.
- The RTI process is a framework designed to provide different levels of support to ensure students master the curriculum.
- Evidence-based strategies and interventions are required by federal law and are best practice for supporting all students.
- Evidence-based strategies must be selected that target individual student needs through analysis of progress monitoring data.
- Different strategies are used which address different learning strengths including auditory, visual, kinesthetic, and concrete to abstract reasoning.

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Specific Learning Disabilities

James R. Schwab, Ph.D., University of West Georgia, Angela C. Fain, PhD., University of West Georgia

A specific learning disability (SLD) is defined as "a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in an imperfect ability to listen, think, speak, write, spell, or do mathematics calculations...[and is unrelated to learning problems that are primarily the result of visual, hearing, or motor disabilities; of intellectual disability; of emotional disturbance; or of environmental, cultural, or economic disadvantage" (Center for Parent Information & Resources, 2017, n.p.). There are three main types of SLD subtypes in reading, writing, and mathematics.

- Dyslexia is a disability in reading in which children demonstrate difficulty with reading comprehension, spelling, and writing. They often have trouble reading accurately and fluently (Center for Parent Information & Resources, 2015).
- Dysgraphia is a disability in writing. Children with dysgraphia demonstrate difficulty writing legibly and at age-appropriate speed. Many children with dysgraphia also struggle to express their thoughts in writing (Center for Parent Information & Resources, 2015).
- Dyscalculia is a disability in mathematics in which children have difficulty understanding number-related concepts or using symbols or functions needed for success in mathematics (Center for Parent Information & Resources, 2015).

Identification

Prior to the passing of IDEA in 2004, all states and schools identified students using the discrepancy model, which states that four criteria are met before a

student is considered eligible for a specific learning disability (Ihori, & Olvera, 2015; Restori, Katz, & Lee, 2009). Those four criteria include

(a) establishing a discrepancy between intellectual/cognitive ability and academic achievement; (b) identifying the psychological/cognitive processing deficit; (c) determining if the child's educational needs can or cannot be met with special education and related services; and (d) exclusionary considerations (Restori et al., 2009).

The discrepancy model, however, has many criticisms including tester inconsistencies, and student underachievement that skewed scores (Restori et al., 2009). With the authorization of IDEA (American Psychological Association, 2018) states were now allowed to use a response to intervention (RtI) which was developed due to major criticisms of the discrepancy model (Restori et al., 2009; Zirkel & Thomas, 2010).

Assume, for example, that a child has an IQ of 85 and the scores in reading, mathematics, and writing were 75, 76, and 77 respectively. Under the discrepancy definition the student would not qualify for special education; however, s/he may still require special education services. Using the RtI model instead allowed psychologists to "use a process that determines if the child responds to scientific, research-based intervention as a part of the evaluation procedures" (ASHA, 2018, n.p.).

Students could be identified with a deficit using universal screening (tier 1), provided high-quality research-based instruction in small groups (tier 2), and possibly individualized instruction (tier 3) before testing for special education services. It is important to use data-based decision making when moving students through the RtI tiers to ensure they really need special education services (Reschly, 2014). If the student did not respond to the scientific, research-based interventions over the course of several weeks, then the student might be identified as needing further testing that could lead to a diagnosis of SLD.

Prevalence/Causes

According to the National Center for Education Statistics [NCES] (2018), there are approximately 2.3 million students diagnosed with specific learning disabilities (SLD) and receive services under IDEA, which translates into approximately 34% of all students ages 3-21 receiving special education services had SLD. By some estimates, mathematics disabilities affect 5% to 8% (Geary, 2004) and writing disabilities affect 6.9% to 14.7% of the population (Katusic, Colligan, Weaver, & Barbaresi, 2009). Reading disabilities affect 5% to

18% of the population although some estimate that 80% of the students with SLD have a reading disability (Fuchs, Fuchs, & Compton, 2004; Shaywitz & Shaywitz, 2005).

The exact cause of SLD is not known; however, researchers have found some possible causes such as genetics (Pennington, 1991), neurological factors (Rao, 2003), and environmental factors (Silver & Haggin, 2002). Researchers believe neurological problems could occur during the prenatal or postnatal period, as the nervous system is developing (Rao, 2003). An alternative theory suggests other factors such as head injury, lack of oxygen, exposure to toxins, seizures and nutritional deficiencies may contribute to central nervous system damage (Rao, 2003). Researchers have shown that malnutrition, prematurity, poor prenatal and post-natal health care, stress, and poor parenting and teaching can create conditions in which brain dysfunction is more likely (Jensen, 2009; Silver & Haggin, 2002). Substance abuse, defective learning models, emotional disturbances, and social and cultural deprivation have also been associated with SLD (Jensen, 2009; Silver & Haggin, 2002).

Characteristics

No two students with SLD will possess an identical profile of strengths and weaknesses because SLD covers an extremely wide range of characteristics; however, some common characteristics include academic problems, attention deficits, oral language difficulties, process deficits and information-processing problems, psychological lack of cognitive strategies needed for efficient learning, social skill deficit, poor motor abilities, and specific problems in reading, mathematics, and/or writing (Cimera, 2007). Students with SLD can display problem behaviors due to their academic deficits (Schwab, Tucci & Jolivette, 2013).

An SLD in reading is characterized by a difficulty in word recognition, fluency, and/or comprehension (Lyon, Shaywitz, & Shaywitz, 2003). Students with an SLD in reading have trouble decoding words, which affects their ability to read fluently, which will affect their ability to comprehend text (Snowling, 2013). Researchers have found that reading rate is one of the number one predictors of an SLD in reading and requires early intervention (Bryant, Bryant, Hammill, McCray, & Kethley, 2004) Students with an SLD in reading may display problems with attention, verbal working memory, and other executive functions (Costa, Hooper, & Edwards, 2016).

Students with an SLD in writing may experience difficulty with the general cognitive and affective processes that effective writing requires (Swanson, Harris, & Graham, 2013). These students have weaker memory skills, executive functioning skills, and cognitive processing skills that makes writing

more difficult, and have low phonological and reading skills, which makes writing more difficult (Costa et al., 2016; Graham, Collins, & Rigby-Wills, 2017). Finally, they can also experience low motivation due to their lack of writing skills (Bryan, 1991).

Students with SLD in mathematics lack the basic foundational skills (i.e., number sense, fractions, mathematics reasoning) to solve more difficult mathematics problems. These students tend to make simple mathematics calculation errors when solving mathematics problems that require higher order thinking skills (Swanson, Lussier, & Orosco, 2011). Students with SLD in mathematics have difficulty retaining information and solving problems strategically, while poor working memory abilities and low cognitive load capabilities may cause them to struggle with comprehending and solving word problems (Gersten et al., 2008; Swanson et al., 2011).

Providing Academic and Behavioral Supports Within the RtI Model

Mr. Smith is currently teaching a class of twenty-five fifth grade elementary students at Big River Elementary School. This class consists of twenty regular education students and 5 students who receive services for special education. Three of the students, Bill, Devante, and Marcia receive services for a specific learning disability in reading and two students, Elizabeth and LaShawn, receive services for a specific learning disability in mathematics. Bill, Devante, and Marcia tend to really struggle with word problems due to comprehension and reading difficulties. Elizabeth and LaShawn have trouble identifying the correct operation to use, identifying what the problem is asking, and using an appropriate strategy to solve the word problem.

Mr. Smith has modeled several times the correct steps, but students continue to perform the steps in the incorrect sequence when presented with independent work. In addition to academic challenges, Elizabeth and Bill also display problem behaviors when asked to answer questions in the class. Since Mr. Smith wants to provide support for all students, including students with SLD, Mr. Smith decides to use an evidence-based mnemonic strategy to support all students.

Tier 1 Instruction

One type of strategy instruction that can help students with SLD be successful in solving word problems is to teach students to use the mnemonic STAR, which stands for **S**earch the problem, **T**ranslate the problem into pictures or equations, **A**nswer the problem, and **R**eview the solution (Peltier & Vannest,

2016). Continuing with the example from above, here is how Mr. Smith supported all students in using the STAR strategy.

First, Mr. Smith begins by providing effective tier 1 instruction, which you learned about in chapter two. Assume Mr. Smith is teaching students to solve the word problem "The average temperature at the South Pole is -45°F. The average temperature on the Equator is 92°F. How much warmer is the average temperature on the Equator than at the South Pole?" Mr. Smith models for students how to Search the problem and underline the important information as he underlines "-45°F", "92°F" and "how much warmer" in the word problem. Next, Mr. Smith models how to Translate the word problem into an equation and writes 92F - (-45F). Third, Mr. Smith reminds students of the subtraction of integers rule, which states to add the opposite of the second term. Fourth, Mr. Smith models how to Answer the problem by adding 92 plus 45 to get 137°F. Finally, Mr. Smith models how to **R**eview the solution and checks that the answer makes sense. Mr. Smith then goes onto performing guided practice with the students on another word problem with the plan to move to independent practice if the students perform well during guided practice.

Tier 2 Instruction

In tier 2 instruction, students get the general curriculum plus more, or core plus more (Shapiro, n.d.). Here, specific research-based interventions are incorporated in small group work with fidelity. Mr. Smith uses tier 2 in the following way:

Mr. Smith would like to get an accurate response from all students and has noticed that Elizabeth and Bill are not fully participating in solving the word problems, so he decides to let the students write the answers on white boards to increase opportunities to respond during guided practice (Schwab et al., 2013). These written answers, or response cards, allow students to hold up white boards simultaneously to show responses to a teacher's question, which provides greater anonymity, which may increase students' willingness to respond (Gardner, Heward & Grossi, 1994; Lambert, Cartledge, & Heward, 2006).

When Mr. Smith asks the students to solve the word problem using STAR, Elizabeth and Bill are participating in attempting to solve the word problems. However, Mr. Smith notices that all students with SLD and three other students are providing the incorrect answers and not performing the steps to the STAR strategy in the correct order.

Mr. Smith decides to provide tier 2 instruction for the five struggling students. He assigns the other students to independent work the following day and decides to work with the five students in a small group. To help these students with the STAR strategy, Mr. Smith provides checklists of each step to STAR with details on each sub-step and questions the student should ask; for example, underneath 'Search the problem,' the checklist includes the sub-steps 'Read the problem carefully, Identify what is known and what is unknown, and Underline the facts.'

Mr. Smith also reads the word problems out loud, which helps students who have a specific learning disability in reading. Mr. Smith continues to model and use guided practice while letting students use the checklists to complete each step.

As the STAR strategy becomes more familiar to the students, Mr. Smith gradually fades away use of the checklist. Elizabeth, however, continues to struggle with adding and subtracting integers in word problems. Elizabeth can now set the word problem up correctly, yet performing the correct operation is still a problem.

Tier 3 Instruction

For tier 3 instruction, students get core plus more, plus individual instruction and interventions (Shapiro, n.d.). As the story unfolds, Mr. Smith continues to find solutions for Elizabeth within the RtI tiered system.

Mr. Smith asks the special education teacher, Ms. Roberts, to work oneon-one with Elizabeth to help learn to solve word problems using the STAR strategy. Ms. Roberts decides to use a graduated instructional sequence (Maccini & Hughes, 2000; Maccini & Ruhl, 2000) to help Elizabeth solve the word problems. Ms. Roberts first teaches Elizabeth to model the word problems using chips or counters while translating the problem into an equation or drawing. As Elizabeth becomes proficient at using the chips or counters, Elizabeth moves onto using drawings, then finally begins to use the equations only. By the end of the week, all of Mr. Smith's students have initial mastery of the STAR strategy.

Progress Monitoring

Changes in the identification of students with SLD have helped to provide students with tiered supports in the general education classroom. Through RtI and other multi-tiered systems of support, general education teachers are able to identify and support students who may be at risk for SLD and/or struggling in the classroom (Shapiro, n.d.). As with all instruction and

interventions, it is important that teachers monitor student academic progress and responsiveness to interventions (McMaster, Parker, & Jung, 2012).

Curriculum-based measurements (CBMs) created by Fuchs, Deno, and Mirkin (1984) over 30 years ago continue to be the dominant research-based assessment tools used by educators and school psychologists nationwide (Jenkins, Schulze, Marti, & Harbaugh, 2017). CBMs are informal assessments (probes) that measure student progress aligned with the curriculum in writing, reading, and mathematics. It takes some time to become familiar with the process; however, the investment made changes teaching and learning and elevates it to another level (Hasbrouck & Ihnot, n.d.). It is essential that teachers use informal assessments to assess student academic performance, respond to interventions, and evaluate the effectiveness of interventions.

Final Thoughts

Students with SLD generally have difficulties in one or more content areas to include reading, writing, and mathematics. IDEA and the emphasis of MTSS changed the way students with SLD are identified. Struggling students receive tiered supports in the general education classroom prior to identification for SLD to help support their individual academic learning needs or receive tiered supports once they have been identified. Data is collected to assess student performance, measure student progress, and evaluate the effectiveness of teacher instruction and interventions.

Points to Remember

- There are three main types of SLD subtypes in reading (dyslexia), writing (dysgraphia), and mathematics (dyscalculia).
- The exact cause of SLD remains unknown; however, researchers have found that genetics, neurological factors, and environmental factors may contribute to the struggles some students face.
- Common characteristics of students with SLD include academic problems; attention deficits; lack of cognitive strategies needed for efficient learning; oral language difficulties; poor motor abilities; psychological process deficits and information-processing problems; social skill deficit; and specific problems in reading, mathematics, and/or writing.
- A specific learning disability in reading is characterized by a difficulty in word recognition, fluency, and/or comprehension and difficulty

decoding words, while a student with SLD in writing may experience difficulty with the general cognitive and affective processes and have weaker memory skills, executive functioning skills, and cognitive processing skills that makes writing more difficult.

• Students with SLD in mathematics lack the basic foundational skills (i.e., number sense, fractions, mathematics reasoning) to solve more difficult mathematics problems, make simple mathematics calculation errors when solving mathematics problems that require higher order thinking skills, and have difficulty retaining information and solving problems strategically.

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Other Health Impairments with an Emphasis on ADHD

Nicholas D. Young, PhD, EdD,

American International College,

Jennifer M. Innocenti, MA,

American International College,

Kristen Bonanno-Sotiropoulos, EdD,

Bay Path University

According to the Individuals with Disabilities Educational Improvement Act of 2004, the disability category, Other Health Impairment is defined as "having limited strength, vitality or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment, that: (a) is due to chronic or acute health problems such as asthma, attention deficit disorder or attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, and sickle-cell anemia; and (b) adversely affects a child's educational performance" (Center for Parent Information & Resources, 2017, n.p.). Approximately 14% of students receiving special education services are doing so under this category (National Center for Educational Statistics, 2018). Although the most common disability in this category is attention deficit hyperactivity disorder, or ADHD, there are quite a few other medical conditions and/or disorders that are also included such as Tourette's syndrome, heart conditions, bipolar, fetal alcohol syndrome, and rheumatic fever (National Dissemination Center for Children with Disabilities [NICHCY], 2012). Several others common conditions include:

 Diabetes is a medical condition where the body has difficulty either using or producing insulin effectively. Diabetes causes such symptoms as excessive thirst and urination, blurry vision, fatigue, and irritability. There are approximately 23.6 million school-aged children affected by diabetes.

Epilepsy is a condition that causes seizures, which alters the way an
individual's brain works. Seizures trigger brain cells to malfunction,
causing unconsciousness, and changes in physical movements.
When a student with epilepsy has a seizure, they may experience
unresponsiveness, involuntary body movements, blackouts, and
incontinence.

- Hemophilia is a blood disorder which causes the individual's blood not to clot right away; therefore, a cut may take a longer to stop bleeding. Students with hemophilia may also experience abnormal menstrual cycles, frequent bruising, and nosebleeds.
- Lead poisoning refers to the slow build-up of lead in the bloodstream
 through exposure to materials that contain lead. Lead poisoning can
 result in very serious mental and physical symptoms including
 anemia, weight loss, abdominal pain, vomiting, sluggishness,
 irritability, and learning problems.
- Leukemia is cancer in the blood and bone marrow and occurs when an abundance of abnormal white blood cells is produced. Students with leukemia experience symptoms such as tiredness, shortness of breath, fevers, night sweats, paleness, achy bones and joints, bruising, and slow healing of cuts.
- Nephritis refers to a condition where an individual's kidneys are inflamed as a result of infection or an autoimmune disease, such as lupus. Symptoms include high levels of protein in the blood, swelling and weight gain, and decreased urine output.
- (National Dissemination Center for Children with Disabilities [NICHCY], 2012).

Special Education Services for Medical Issues Under Other Health Impairments

The medical conditions associated with this disability area may require that diagnosed students receive medical supports while attending school or may miss more school than a typical peer resulting in missed instructional time (Center for Parent Information & Research, 2015). Students might have frequent doctor visits, hospitalizations, and/or sick days. Teachers need to be aware of this and continually work with families and health care providers to ensure students are supported to maintain their educational requirements and performance.

When a student is found eligible for special education under other health impairments, there are several related services that may be especially important such as medical services, school health services, and school nursing services (NICHCY, 2012). These are assessed at the time of an IEP meeting and determined with the assistance of licensed medical providers based on the need for related services during the school day so that the student is able to access the curriculum (NICHCY, 2012; Yell, 2016).

Attention Deficit Hyperactivity Disorder

Attention deficit hyperactivity disorder (ADHD) is considered to be a chronic neurodevelopmental disorder that is defined by hyperactivity, inattention, and impulsivity (Usami, 2016). ADHD is further associated with other impairments such as social, emotional, and/or cognitive impairments, family issues, academic performance, health risks, and suicidal ideation (Barkley, 2006). The impairments play a significant part in child development that, when not addressed in childhood, may lead to disruptive behavioral patterns that are prolonged and are harder to correct and impede a student's academic performance throughout his or her entire school career (Bell, 2011). Without effective treatment, children's and adolescents' chances of crime/criminal justice contact, substance abuse, child abuse, accidents with severe injuries, traffic violations, and adult mental illness/psychiatric disorders increase significantly (Barkley, 2006).

Attention Deficit Hyperactivity Disorder (ADHD) refers to "a persistent pattern of intention and/or hyperactivity-impulsivity that is more frequently displayed and more severe than is typically observed in individuals at a comparable level of development" (American Psychiatric Association, 2013, p. 61). ADHD requires a diagnosis from a licensed psychiatrist (Bell, 2011). According to the Centers for Disease Control and Prevention (2018), approximately 6.1 million school-aged children are diagnosed as having ADHD, which accounts for 9.4% of school-aged children. Further data reveals that 2 out of 3 children diagnosed with ADHD also have a comorbid behavioral, mental, or emotional disorder as well (Centers for Disease Control & Prevention, 2018).

The American Psychological Association, or APA, (2013) noted that boys are 2 to 9 times more likely to receive an ADHD diagnosis than girls and, through twin studies, ADHD is reported to be highly heritable. In 65% of children diagnosed with ADHD, the symptoms have carried through adulthood (Wolraich et al., 2005). Curtis (2014) noted that students who grew up in a very structured environment, tend to mask the symptoms associated with ADHD and other psychiatric disorders.

Approximately 80% of children who have a diagnosis of ADHD are also likely to have at least one other psychiatric disorder and 50% are likely to have two

psychiatric disorders, known as a comorbid disorder (Barkley, 2006). Common comorbid disorders include oppositional defiant disorder (ODD), conduct disorder (CD); then anxiety disorder (AD), and major depressive disorder (MDD), and as of 2016, bipolar disorder (BD), severe mood disorder (SMD), and disruptive mood dysregulation disorder (DMDD) have been considered, primarily due to symptoms expressed in late childhood and adolescents (Usami, 2016).

Comorbid disorders are becoming more prevalent due to the increased use of mood stabilizers and antipsychotics for children (Waxmonsky et al., 2013). Emotional instability is a primary deficit in the diagnosis of ADHD, which can influence mood. Symptoms of students with ADHD and Severe Mood Dysregulation (SMD) experience higher rates of aggression, prominent affective lability, and hostile interpretation of neutral stimuli that disrupt school, home, and peer relations (Waxmonsky et al., 2013). The National Institute of Mental Health [NIMH] (2017) has created a diagnosis of SMD to address a possible construct for students who do not meet the criteria for a mood disorder but experience some symptoms. The criteria to receive a SMD diagnosis includes a persistently abnormally irritable or sad mood, developmentally inappropriate levels of reactivity to stimuli three or more times per week, and evidence of persistent hyperarousal that begins prior to the age of 12 (Waxmonsky et al., 2013).

Symptoms of ADHD can present in three different aspects: inattention, hyperactivity, and impulsivity (National Institute of Mental Health, n.d.). Younger children diagnosed with ADHD are typically found to be hyperactive and once children begin to attend school, symptoms of inattentiveness increase (Alsalamah, 2017). Extensive research has found that children with ADHD, suffer from learning difficulties including organization, memory, and deficits in executive functioning, including problem-solving and critical thinking (Alsalamah, 2017; Birchwood & Daley, 2012; Kulkarni, 2015; Salami, Ashayeri, Estaki, Farzad, & Entezar, 2017; Scholtens, Rydell, &Yang-Wallentin, 2013).

Students with ADHD are at a higher risk for absenteeism, course failure, drug and substance abuse, and dropping out of school (Scholtens et al., 2013). The disruptive behavior further causes impairment in daily living activities and struggles within the home. In adolescents, students untreated for ADHD exhibit more criminal/deviant behaviors and in later life, often drop out of high school, get more traffic violations, are unemployed and have issues at work, and experience higher marital issues (Usami, 2016).

Inattention, Hyperactivity, and Impulsivity

Research is constantly being conducted on ADHD because it is considered a chronic disorder (Usami, 2016). Brain scans have shown that there is a delay in the frontal cortex of students diagnosed with ADHD. The frontal cortex controls cognitive processes such as attention and motor planning (Usami, 2016). Due to the cognitive impairment in early age, children begin to have problems with speech development when compared with children of similar age (Barkley, 2006). In addition to the inattentive aspect of ADHD, children showed increased difficulty with organization and conversational pragmatics of their speech (Barkley, 2006). Approximately 64% of children who have a speech and language disorder are likely to be diagnosed with ADHD, and these children had more difficulty with recall, story-telling and language tasks and not language impairment (Barkley, 2006).

There are three main subtypes to ADHD: predominantly inattentive, predominantly hyperactive/impulsive and combined (National Institute for Mental Health, n.d.). Data collected on elementary school students found that inattention is correlated with underachievement (Tymms & Merrell, 2011). Hyperactive/impulsive has a less negative association with underachievement, and impulsivity alone has a negative correlation with reading and mathematics (Tymms & Merrell, 2011). Tymms and Merrell (2011) note that impulsivity is inversely related to intelligence, as well as positively linked to academic failure.

Under general circumstances, the cognitive dysfunction model and the motivation-based dysfunction model cites that most students can delay their reaction to something; however, students diagnosed with ADHD struggle with delaying their reaction to a later time (Tymms & Merrill, 2011). The student tries to divert his/her attention to something else and is then perceived as having inattention and hyperactive difficulties (Tymms & Merrell, 2011). Students who tend to be predominately impulsive are unable to delay their reaction and blurt out answers, and this is an obvious indicator that the student is processing the subject matter and the subject is holding the student's attention (Tymms & Merrill, 2011).

When looking at inattention and hyperactivity, Imeraj et al. (2016) found that school-aged students spent approximately 12% of their classroom time idle with such activities as transitioning from one assignment to the next or waiting for instructions. Idle time is a period of "high delay, low structure, and low stimulation" (Imeraj et al., 2016, p. 78). It has been argued that students diagnosed with ADHD rush through assignments due to an inability to focus, effectively increasing their idle time; yet Imeraj et al. (2016) argued that the transition-idle time is an area of concern for interventions.

Students diagnosed with ADHD and students with no diagnosis were found to engage in more sensation-seeking behavior such as hyperactivity, noisiness, disruptive behaviors and disruption during low stimulation (high idle) time that did not provide instruction and were considered to consist of more self-paced assignments/activities; however, students diagnosed with ADHD had exacerbated symptoms of hyperactivity and disruptive behaviors than other students (Imeraj et al., 2016). Parents and teacher have reported that inattention is reduced when the student is engaging in "high interest" activities, such as watching movies, playing video games, and drawing (Orban, Rapport, Friedman, Eckrich, & Kofler, 2018).

Environmental distractors significantly influence students diagnosed with ADHD (Cassuto, Ben-Simon, & Berger, 2013). Students with ADHD were negatively impacted by an assortment of environmental factors such as auditory, visual, and a combination of auditory and visual, while children with no diagnosis were only affected by the combination type of environmental distractors (Cassuto et al., 2013). In studies, auditory stimuli increased attention and focus but also increased impulsiveness (Uno et al., 2006). On the other hand, when visual noise was introduced into the session, commission errors decreased, and omission errors increased, reaction time was prolonged, impulsiveness improved, the child's ability to suppress reaction was improved; however, attention and information processing speed declined (Uno et al., 2006). In summary, auditory noise improved inattention and impulsiveness, while visual noise stimuli can aid with attention and reduce the number of wrong answers.

Social Impairment

Students diagnosed with ADHD have significant social impairment. Students are more apt to quarrel with friends, have low self-esteem, and poor communication skills (Wehmeier, Schacht, Barkely, 2010). Students with significant social impairment are more likely to have a comorbid diagnosis of ODD or CD, which is present in about 60 percent of students with an ADHD diagnosis (Klimkeit et al., 2006). Barkley (2006) suggests that the social impairment begins in childhood and occurs because children and adolescents have problems with sharing, cooperating with their peers, and taking turns; whereby, interaction tends to be self-centered, intrusive, commanding, impulsive, and hostile. This social impairment can result in children diagnosed with ADHD having limited to no close friends by third grade (Wehmeier et al., 2010). Students diagnosed with ADHD are more likely to be the class clown, disruptive in social settings, express their frustration and anger, and show less empathy and guilt (Wehmeier et al., 2010).

Due to the aforementioned characteristics, approximately 56% of these students were rejected not only by their peers but also in a social setting; therefore, these students gravitate towards other peers with deviant behaviors such as hitting, stealing, lying, back talking, running away (Barkley, 2006; Hoza et al., 2005). Children diagnosed with ADHD are more likely to be bullied, beaten up, and assaulted with a weapon by late adolescence and girls diagnosed with ADHD are more likely to be sexually assaulted (Barkley, 2006). Students diagnosed with ADHD do not have high incidences of sexual disorders; yet, they are more likely to engage in the practice of noncontraception usage, are more likely to have casual sex with multiple partners, and riskier sexual behaviors that lead to (four times greater) sexually transmitted diseases/infections and a 37:1 chance of teenage pregnancy (Barkley, 2006).

Bullying has increased over the years and has caused great harm, enough so that it is now considered a significant public health problem that can have astronomical short- and long-term psychological effects on individuals (Espelage & Holt, 2013; Young, Michael & Smolinski, 2019). A self-report survey was provided to children at the age of 8 and showed male victims exhibited significantly more depressive symptoms by the age of 18 as well as suicidal ideation and, equally as concerning, frequent victimization by bullying increased anxiety disorders (Brunstein-Klomek et al., 2009).

Direct bullying is described as experiencing physical and verbal aggression such as kicking, hitting, threatening, name-calling, and insulting, while indirect bullying is characterized as social isolation to include behaviors such as ignoring, excluding, and backbiting (van der Wal, Wit, and Hirasing (2003). Many of the issues surrounded by bullying overlap with the characterization of students diagnosed with ADHD. Behavioral characteristics of bullies are externalizing behaviors such as defiant, disruptive behaviors; social competence; academic challenges; and negative attitudes and self-cognitions (Young et al., 2019). Behavioral characteristics of victims include internalizing behaviors such as depression, anxiety, withdrawal and avoidance; negative self-related cognitions; and lower social skills (Espelage & Holt, 2013; Young et al., 2019). Bully-victim behavioral characteristics have comorbid internalizing and externalizing behaviors and negative attitudes about themselves (Espelage & Hold, 2013). Bullies, victims, and bully-victims are linked to symptoms associated with depression, as well as suicidal thoughts/ideation and behaviors (Espelage & Holt, 2013).

Espelage and Holt (2013) argued that assessing for depression and suicidal ideation along with bullying can be an overwhelming burden on school officials and should be monitored by all professionals in the child's life to include coaches, teachers, pediatricians, parents, and community leaders.

Assessing for bullying should be standard practice for schools and pediatricians with the use of suicidal ideation assessments that can be provided to students; however, teachers may need to engage in a more overview scan (Espelage & Holt, 2013). The professionals in the student's life, therefore, need to determine a baseline of the individual's behavior and mentally note any changes in the behavior that were not prompted such as missing more classes, attending more, doing homework assignments or lack thereof, giving things back that were borrowed, more external behaviors, more internal behaviors, change in weight and/or appetite (Espelage & Holt, 2013).

Emotional Impairment

Emotional impairment, or internal behaviors, include poor self-regulation of emotion, excessive emotional expression such as anger and aggression, reduced empathy, decreased arousal to stimulation, and problems coping with frustration (Barkley, 2006). Emotional impairment not only affects the student, but negatively impacts the family in ways such as hostility and aggression towards parent and child and marital issues (Barkley, 2006). Due to an emotional impairment such as low self-esteem, lack of self-confidence, poor self-perception, and a distorted sense of self, students are at an increased risk of experiencing anxiety and depression (Elia, Ambrosini, Berrettini, 2008). Due to the sensation of anxiety, these students tend to worry more about their competence and their quality of performance, which is expressed through their quickness to panic, constant need of reassurance, and are socially phobic, shy, and avoid interacting with unknown people (Elia et al., 2008). Students diagnosed with ADHD may experience weeks to months of unhappiness and are unable to find any pleasure in activities with a persistent irritable mood (APA, 2018). Depressive symptoms include hypersomnia, hyposomnia, loss of energy, significant change in appetite, and feelings of worthlessness (APA, 2013).

Barkley (2006) notes that executive function (EF) is the human's capacity to self-organize and engage in goal-directed actions and self-regulation. The EF further aids individuals with planning, perception of time, decision making, inhibition and thinking, and organizing (Barkley, 2006). Common and recognizable components to EF are working memory (verbal and non-verbal), inhibition, generativity (fluency, goal-directed inventiveness), and self-regulation of emotions (Barkley, 2006). Due to an emotional impairment and limited EF, ADHD individuals are more likely to be impulsive, have severe emotional reactions towards events, thus making them less able to moderate or manipulate or suppress emotional reactions (Barkley, 2006).

ADHD and Daily Life Struggles

Parents and teachers have expressed a student's inattention as "Doesn't seem to listen, daydreams, fails to finish assigned tasks, often loses things, can't concentrate, easily distracted, can't work independently of supervision, requires more redirection, shifts from one uncompleted activity to another, confused or seems to be in a fog" (Barkley, 2006, p. 77). Both parents and teachers have noticed that the student's behaviors tend to fluctuate throughout the day; whereby, certain symptoms such as becoming more demanding, noisy, disorganized, disruptive, or impulsive that are associated with ADHD are more prevalent than externalized behaviors (Barkley, 2006). Parents and teachers need to observe the child/ren to determine what behaviors are more prominent during which periods of the day (Usami, 2016).

Usami (2016) noted that parents have expressed their distress and struggles with their children; for example

- Oftentimes their children will get up early in the morning and wash their face, groom themselves, and get dressed with little to no effort or prompts, then the student will start to act inappropriately at breakfast, resulting in quarrels with the parent(s) and/or siblings.
- While at school, some of the students would behave well while others did not.
- Due to their social impairment, individuals diagnosed with ADHD had few friends that accepted them.
- Many times, teachers would correct or redirect students for their disruptive behavior and then students would not discuss the events that unfolded at school.
- The student would struggle with his or her homework at home.
- Once the parent(s) return home, the student with ADHD would not enjoy any family involvement/family time, continue to quarrel with their parent(s) and/or siblings, would not talk with an inside voice and would be disruptive during dinnertime.
- After dinnertime, most students with ADHD would play, study, play sports, or engage in private lessons. When it gets closer to bedtime, the individual with ADHD will become argumentative, hostile, and uncooperative (i.e., refusing to brush his or her teeth, changing into pajamas and preparing for the next day, while older students stayed out passed curfew.

 Other parents have reported that they are uncomfortable with taking their children/teen diagnosed with ADHD out in public due to their disruptive and argumentative behavior.

Due to the struggle of being a parent with a child diagnosed with ADHD, parents have reported increased stress due to the external behaviors such as missing work and losing money due to being called by the school for their student's behavior and they are emotionally frustrated due to the argumentative and hostile interactions with the student (Usami, 2016). Parents also reported that their child(ren) diagnosed with a comorbid disorder (such as ODD) experienced more severe behavior outbursts in the evening (Usami, 2016). Inattention and ODD symptoms in girls were a greater family burden than that of boys (Usami, 2016). ODD symptoms include losing temper frequently, easily annoyed, expresses anger and resentment, argumentative with authority figures, refuses to comply with instructions by authority figures, deliberately annoys others, blames others for their mistakes, and tends to be vindictive and spiteful (APA, 2013).

Conduct disorder (CD) is characterized by aggression towards people and animals such as bullies/intimidates/threatens others, initiates physical fights, uses weapons, physically cruel to people and animals, steals from victims, forces sexual activity on others, deliberately engages in destruction of property like fire setting, burglarizes homes, lies, steals, stays out past curfew prior to age of 13, runs away from home overnight, and truancy in school prior to age of 13 (APA, 2013).

Pelham, Gnagy, and Greiner (2016) noted that ADHD is considered the most common diagnosis in mental health clinics; and ADHD has received the most referrals by primary care physicians. ADHD is considered the most common diagnosis in special education due to inattention and impulsivity causing learning impairment; as well as the most common symptoms associated with behavioral problems in regular classrooms; therefore, the treatment for ADHD is relatively expensive (Pelham et al., 2016).

A significant difficulty for parents is trying to 'control' the symptoms of their children with ADHD due to their lack of knowledge about the disability. Ideally, ADHD can be treated solely by a clinician; however, the student will lack in significant areas of emotion regulation, anger and aggression (Pelham et al., 2016). One of the most effective methods for treating ADHD is for parents and child(ren) to attend a summer treatment program (Pelham et al., 2016). The program is ideal for ages 7-12 years old, where coaching, role-play and practice, modeling, and feedback/reinforcement are utilized to provide training in anger management, coping with anger, bullying, peer mediation, social skills (Pelham et al., 2016). Parents should attend a simultaneous group

where they learn about the disability and learn how to implement behavior modification interventions with their child to improve externalized behaviors at home (Waxmonsky et al., 2013).

There is currently no data to determine how much the family endures due to lost wages for treating their child(ren) for ADHD, yet the annual cost for children with ADHD in an education setting is approximately \$13.6 billion and an estimated societal annual cost for the treatment of ADHD was approximately \$52. 4 billion annually in 2007 (Pelham, Foster & Robb, 2007). Jensen et al., (2005) noted that insured children with ADHD and their family members spend approximately \$2,461 annually versus families without someone having an ADHD diagnosis spend approximately \$1,220 annually. According to Pelham et al., (2016) the treatment for ADHD is considered to be the fourth highest disorder to treat.

Cognitive Impairment

Barkley (2006) suggested that cognitive impairment in students diagnosed with ADHD was represented through intellectual development: gifted, low intelligence, have mild intellectual retardation, or learn more slowly. Due to the disruptive behaviors and behavioral inhibitions and impaired EF, there is a negative relationship between ADHD and IQ, which involves the EF that consist of working memory, internalization of speech, the development of verbal thought and is lacking in children diagnosed with ADHD (Barkley, 2006).

Orban et al. (2018) postulate that children with ADHD struggle in school and many other aspects of their life due to the areas of the brain that are affected such as working memory. The brain does not process material in the same way that non-ADHD students do. Essentially, students diagnosed with ADHD may prefer certain subject areas (art and music) over other areas (math) due to the way teacher instruction is provided (Orban et al., 2018). Students diagnosed with ADHD need constant reassurance from their teachers while math tends to be taught and then self-pace methods are utilized (Orban et al., 2018).

The cognitive impairment may be significant in the classroom; however, students may be able to identify their own feelings about their behaviors using self-monitoring techniques (Klimkeit et al., 2006). Zucker, Morris, Ingram, Morris, and Bakeman (2002) reported that many researchers argue that due to the cognitive impairment and lack of self-perception, students will respond to questions about their thoughts, emotions, and behaviors in an impulsive manner and spur-of-the-moment feelings; however, Klimkeit et al., (2006) found that students were aware of their emotions and their behaviors and suffered from anxiety because they do not fully understand how to

behave in social settings. Parents and teachers tend to make their reports on the behaviors that are distressing to them (external behaviors) and do not consider the student's point of view (internal perception of behaviors) (Klimkeit et al., 2006). Students diagnosed with ADHD reported that they had more difficulty with concentration, they were more behaviorally disturbed, and experienced more social problems when compared to students that were not diagnosed with ADHD; yet, students diagnosed with ADHD did not report less interest in school than the non-ADHD students (Klimkeit et al., 2006).

School Life

In elementary school, the core focus for students is the standardized achievement test, in middle school the focus is on completing homework assignments, as well as returning homework assignments, while in high school the focus is on GPA as a means to gauge academic success and college admittance (Kent et al., 2011). Students (ages 14-18) diagnosed with childhood ADHD had an average GPA of 2.75 compared to the non-ADHD peer whose average GPA was 3.0 (Kent et al., 2011). The correlation between ADHD and grades is limited as accounting for the core course difficulty for students diagnosed with ADHD versus non-ADHD has yet to be established (Kent et al., 2011). Students diagnosed with ADHD in childhood were also more likely to repeat a grade than their peers and placed in remedial or basic level courses (Kent et al., 2011).

Attendance is a significant factor for students diagnosed with ADHD. Kent et al. (2011) noted that students diagnosed with ADHD tend to have either more absenteeism or tardiness due to lack of time management. On average, students diagnosed with ADHD had a 2.4 day/year difference in absences than non-ADHD students, while teachers reported tardiness at a rate of 4.6% for elementary school, 12.2% for middle school, and 21.7% for high school students (Kent et al., 2011). Students' poor academic standing and increased tardiness/absenteeism may correlate with the high drop-out rate of high school students diagnosed with ADHD (Able et al., 2007). On average, approximately 9% of students diagnosed with ADHD graduate from high school (Able et al., 2007).

Research has shown several strategies for increasing outcomes for students diagnosed with ADHD, including self-monitoring strategies, combination therapy for executive functioning and sensory integration, and self-regulation strategy development (Alsalamah, 2017; Barnard-Brak, Sulak, & Fearon, 2011; Bell, 2011; Shimizu, Bueno, & Miranda, 2014; Young, Noonan, Bonanno-Sotiropoulos, 2018).

Strategies for Increasing Positive Outcomes

Self-Monitoring Strategy

Self-monitoring strategy is a highly effective technique used to increase student achievement in many content areas as students attempt to use skills such as choice making, decision making, self-advocacy, goal setting, self-efficacy, problem solving, self-knowledge, and self-management/regulation as well as to increase appropriate behavior and social interactions (Alsalamah, 2017; Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000). This strategy requires that students think about and record their own behaviors in relation to a previously specified criteria (Alsalaham, 2017; Bell, 2011; Bruhn, McDaniel, Kreigh, 2015). There have been several studies that indicated the effectiveness of self-monitoring strategies within reading and math performance, as well as influenced positive behavior specifically for students with ADHD (Alsalaham, 2017). Most studies revealed positive outcomes in academic performance and appropriate behavior for these students (Alsalaham, 2017; Bell, 2011; Bruhn et al., 2015).

Combination Therapy (Executive Function and Sensory Integration)

According to Salami et al. (2017), development of executive functioning skills such as organization and problem-solving have been shown to increase academic performance for students diagnosed with ADHD, as well as develop and improve social abilities. Sensory integration is beneficial for the prevention of excessive movement and improved balance for this population of students as well, and teaching sensory integration interventions has been reported to improve anger management (Salami et al., 2017).

Self-Regulation Strategy Development Approach

Self-regulation strategy development (SRSD) is an evidence-based approach used to assist in developing both the writing skills and motivation of students with writing difficulties (Young, Noonan, & Bonanno-Sotiropoulos, 2018). Meta-analyses have proven that SRSD has "the strongest impact of any strategies instruction approach in writing and is among the strongest currently researched interventions for writing" (Harris & Graham, 2013, p. 74).

SRSD has also been found to be very effective for students with attention deficit hyperactivity disorder (ADHD). Students with ADHD, similar to students with LD, experience deficits with executive functioning and working memory (Young, Bonanno-Sotiropoulos & Smolinski, 2018). SRSD combines both explicit instruction, along with opportunities for supported independent practice. Explicit instruction in goal setting, self-monitoring, self-instruction,

and self-reinforcement are prevalent in the SRSD approach (Ennis, Jolivette, Terry, Frederick, & Alberto, 2015).

There are six stages for implementation of the self-regulation strategy development approach (Ennis et al., 2015). These stages include building background knowledge, teacher discussion of the strategies involved, teacher modeling of the strategies, student memorization of the strategies, teacher support during the writing process and use of the strategies, and independent practice (Ennis, et al., 2015; De La Paz & Sherman, 2013; Johnson, Hancock, Carter, & Pool, 2012; Young, Bonanno-Sotiropoulos, & Smolinski, 2018).

When building background knowledge, teachers need to understand the unique writing abilities and provide appropriate foundational knowledge as needed. Once background knowledge has been discussed, the teacher must discuss the purpose of the writing strategies that will be taught (Harris & Graham, 2013). Discussions should begin with the identification of what it is that good writers do, should occur between teacher and students, as well as peer-to-peer, and should be focused around the strategies identified as good writing (Young, Noonan, Bonanno-Sotiropoulos, 2018).

Discussions should also incorporate visuals such as charts or graphic organizers in order to support strategy development and memory throughout the process (Young, Noonan, Bonanno-Sotiropoulos, 2018). After discussions have occurred, the teacher should model how to utilize the specific strategy. Modeling the writing process out loud, similar to a read aloud/think aloud, allows the students to comprehend the thought process behind the strategy (Harris & Graham, 2013; Young, Noonan, Bonanno-Sotiropoulos, 2018). The next period, memorization, involves student practice using the strategy or strategies learned.

Practice should be supported through partner, group, and individual opportunities, as well as utilization of mnemonic devices. Once students have memorized the strategies, teachers should provide scaffolded support throughout the writing process (Harris & Graham, 2013). Guided support includes such practices as collaborative writing, the use of prompting, as well as self-monitoring strategies. Finally, independent practice is achieved when students can independently use the strategies, including self-monitoring and goal setting. (Young, Bonanno-Sotiropoulos, & Smolinski, 2018).

Final Thoughts

ADHD affects nearly every aspect of an individual's life to include the individual's self-esteem, self-confidence, increases anxiety and depression (internal behaviors), increases inattention, hyperactivity, anger and aggression, promotes social isolation/impairment, emotional impairment,

poor academics, greater risk of dropping out of school, and risky sexual behavior (external behaviors) (Barkley, 2006; Hoza et al., 2005; Wehmeier et al., 2010). The behaviors cause conflict within the family, affect employment opportunities and relationships. Individuals diagnosed with ADHD tend to seek friendship with individuals with deviant behaviors (Usami, 2016). The symptoms that characterize ADHD throughout early education endeavors persist throughout college and adulthood, despite believing that ADHD would resolve during adolescence (Barkley, 2006; Thomas et al., 2015).

Students diagnosed with ADHD have significant social and emotional impairment (Barkley, 2006). Social impairment includes lack of social support/friends, social isolation, being bullied or being the bully, hostile and aggressive towards others. Emotional impairment can include a mood disorder (MDD, BP), dysregulation of emotions, feelings of worthlessness, low self-esteem, and lack of self-confidence to name a few (Barkley, 2006). Many times, a combination of social impairment, emotional impairment, and a mood disorder could be enough for the student to exhibit suicidal ideation (Espelage & Holt, 2013).

Curtis (2014) noted that parents who implemented structure throughout the child's life masked symptoms associated with ADHD and other psychiatric disorders; thus, causing impairment in late adolescence and young adulthood. Parents who experienced symptoms associated with ADHD were encouraged to attend STP to help learn about the disability, as well as learn how to enforce the change in behavior to reduce the symptoms associated with ADHD and other psychiatric disorders/comorbid disorders. The annual cost of treatment for ADHD is nearly double for households when compared to other households without an ADHD diagnosis.

Several strategies for increasing outcomes for students diagnosed with ADHD included self-monitoring strategies, combination therapy for executive functioning and sensory integration, and self-regulation strategy development (Alsalamah, 2017; Young, Noonan, Bonanno-Sotiropoulos, 2018). Treating students for ADHD as early as possible is ideal to build time management skills, become goal-directed, learn to control their emotions and behaviors, improve focus and inattention, and find appropriate outlets for their hyperactivity. The self-monitoring strategy helps improve academic achievements, decision making, and goal setting (Wehmeyer et al., 2000).

Combination therapy improves the students EF to help the student become a more effective organizer and problem-solver (Alsalamah, 2017). The self-regulation strategy utilizes six stages of implementation to enhance one's working memory (Barnard-Brak, Sulak, & Fearon, 2011; Shimizu, Bueno, & Miranda, 2014). ADHD has many moving parts; therefore, it is imperative for

educators to work with the parents and the students to maximize the treatment interventions for students with ADHD.

Without appropriate treatment, individuals diagnosed with ADHD go on to report higher rates of unemployment due to being terminated from their job because of procrastination, lack of time management, lack of motivation, mood liability, low self-esteem and increased anxiety (Able et al., 2007). Individuals diagnosed with ADHD report 33.5% receiving some college with no degree, 26.1% hold a college degree and 29.3% obtained a post-secondary degree. When compared to their counterpart of non-ADHD individuals 32.8% reported some college, 23.8 reported having a college degree, and 22.7% obtained a post-secondary degree (Able et al., 2007).

Points to Remember

- Other health impairment disabilities include, but are not limited to, chronic or acute health problems such as asthma, attention deficit disorder or attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, and sickle-cell anemia.
- Attention-deficit/hyperactivity disorder (ADHD) is a hereditary neurological development that is characterized by severe and persistent hyperactivity, impulsiveness, and inattention.
- Approximately 6.1 million school-aged children are diagnosed with ADHD.
- 2 out of 3 students that are diagnosed with ADHD have a comorbid disorder (i.e., behavioral, mental, or emotional).
- ADHD affects the family; causes social, emotional, and cognitive impairment; can lead to a comorbid diagnosis, cause other health factors, and suicidal ideation, along with risky sexual behavior, traffic violations, criminal activity, unemployment and relationship issues.
- Families that have a member who carry an ADHD diagnosis, have medical expenses that are doubled annually as compared to those with a non-ADHD family member.
- Effective treatment in the school setting consists of self-monitoring strategies, combined therapy (EF and sensory integration), and self-regulatory strategy development.

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Deaf and Hard of Hearing

Michelle A. Gremp, PhD, Eastern Kentucky University

Language connects us to the world and to other people and provides the foundation upon which our communication and interactions with others are built. But what is language and how is it learned? In its strictest sense, language is a complex and dynamic system of conventional symbols that is used in various modes for thought and communication (American Speech-Language-Hearing Association, n.d.a). Yet for all its complexities, the ability to understand and use language develops effortlessly for typically developing children, and they arrive at school prepared to learn.

Children who are deaf or hard of hearing (DHH) and born to deaf parents who are fluent users of American Sign Language are exposed to a full end complete language in the same way as hearing children; however about 90 – 95% of children who are DHH are born to parents with typical hearing and therefore do not enjoy this same shared-language advantage (Mitchell & Karchmer, 2004). Hearing parents are typically not fluent users of sign language, and a hearing loss deprives a child who is DHH from opportunities to 'overhear' conversations. As a result, children who are DHH do not exhibit incidental language learning in the way that children with typical hearing do (Mitchell & Karchmer, 2004).

Understanding the cascading effects of this period of language deprivation is essential for identifying and implementing evidence-based educational interventions for children who are DHH. Before discussing these interventions, however, an overview of key concepts is necessary as well as introducing several topics that will assist teachers in communicating with the variety of professionals who provide services to students who are DHH and in the development of effective educational plans, teaching strategies, and classroom accommodations to meet the needs of individual students who are DHH.

Key Concepts of Deafness

Sound Measurement

Sound is made up of 2 physical properties, frequency and intensity, that are perceived physiologically as pitch and loudness, respectively. The combination of frequency and intensity contribute to the overall audibility of a particular sound and are displayed visually on an audiogram (Centers for Disease Control and Prevention, 2018). Frequency is the number of sound wave cycles that occur in a unit of time, usually a second; it is measured in Hertz (Hz) and is represented on the x or horizontal axis of the audiogram (Centers for Disease Control and Prevention, 2018). The human ear can perceive sounds with frequencies that range from the very low frequency of 20 Hz to the very high frequency of 20,000 Hz; however, the frequencies between 250 and 6,000 Hz represent those necessary for the production and reception of speech. One way to think of the frequency range is to imagine a piano keyboard (Centers for Disease Control and Prevention, 2018).

Lower frequency or lower pitch sounds can be heard at the far left-hand side of the keyboard; as one makes their way toward the right-hand side of the keyboard frequencies increase and are perceived as having a higher pitch. The intensity of sound is a measure of the force of a sound wave's vibration; it is perceived as loudness and measured in decibels (dB) (Centers for Disease Control and Prevention, 2018). The dB system is based on a logarithmic rather than linear scale which means that changes or differences in decibel levels cannot be thought of in the same way as inches on a ruler. Inches are equally spaced and begin at a zero point which represents no distance.

The decibel scale, however, has a relative zero point and each increase in units is larger than the one before. The relative zero means that 0 dB represents the softest sound that can be heard by most people at a particular frequency (Centers for Disease Control and Prevention, 2018). People can actually have a threshold of -5 or -10 dB which does not mean that there is a "negative" sound level, rather that they are able to detect a particular sound at a level that is 5 or 10 dB softer than most people. The logarithmic scale means that for every increase of 3dB the acoustic power or sound intensity of a sound is doubled (Noise Help, n.d.).

Anatomy and Physiology of the Ear

The ear is made up of three main sections to include the outer ear, the middle ear, and the inner ear. Understanding the anatomy and physiology of each section will provide an overview of the auditory pathway that transmits sound

from the environment to the brain where it is interpreted into meaningful information, ranging from environmental sounds to spoken language.

Sound waves moving through the air arrive at the outer ear, or pinna, that acts as a funnel of sorts to collect sound and then sends it down the external auditory canal to the eardrum or tympanic membrane (National Institute on Deafness and Other Communication Disorders [NIDCD], 2018a). The tympanic membrane moves back and forth in reaction to the impact of the sound wave and marks the boundary between the outer and middle ear. Its rate and degree of vibration are determined by the specific frequency and intensity characteristics of the sound wave (NIDCD, 2018a).

The middle ear is an air-filled space that contains three very small bones (ossicles) joined together in a chainlike fashion (NIDCD, 2018a). The first bone in the chain is the malleus which is fixed at one end to the interior side of tympanic membrane, while the other end of the malleus attaches to the incus which in turn attaches to the stapes, a stirrup-shaped bone whose base rests on the opening to the inner ear knows as the oval window (NIDCD, 2018a). The ossicles are set in motion in response to the vibration of the tympanic membrane and result in a change of acoustic energy to mechanical energy as the sound wave, with its unique frequency and intensity characteristics still intact, makes its way to the inner ear.

The oval window, another membranous surface, moves back and forth in response to movement of the stapes and provides the opening into the cochlea or inner ear. The cochlea is a spiral-shaped shell divided into 3 fluid-filled chambers. Within the cochlea lies the Organ of Corti that contains thousands of hair cells (12,000 to 15,000 outer hair cells and 3,000 inner hair cells) arranged in a tonotopic or frequency-specific manner (NIDCD, 2018a). As the sound wave travels through the fluids of the cochlear, it continues to represent frequency and intensity and stimulates specific hair cells. These hair cells send an electrical signal to the eighth cranial or vestibular-cochlear nerve which carries the signal to the auditory cortices in each hemisphere of the brain and ultimately to the brain for interpretation (NIDCD, 2018a).

Degrees and Types of Hearing Loss

The properties of frequency and intensity are intrinsically tied to the diagnosis of hearing loss and in determining and understanding the degree and type of loss a person experiences. A person with typical hearing is able to detect sounds with intensities ranging from -10 to 25 dB at the frequencies important for the perception and production of speech; however, a malfunction of any part of the auditory pathway described above can cause the sound wave to be disrupted or distorted, resulting in a hearing loss. The

intensity at which a sound is audible to a person is referred to as the threshold, and it determines a person's degree of hearing loss (NIDCD, 2018a).

Hearing loss is categorized into degrees ranging from minimal (with thresholds of 16-25 dB), to mild (26-40 dB), moderate (41-55 dB), moderately severe (56-70), severe (71-90 dB), and profound (91 dB or greater) (Heward, Alber-Morgan, & Konrad, 2018). As the degree of hearing loss increases, the ability to understand spoken language decreases. A hearing loss from mild up through the moderate or moderately severe range affords some access to spoken language when it is loud enough and in close proximity to the listener, but severe and profound losses have a much greater impact on speech and language development (Lim & Goldberg, n.d.). The key to improved access to sound is proper selection and fitting of an appropriate assistive listening device.

When a hearing loss is determined, audiologists conduct additional testing in order to determine the type of hearing loss. Testing performed through use of headphones or earphones is referred to as air-conduction audiometry because sound is delivered through the air, passing through the outer and middle to the inner ear and ultimately to the brain (Lim & Goldberg, n.d.). In bone-conduction audiometry, however, the outer and middle ear pathways are bypassed as sound is delivered by a small oscillating vibrator directly to the inner ear.

When thresholds from bone conduction and air conduction testing are the same, a problem with the inner ear is indicated. This type of hearing loss is referred to as sensorineural because the problem involves the sense organ of hearing and/or the auditory nerve sending sound waves to the brain for processing (American Speech-Language-Hearing Association [ASHA], n.d.b). With a sensorineural hearing loss, the clarity of a sound signal is impacted due to damage of the hair cells which serve as sensory receptors (ASHA, n.d.b). If, however, bone conduction thresholds are better than air conduction thresholds (i.e., smaller in number which indicates better hearing) by at least 10 dB, then the type of hearing loss is conductive (ASHA, n.d.b). In this case, the problem results from the outer and/or middle ear failing to accurately transmit the sound wave to the inner ear. With a conductive hearing loss, sounds just need to be made louder so that the fluids of the cochlea are set into motion. Proper function of the inner ear means that the clarity of the sound signal remains intact.

In some cases, there is a problem with both the outer and/or middle ear as well as the inner ear. Such an occurrence results in a mixed hearing loss; problems in both conducting the sound from the air through the outer and

middle ear as well as identifying frequency and intensity information within the inner ear mean that both loudness and clarity of a sound signal are impacted (ASHA, n.d.b).

The Audiogram and Assistive Listening Devices

Results from audiologic testing are graphed on an audiogram. Frequency is displayed from low to high levels (125 to 8,000 Hz) along the x axis, and intensity is displayed from low to high levels (-10 to 120 dB) along the y axis (Jerger, 2013). Typically, both pure-tone thresholds and speech recognition scores are reported on an audiogram in an attempt to estimate the listener's ability to understand speech. The information gathered during an audiologic exam helps an audiologist, in conjunction with parents, to make amplification decisions. An in-depth explanation of the various types of assistive listening devices is not possible here; however, a brief description is necessary to highlight significant differences in the types of devices teachers commonly encounter in the classroom.

Hearing aids are the most well-known device. A hearing aid functions by collecting sound through a microphone, performing some conversions of that sound, and eventually sending an amplified signal to the ear (Fitzpatrick et al., 2012). This tends to work well when merely making a sound louder improves understanding of spoken language; however, for children with severe or profound sensorineural hearing loss, increased loudness alone does not provide much benefit.

In some cases, a cochlear implant is sometimes determined to be a better choice. The implant consists of both an internal, surgically-implanted component as well as an external component (Fitzpatrick et al., 2012). Sound is converted into an electrical signal and sent to an electrode array which has been inserted into the cochlea (Fitzpatrick et al., 2012). The signal is then sent directly to the auditory nerve and makes its way to the brain where the sound is interpreted.

Cochlear Implants and Hearing Aids

Over the past two decades, the DHH community has seen momentous changes in hearing technology, including the most widely known hearing devices such as the cochlear implant and hearing aids (Luft, 2017). According to the National Institute on Deafness and other Communication Disorders (NIDCD; 2018), a cochlear implant is a small, complex electronic device that provides sounds to a person who is profoundly or severely hard of hearing. Cochlear implantation has become a commonly recommended procedure for children who are deaf as young as 12 months of age (Jung & Ertmer, 2018).

According to Luft (2017), between 1999-2000, 5.3% of K-12 students with DHH used cochlear implants, which increased to 15.0% within 10 years. Jung and Ertmer (2018) report that younger children who receive cochlear implants showed relatively more difficulty in grammatical development than in vocabulary acquisition, even though their foundational language skills are within the normal hearing range for developing toddlers.

A hearing aid is a small external electronic device that makes some sounds louder so that a person with hearing loss can listen, communicate, and participate more fully (NIDCD, 2018b). The Gallaudet Research Institute (2001, 2011), states that 62.9% of DHH students used hearing aids for instruction in 2011, which increased 4.5% from 2010. Hearing aids have improved hearing for students within the classroom; however, according to NIDCD (2018b), only one in five people who would benefit from a hearing aid actually wear one.

Assistive Listening Systems

An assistive listening system (ALS), also called an Assistive Listening Device (ALD), is an amplifier that brings sound directly to the ear without the interruption of other noises (National Association of the Deaf (NAD); 2018). ALSs are used by individuals with mild to profound hearing loss. Individuals with hearing aids or cochlear implants may even use ALSs as they have been shown to improve the quality of sound input, increasing their effectiveness (NAD, 2018). A common misconception for students who are DHH is that technology such as hearing aids, sound amplification systems, and cochlear implants restore hearing similarly to how glasses improve vision; however, this is not the case (Luckner & Pierce, 2013). A person who wears hearing aids, for example, may do so to amplify sound but sound quality and clarity may not reach normal hearing standards. Educators should take this into account when addressing students with these accommodations.

Speech-to-Text

Given the diverse communication needs of a student who is DHH, support services need to be tailored to the individual needs of each student. The standard for translating speech-to-inaudible communication would be through sign language and the use of an interpreter. One of the hurdles of having a dedicated visual communication device or aid in the classroom is the requirement for the student to look away from any presented materials at the front of the classroom. There are three variations for speech-to-text, two of which involve a transcriber typing the words that they hear either using: A) a standard QWERTY keyboard or B) a stenographic machine. In either case, the transcriber can be located within the classroom or linked via an Internet-

enabled application such as Skype and Google Hangout. The third option would be to use automatic speech recognition, which is becoming more reliable as technology advances. Many students, however, have personal preferences that should be taken into account for deciding their speech-to-text method. Research has shown that retention of information improves with the electronic speech-to-text support compared to utilizing an interpreter (Stinson & Francis, 2016).

Approaches to Communication

Perhaps one of the longest-running controversies in the field of deaf education has centered on the "right" method of communication to use with a child who is DHH. For years there have been proponents who call for the use of ASL exclusively, while others promote the development of spoken English skills (Pittman, Sass-Lehrer, & Abrams, 2016). These views, however, represent two extreme perspectives and promote a simplistic view of communication. In truth, both ASL and English are languages that are expressed through a variety of communication approaches, or systems of communication, along a continuum of modalities from visual to auditory (Pittman et al., 2016).

Moving from most to least visual, common approaches include bilingual/bimodal, simultaneous communication, sign-supported speech, Pidgen Signed English, cued speech auditory oral, and listening and spoken language (Pittman et al., 2016). Many children who are DHH utilize some combination of both modalities and the incorporation of one or more of these approaches to ensure success in specific receptive and expressive language tasks (Pittman et al., 2016).

Language learning is a naturally occurring phenomena that relies on rich and accessible input. When there is a match in hearing status and communication approach between parents and a child, the child is exposed to a linguistically rich environment that fosters the development of receptive and expressive language skills, allowing them to enter school with the language skills needed for success. By understanding the continuum of communication and learning to reflect on and evaluate the effectiveness of their decisions (Moeller & Mixan, 2016), parents are better equipped to assist in the development of communication skills for the child who is DHH.

In some cases, this will require parents to join the child in the task of intentional and explicit language instruction, for example, in learning American Sign Language (ASL) (Luckner, 2016). In all cases, however, it demands that parents learn to provide meaningful language learning opportunities that foster authentic communication. It is not the approach or

mode of communication as much as the quality of interactions that influences early language development (Luckner, 2016). It is, therefore, important to seek the best approach in each situation rather than assume there is a one-size-fits-all model for children who are DHH.

When a mismatch in hearing status or communication approach occurs at home, that child arrives at school faced with a dual challenge of learning a first language (whether ASL or English) and learning through that language as content is introduced (Easterbrooks & Beal-Alvarez, 2013). Teachers must be aware when such mismatches occur and work with parents and other professionals to determine the language approach that is best for each student. They must also be prepared to provide support through the implementation of evidence-based instructional interventions to ensure that a student's performance aligns with his or her learning potential.

Evidence-Based Instructional Interventions

Early Intervention

Early intervention is arguably the most important intervention for students who are DHH because of its long-term impact on educational performance and achievement. The Early Hearing Detection and Intervention (EHDI) process outlines the 1,3, 6 rule which recommends that newborns are screened for a hearing loss by 1 month of age, identified with a hearing loss by 3 months of age, and enrolled in an early intervention program by 6 months of age (American Academy of Pediatrics, 2018). When this rule is followed language and educational outcomes for children who are DHH are greatly improved. Without early intervention, children may very well enter school without the essential language abilities needed to achieve academic success. When this is the case, the task of helping these children achieve their potential rests in great part with classroom teachers and their ability to implement effective instructional interventions (Heward et al., 2018).

Assessment as Intervention

Assessment marks the first step in the development of an appropriate educational plan for a student who is DHH. The assessment process must address not only academics, but also social and functional skills, as well as aspects of the instructional environment (Heward et al., 2018). The tools outlined below provide suggestions for assessing these additional areas; however, it must be noted that these tools identify skill level at one point in time (static assessment). As students who are DHH move from grade to grade content becomes more complex and academic expectations increase, often leaving these students struggling to keep up. A dynamic assessment model

must, therefore, be adopted to assess a student's ability to acquire skills (The Outreach Center for Deafness and Blindness, 2017). With periodic administration of these tools, educational teams will be better equipped to determine whether a student's instructional plan and accompanying services require modification.

The Expanded Core Curriculum for Students who are Deaf or Hard of Hearing, (EDD-DHH), (Iowa Department of Education, 2013) was developed in recognition of the unique needs of students who are DHH. This document addresses a variety of skills beyond those related to core academic subjects including audiology, career education, communication, family education, functional skills for educational success, self-determination and advocacy, social-emotional skills, and technology (Martin, & Clark, 2014). While the EDD-DHH (Iowa Department of Education, 2013) is not a standardized tool, it allows an educational team to identify gaps in the development of skills that are essential to the development of students who are DHH. As a result, direct instruction from a teacher of the deaf or another professional in a related field can be included as part of a student's curricular modifications (Johnson, 2016).

Successful classroom instruction is dependent upon students being placed in the most appropriate environment and being able to access and understand the method by which instruction is presented. Such is not always the case for students who are DHH and, as a result, these learners may encounter barriers to communication access (Johnson, 2016). A variety of checklists are available to assess student readiness and to determine the appropriateness of the current or proposed educational setting (Anderson, Smaldino, & Spangler, 2011; Johnson, 2013). Once an appropriate placement is determined, a student's ability to access information must be assessed.

For students who are DHH, regardless of the communication approach they utilize, their ability to learn relies on their ability to attend to and process the information presented, a skill which can be affected by internal as well as external factors (Johnson, 2013). For students who access instruction auditorily, the Functional Listening Evaluation (Johnson, 2013) outlines the process for measuring noise and reverberation levels in a classroom and determining the impact of these and other factors, such as distance from a sound/information source and access to visual cues, on a student's listening ability.

The Classroom Participation Questionnaire (Antia, Sabers, & Stinson, 2007) can be completed by students who use any type of communication approach and provides the teacher with an overall view of their attitudes and perceived ability to understand instruction. Beyond learner characteristics, the acoustic

characteristics of a classroom can create a barrier to communication access as well and should be assessed as part of the development of an instructional plan for students who are DHH.

The American National Standards Institute (ANSI) has set the level of 35 dBA as the acceptable maximum limit of classroom ambient noise, yet a review of numerous studies revealed that few classrooms meet such standards (Gremp & Easterbrooks, 2018). Classroom noise can be estimated by installing a specific application on a cell phone, and findings of excessive noise levels can be addressed with simple sound reduction techniques such as adding carpet squares to the floor and closing hallway doors (TrueAudio, 2017).

Meaningful and Explicit Instruction

Successful implementation of evidence-based instructional interventions for students who are DHH is contingent upon an educator's ability to provide meaningful, explicit instruction. Meaningful instruction focuses on creating a learning situation in which the concept to be learned is important (i.e., meaningful) to the learner and combines the concept of active learning (Bonwell & Eison, 1991) with Piaget's theory of cognitive development (McLeod, 2018a). Teachers provide a meaningful context by involving students in "doing and thinking about the things they are doing" (Bonwell & Eison, 1991, p. 1).

Explicit instruction of language and concepts must be provided to support these learning experiences. Students who are DHH may not overhear spoken language or may lack exposure to a completely signed language system; thus, they are often unable to benefit from incidental learning opportunities that surround them each day (McAnally, Rose, & Quigley, 2007). It is not uncommon, therefore, for students who are DHH to enter school without having learned the language and vocabulary associated with the everyday routines and special events they have actually experienced. These experiences and the language that accompanies them are essential in the development of schemata, or the storage and organization of memories, because learning occurs when new information is encountered through additional experiences or written text and then compared to existing schema (McAnally et al., 2007).

It is essential, then, for teachers of students who are DHH to provide meaningful experiences and explicit instruction (Hollingsworth & Ybarra, 2017). Meaningful experiences provide the opportunity to teach vocabulary, content, and language, but they must be well planned and based upon true learning objectives; merely completing an activity is not sufficient (McAnally et al., 2007). While field trips and cooking activities can certainly qualify as

meaningful activities, the goal cannot be the visit itself or the yummy dessert that was made; rather, goals must be based on measurable outcomes. Extending the previous examples, possible objectives for these activities might be

- Upon returning from a trip to the zoo, students will match animal names to the proper category (mammals, amphibians, reptiles, birds, fish) with 80% accuracy.
- After making brownies, students will correct sequence sentence strips describing the steps.

Explicit instruction shares many qualities with direct instruction and follows a series of sequenced activities beginning with a teacher model, followed by opportunities for guided practice that include specific teacher feedback and, finally, opportunities for independent practice (Hollingsworth & Ybarra, 2017). Key terms, unfamiliar words, mathematical processes, and comprehension strategies can all be taught using explicit instruction techniques. Meaningful and explicit instruction can be integrated across a broad range of topics and provides the means for successfully implementing a wide range of evidence-based interventions (Hollingsworth & Ybarra, 2017).

Teaching and Learning Interventions

Evidence-based instructional interventions can be grouped into two broad categories, those of teaching interventions that are used by teachers to assist students in mastering what they need to learn, and learning interventions that are utilized by students to help them improve how to learn (Weinstein & Mayer, 1986). For both types of interventions, teachers must provide explicit instruction to help students who are DHH select and accurately execute appropriate strategies to facilitate learning.

Teaching interventions. A primary intervention used by teachers across all areas of education is scaffolding or the practice of sequencing lessons into discrete steps. Based upon Vygotsky's zone of proximal development (ZPD) (McLeod, 2018b), teachers select appropriate goals between a student's independent and frustration level of learning and provide support for successful completion. For younger students who are DHH, instruction focuses a great deal on the development of language skills and utilizes the practice of modeling and imitation within a scaffolding framework (McLeod, 2018b). Teachers continually work to expand the length of students signed or spoken utterance and to increase their vocabulary skills, utilizing appropriate practices for the student's method of communication.

Acoustic highlighting is the practice of placing emphasis on certain sounds within words or words within a sentence to make them more audible and is

often used to improve speech production or increase sentence length for students learning listening and spoken language (Robbins, 2016). When a student omits a sound, word, or phrase in a sentence, the teacher provides the correct expanded production, using acoustic highlighting to draw attention to elements of their productions that were omitted. For students using ASL, vocabulary or concepts can be taught through the use of sandwiching (Luckner, 2016). A teacher using the sandwiching strategy might introduce a new word by showing a picture. Then the word would be signed, fingerspelled, and then signed again. Printed words can be included in the sandwich sequence as well. The incorporation of skill-related strategies into a scaffolding framework can help provide meaningful contexts to help students who are DHH master skills and avoid frustration (Luckner, 2016).

Learning interventions. Interventions that help students who are DHH learn how to learn are essential for overall academic success because they are designed to promote independent learning and include cognitive, metacognitive, and organizational strategies (Wentworth Institute of Technology, 2016). As with previous interventions, these must be explicitly taught, and students must be able to recognize their effectiveness in order to generalize their use to a variety of learning situations.

Cognitive strategies provide a framework for learning tasks that cannot be completed by following step-by-step procedures (Wentworth Institute of Technology, 2016). They provide support for students who are DHH by helping them develop internal procedures necessary to perform complex tasks. Cognitive strategies can be used to assist with general problem-solving, remembering, writing sentences or paragraphs, and comprehending text. While some students develop cognitive strategies on their own, a great number of students who are DHH do not. One of the most frequently used methods for remembering a series of numbers or letters, such as a phone number or the spelling of a word, is through verbal rehearsal, i.e., the repetition of numbers or letters to oneself with inner or silent speech (Hatten-Roberts & Lodge, 2018). This skill frequently develops later for students who are DHH than for students with typical hearing; therefore, explicit teaching of the strategy of repeated rehearsal can help to increase a student's memory abilities (Bebko & McKinnon, 1990). Similarly, the techniques of chunking, (combining single bits of information into larger units to alleviate memory load), mnemonics, imagery, and the key word method can all be taught as ways to assist with recall and retrieval of information (Webster, 2018).

Metacognition is an awareness of one's own thinking. When used in an academic context metacognitive ability refers to one's ability to monitor comprehension of content (Wilson, 2014). Successful users of metacognitive abilities ask themselves if they understand the content throughout a learning

activity; they recognize when breakdowns in learning occur; and they are able to select effective strategies to get themselves back on track (Wilson, 2014). Being able to monitor their own learning is an essential skill for all students, but perhaps even more so for students who are DHH who may overestimate their understanding of the material or not recognize when they have missed something (McAnally et al., 2007).

To assist students who are DHH in recognizing when they don't understand, teachers can model metacognitive strategies. Through the use of think-aloud teachers demonstrate the thoughts and questions they have when monitoring their own ability to work through a problem or comprehend written text (Ness, 2018). Providing students who are DHH with example questions or checklists can facilitate implementation of metacognitive strategies and lead to improved comprehension and achievement across a range of content areas.

Organizational strategies are readily recognized as effective learning interventions and include techniques such color coding or using a planner as well as use of visual supports such as graphic organizers, pictures, and videos (Zelazo, 2018). These items allow students who are DHH to visually display their thoughts in an organized manner and illustrate links between concepts (Spencer & Marschark, 2010). In general, students who are DHH rely to a greater extent on visual input; therefore, by selecting appropriate visual aids to represent and organize their thoughts, students can create supports that ease the load on working memory and allow them to focus on deeper understanding of content (Spencer & Marschark, 2010).

Final Thoughts

Overall advances in technology have positively impacted the auditory and communication skills of students who are DHH resulting in a greater number of these students attending schools in their own neighborhoods and in classrooms with peers who have typical hearing. Whether instruction is being delivered by a highly qualified teacher of the deaf or a general education classroom teacher, knowledge of key concepts is essential to developing a successful educational plan for students who are DHH.

By understanding the properties of sound and classroom acoustics a teacher can help to optimize the learning environment; likewise, familiarity with the way sound is processed, knowledge of the types and degrees of hearing loss, and an appreciation of the importance of early and complete language development helps teachers to realize the unique needs of students who are DHH. No matter what modality or communication approach is utilized by a child who enters a classroom, teachers must recognize the

importance of providing meaningful, explicit instruction to support the teaching and learning interventions that can assist students in achieving academic and career success and in reaching their learning potential.

Points Remember

- Teachers who provide instruction to students who are DHH must have a basic knowledge of the characteristics of sound, the auditory pathway, degrees and types of hearing loss, and communication approaches.
- Early intervention is essential for minimizing the impact of hearing loss on language development and long-term educational outcomes.
- Educational interventions must include assessments to determine appropriate educational placement and an acoustically favorable environment to ensure communication access.
- Meaningful, explicit instruction must be incorporated across all content areas.
- Teaching and learning interventions are both necessary to teach students who are DHH what they need to know and how they need to learn.

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Visual Impairment and Deaf-Blindness

Nicholas D. Young, American International College, Kara Johnson, MEd, Endicott College

Language, whether it be written or verbalized, is the foundation for all learning and is the basis for expression of needs and interaction with others. Children who are deaf-blind or visually impaired (VI) face considerable challenges in the development of language skills in order to succeed in school (Mosca, Kritzinger, & van der Linde, 2015). These populations are increasingly educated within regular education classrooms along with their typical peers; however, most professionals do not have the skill set to be able to effectively teach students with such needs (Luckner & Pierce, 2013). As required by law, schools must create educational environments that are conducive to meeting the unique needs of all students in order for them to receive appropriate educational services and be successful (IDEA, 2004).

Communication and Academic Delays

According to the Individuals with Disabilities Act, this category is defined as "an impairment in vision that, even with correction, adversely affects a child's educational performance. The term includes both partial sight and blindness" (Special Education Guide, 2018). The latest data shows that there are over 63,500 students under the age of 21 in the United States who are legally blind or have an impairment that affects their ability to access traditional academics (American Foundation for the Blind, 2017).

In the educational setting, vision is a primary sense for which most academic strategies are based. This can make learning challenging for students with a visual impairment when teaching practices and accommodations are not adjusted to meet their needs. Students with visual impairment can and do succeed but often at different rates and in different sequences than typical students (American Foundation for the Blind, 2018a). For students with a visual impairment, strategies must be modified to reflect the child's visual, auditory, and tactile/vision capabilities.

Instructional Practices and Accommodations

In the visual impairment (VI) community, the controversial issue remains on whether placement of individuals with visual impairments is best served by regular schools with a wide variety of students, including those with and without disabilities, or schools designed specifically for visually impaired learners (Johnson-Jones, 2017; Jordan, 2015). Proponents of regular public schools argue that with qualified teachers who know how to teach students who are visually impaired as well as the use of research-based teaching methods, these students can be successful (Johnson-Jones, 2017; Jordan, 2015).

Response to Intervention (RtI) for Students with VI

The number of districts and schools in the United States implementing RtI continues to increase (Shah, 2011; Samuels, 2016). RtI may be an effective intervention model for students who are visually impaired. For students who are visually impaired, data-driven decision-making teams that meet on a regular basis and use data to guide discussions are imperative to ensuring the educational program is meeting the student's needs. There are several evaluations that should be conducted annually to determine the learning medium that students who are visually impaired are most successful with, as this plays an integral part in the RtI and learning process (Jones, Smith, Hensley-Maloney, & Gansle, 2015).

- **Tier 1.** Districts implementing RtI with students who are visually impaired may have to redesign the framework in order to meet the individual needs of this population. Within Tier 1, or the primary level, the core curriculum with implementation in the general education setting is taught on a daily basis. The use of concrete math aids such as a talking calculator or manipulatives can increase computation accuracy within Tier 1 (Jones et al., 2015). Educators must understand that although a student with a visual impairment may require direct instruction by a specialized teacher, it does not mean the student should be automatically placed in Tier 2 (Jones et al., 2015).
- **Tier 2.** The Secondary level, or Tier 2, is composed of more supplemental interventions that are more individualized and require more frequent assessment. Instruction for a student with a visual impairment at this level may include specialized instruction by a low-vision specialist, occupational therapist, or reading specialist (Jones et al., 2015). Tier 3, or the tertiary level, is only implemented when Tier 1 and Tier 2 supports are not effective (Jones et al., 2015).
- **Tier 3.** Instruction at the third, or tertiary level, focuses on a more specialized curriculum that addresses practical life skills for a student.

Students with a visual impairment may require more intensive reading intervention given that they often miss valuable opportunities for incidental learning that their typical peers are exposed to at a much higher rate (Jones et al., 2015). They may also require vocabulary instruction prior to reading fluency and comprehension interventions in order to be successful (Jones et al., 2015).

Accommodations for students with VI

Screen reader. A screen reader is a software program that allows blind or visually impaired users to read the text that is displayed on the screen using a speech synthesizer of braille display. Screen readers are currently compatible with different computer operating systems. They enable the user to determine how much and what type of information within a sentence should be read and/or defined out loud by the commands the user inputs (American Foundation for the Blind, 2018b).

Text-to-speech. Text-to-speech, abbreviated as TTS, the software can be a useful tool for students with a visual impairment. It is a form of speech synthesis that converts text on a computer into speech, or spoken voice, output. Most TTS software enables the students to control the voice speed as well as raise and lower the volume (American Foundation for the Blind, 2018c).

Braille. Braille is a system of raised dots that can be read with the fingers by people who are blind or who have low vision (American Foundation for the Blind, 2018d). Braille is not considered its own language, as the many other languages, such as English, Arabic and Spanish, incorporate the coding system into the native language and provide a means of literacy for all (American Foundation for the Blind, 2018d). Braille is produced on a braillewriter, which creates the raised dot systems on a page. Technology advancements have enabled students who are blind and visually impaired to access software programs and portable electronic braille devices to save and edit their writing within educational settings (American Foundation for the Blind, 2018d). The advancements in technology enable the software to dictate the typed braille back to them verbally, display tactually, or produce a hard copy on a desktop computer-driven braille embosser (American Foundation for the Blind, 2018d).

Enlarged print. Some students with a visual impairment are able to read regular printed materials using a device, such as a magnifying glass, to enlarge the words as they read. For other students, the print itself may be enlarged (American Printing House for the Blind, 2009). When enlarging print for students with a visual impairment, there are certain factors that should be

taken into account, such as print size, shading and contrast, font and type of paper, as these all affect a student's ability to read print well (American Printing House for the Blind, 2009). Additional considerations, such as the rate at which text is read and overall fatigue from reading print should be taken into account for students with a visual impairment (American Printing House for the Blind, 2009).

Tactile maps. The educational goals for most students, including those who have a visual impairment, are for them to be able to effectively communicate, demonstrate social competence, exhibit an employable skill set, and personal independence (American Foundation for the Blind, 2018a). For students with a visual impairment, use of tactile maps might be the critical missing component in order for them to become independent in navigating an environment or new geographical location, such as a college campus or community (Feucht & Holmgren, 2018). Tactile maps facilitate orientation and mobility (O&M), a critical skill for people who are visually impaired. Although the Americans with Disabilities Education Act (ADA) (1990) mandates that O&M services must be provided, it should be noted that timely and sufficient services can be difficult to obtain due to limited resources and professionals qualified to provide these services (Feucht & Holmgren, 2018).

Legal Mandate: Alice-Cogswell Macy Act

Although IDEA has proven to be effective for most students with disabilities, it has not been beneficial in advancing the deaf, hard of hearing, deaf-blind, blind, and visually impaired community (National Association of the Deaf, 2018). In anticipation for the next reauthorization of IDEA, organizations for the blind and DHH joined together and developed the Cogswell-Macy Act (National Association of the Deaf, 2018). The Cogswell-Sullivan Macy Act was presented to both Congress and the Senate in 2017, but was not considered, as the newest redevelopment of IDEA had not arrived for discussion (American Foundation for the Blind, 2018e).

The Cogswell-Sullivan Macy Act will ensure that every child who is deaf or deaf-blind, blind, or visually impaired, regardless of whether they have additional disabilities, will be properly counted and served (American Foundation for the Blind, 2018e). There currently remains a large discrepancy between the National Center for Education Statistics from the U.S. Department of Education and the Office of Special Education Programs regarding the number of students who are deaf and blind (National Association of the Deaf, 2018). The Cogswell-Sullivan Macy Act will also ensure that the U.S. Department of Education is holding states and schools accountable by making sure students who are DHH or VI are being served by qualified personnel, are properly evaluated, and engage in planning with

states to be sure that they can, in fact, meet each child's specialized needs (Conference for Educational Administrators of Schools & Programs for the Deaf [CEASD] 2017).

Final Thoughts

Students who are visually impaired often do not bring the same extensive written or verbalized language skills to the educational setting that their typical peers do (Mosca et al., 2015). These gaps in skills can greatly affect their ability to learn; however, with appropriate accommodations and modifications tailored to their learning profiles and needs, students who are visually impaired can and do learn. RtI provides a framework for educators to identify students in need of supplemental intervention and provide targeted interventions to meet the needs of all learners. For students who are visually impaired, specific accommodations that have been determined appropriate for the students' learning profile are used within the RtI model. It is essential for educators to take into account the individual needs of students with visual impairments in order to implement appropriate accommodations and instructional practices.

Points to Remember

- Students who are visually impaired are entering classrooms with varied foundations of language skills, whether it is auditory or visual.
- Students have individual preferences and accommodations based on need and educators should this take into account when planning lessons and interventions.
- RtI is an effective framework for educators to evaluate student progress as they incorporate learning mediums throughout their curricula, especially for students with visual impairments whose needs are specific to their disability.
- There are many different technological accommodations for students who are visually impaired; the selection of which may be restricted by availability and financial feasibility.
- Educator awareness and early intervention for students who are visually impaired is critical to ensure long-term academic success.

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Traumatic Brain Injury

Ann Marie Leonard-Zabel, D.Ed., *ABSNP, Curry College and NEALAC Clinic*

Traumatic brain injury (TBI) is a public health problem across all ages and in all populations; even in North America and Europe, where TBI incidence is lower than in poor regions. Since the rate is increasing rapidly in low-income and middle-income countries (mostly due to road traffic accidents), TBI is predicted to become the third leading cause of global mortality and disability by 2020, according to the World Health Organization (Tabish & Syed, 2015). In the U.S.A. about 2.2 million individuals are affected annually by a TBI causing more than 50,000 deaths and 280,000 hospitalizations (Centers for Disease Control and Prevention, 2017). The direct and indirect costs associated with TBI is estimated to be 60 million dollars with a more significant number of patients suffering moderate to severe functional disabilities requiring intensive care and various medical and neuro-behavioral supports (Stocchetti & Zanier, 2016).

What would you do if you had a student come into your classroom at the beginning of the school year after suffering a traumatic brain injury over the summer? Would you seek assistance from the guidance department, school psychologist, 504 accommodation team, special education team, school nurse, pediatrician, or family? Would you seek additional information to implement strategies or approaches that would assist your student to feel comfortable to learn?

Let's take a look at the case of Steve, a rising 9th grade student. Steve will be entering your classroom at the beginning of the school year. He experienced a TBI as an outgrowth of a car accident over the summer school break. He suffered a closed head injury requiring rest; medication for pain, nausea, and vertigo; and stress-reduction techniques to help with any agitation he may experience. He was hospitalized for seven hours and discharged.

Over the summer Steve kept his medical appointments and was able to be medically cleared to return to school but with physical accommodations to help with psychomotor agitation and any

headaches causing him to appear less attentive and engaged within the learning process. Parents asked for medical accommodations that included periodic breaks and to have a quiet area for Steve to debrief if he appears fidgety and agitated; however, he was noted by his physician to experience short-term memory, working memory, and long-term retrieval coupled with executive functioning problems. Based on this case, many approaches can assist school professionals as to how to teach Steve to his best ability.

Defining Traumatic Brain Injury

A child or youth with a brain injury may qualify for special education services under the disability category of Traumatic Brain Injury (TBI). According to the Individuals with Disabilities Education Act,

Traumatic Brain Injury means an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. Traumatic brain injury applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual, and motor abilities; psychosocial behavior; physical functions; information processing; and speech. Traumatic Brain Injury does not apply to brain injuries that are congenital or degenerative, or to brain injuries induced by birth trauma (Center for Parent Information & Resources, 2017, n.p.).

A traumatic brain injury in children and youth is an injury to the brain and brain system networks that usually results from a direct blow to the head (Kolb, Wishaw, & Teskey, 2016). TBI occurs generally from the individual's head making an impact with an object such as with automobile or recreational accidents and sports injuries, among others (Kolb et al., 2016). Traumatic brain injury (TBI) is the leading cause of disability and death in children and adolescents within the U.S. between the ages of 0-4 and 15-19 (Centers for Disease Control and Prevention, 2018). In an average year, about 62,000 children sustain brain injuries requiring hospitalization and nearly 565,000 children, including youth, are treated within hospital emergency rooms for brain injury and later released (Centers for Disease Control and Prevention, 2018). Traumatic brain injuries often result in death or severely injured for those newborn to 14 years of age (Centers for Disease Control and Prevention, 2018).

The number of TBI are staggering with regards to the impact of injury for children and youth. Falls are the leading cause of TBI for small children ages 0-4 with roughly 1,300 children experiencing severe brain injury or even death at the hands of child abusers every year (Centers for Disease Control and Prevention, 2017). The highest rate of TBI injury includes adolescents ages 15-19 due to a variety of factors such as not wearing a seat belt when riding in a car with others, riding with a reckless driver, use of drugs and alcohol, involvement in a physical fight(s), engaging in contact sports, among others. Males are two to three times more likely to receive a TBI than females, even though females are currently climbing in the number of injuries to the brain (Leonard-Zabel, 2018; Shi et al., 2009).

There are three diagnostic categories involved with a TBI moving from mild, to moderate, and finally severe (Brain Injury Alliance Utah, n.d.). A concussion is a mild traumatic brain injury that occurs as a result of a forced blow to the head resulting in stretching and tearing the cells creating temporary changes on the cellular level thereby disrupting normal brain functioning (Brain Injury Alliance Utah, n.d.). Loss of consciousness usually does not occur. A concussion usually cannot be seen on brain imaging tools such as CT scan or MRI; thus, concussions are often described as an "invisible injury" that others minimize or dismiss its diagnosis (Brain Injury Alliance Utah, n.d.). Most concussions resolve in 1 to 3 weeks when a student follows the medical orders of rest (Goldman & Kramer, 2016).

Post-Concussion Syndrome is a complex disorder in which various symptoms such as headaches and dizziness can last for weeks, months or sometimes a year or more after the injury that caused the concussion (American Association of Neurological Surgeons, 2018). A Second Impact Syndrome is a rare and potentially fatal event when a second "hit" occurs before the brain has fully healed, resulting in brain swelling, severe brain injury, or even death (American Association of Neurological Surgeons, 2018; Cantu & Hyman, 2012).

Federal Regulations Involving Traumatic Brain Injury

Children and youth with traumatic brain injury (TBI) may or may not have an Individualized Educational Plan (IEP) depending if the individual's injury is adversely impacting the ability to make adequate and effective progress (Center for Parent Information & Resources, 2017)). This would be formally measured, not only by medical and behavioral means but by a variety of assessments as part of a special education evaluation. This may include, but is not limited to, cognitive and achievement testing, speech and language evaluations, occupational and physical therapy screenings, adaptive physical education scales, social-emotional and personality testing, and

neuropsychological tests/subtests (Leonard-Zabel, 2018). To be considered for special education services under IDEA-2014, the TBI student needs to meet the federal definition and meet the eligibility criteria of special education. Each state has specific laws connected to special education requirements and may require documentation such as a hospital discharge summary and/or pediatrician/neurologist report (Lipkin & Okamoto, 2015). Some states may require the input of a licensed professional who is qualified to make the diagnosis of TBI on the multidisciplinary evaluation team.

A TBI severity level is not required for a student to receive services or physical accommodations under Section 504 of the Rehabilitation Act of 1973 (Bowen, 2008). To qualify for Section 504 accommodations, the TBI student needs to be determined to have a physical and/or mental impairment that substantially limits one or more major life activities (e.g., such as learning), and have a documented record of such impairment, or be regarded as having such an impairment per individual state regulations specifying documentation or a specialized team membership to make the determination (Jantz et al., 2014).

When a Student Returns to School After Initial Medical Treatment of TBI

When an individual sustains a TBI, there are many people who are involved, directly and indirectly, in the student's return to school to include:

- Survivors and their parents, siblings, extended families and friends;
- Healthcare providers, including surgeons, physicians, counselors, rehabilitation therapists, social workers, personal care attendants, and/or lawyers;
- Insurance companies that issue health insurance;
- Educators at every level involving regular and/or special education;
- Government agencies that administer health and social programs such as Medicaid, State
- Children's Health Insurance Program (SCHIP), Supplemental Nutritional Assistance Program (SNAP), and Vocational Rehabilitation (involving transition from high school to the world of work). The Brain Injury Association of America (2018).

When a student with a TBI returns to school, maintaining an understanding of the extent of the individual's post-level of psycho-educational functioning will be vital to implementing transition services or learning modifications and/or accommodations for successful adaptation to the educational arena (Leonard-Zabel, 2018). If parents, professionals, and the student are having

difficulties understanding the recovery process and rate of learning, it could lead to misunderstanding and high expectations when academic expectations are too much for the individual healing from an injury.

When reviewing the case of Steve, for example, who was introduced at the beginning of this chapter, his return to school could involve professionals seeing him walk and talk without losing his balance. Logic could dictate that he has recovered from the gross motor weaknesses initially sustained from his TBI; however, the professional(s) may not see when he walks from one end of the school building to another to attend a class that he may lose his balance due to growing fatigue or that he may become disoriented and lost on his way to class due to intermittent vertigo as a result of a compromised vestibular system.

According to Jantz et al. (2014), the following may occur and cause parents and professionals to react due to inaccuracies surrounding TBI:

- reluctance to be involved in the individual's transition process;
- inaccurate expectations of the cognitive potential of the individual;
- possible minimization of reported strengths or weaknesses with learning;
- premature or unsuccessful attempts to resume pre-injury educational sports activities;
- resistance to educational intervention efforts and setting unreasonable or unattainable goals;
- an unrealistic level of expectation to have one participate in learning or physical activities when not fully recovered;
- unreasonable or inappropriate comparison to peer performance;
- feeling helpless leading to frustration, self-blame, and anger for lack of progress;
- feelings of despair, helplessness, low self-esteem/worth, anxiety or depression;
- incorrect or immature responses to inappropriate behaviors or social interactions;
- · misconceptions of behaviors; and
- a "one-size-fits-all" or a "cookie cutter-approach" based on previous experiences with TBI and
- not customized to the particular individual's needs.

Possible Learning and Behavioral Consequences of Traumatic Brain Injury

Depending on the level of injury and the impact it has on the individual's educational, personal, and social life, there may be neurological and/or cognitive impairments, personality or behavioral changes, and even lifestyle consequences that occur.

Neurological Impairment (motor, sensory, and autonomic)

Motor function impairments can impact gross motor coordination, balance, walking, hand function-grip strength and coordination, and oral motor speech production (Morrison, 2010). A possible sensory loss may be affected involving taste, touch, smell, sight and hearing acuity (Morrison, 2010). There are sleep disturbances that may impact deep restorative sleep such as insomnia, fatigue, restless legs, and level of pain. There can be medical complications such as head-onset epilepsy, hydrocephalus with pressure and fluid treated with a shunt, benign hydrocephalus not needing a shunt, hematoma, and heterotopic ossification (HO) which is the presence of bone in soft tissue where bone usually does not exist as a direct result of injury or trauma impacting musculoskeletal, central nervous system, and/or spinal cord injury (Morrison, 2010).

Cognitive Impairment

The brain is a system of interconnections in which injuries to specific sites of the brain could impact the entire brain system. Despite this, many facets of cognitive development can be affected and cause the child or youth to have difficulties with learning and ruled-governed behavior. Memory impairment can impact new learning and create havoc with attention and concentration reducing speed and flexibility of thought processing (Leonard-Zabel, 2018). Injury to the brain can affect higher-order thinking and reasoning and impair the individual's problem-solving ability especially involving rule-governed behavior. Executive functioning skills can be impacted leading to difficulties with planning, organization, and making good decisions (Morrison, 2010). Language problems could occur, involving dysphasia, word finding challenges, and trouble with reading and writing. Further difficulty with age-appropriate judgment and safety awareness can be affected depending on the level of severity of the injury (Morrison, 2010; Leonard-Zabel, 2018).

Personality and Behavioral Changes

Mood or anxiety, as well as depression, can all occur at once or individually even months and years after a TBI. Impaired social and coping skills coupled with reduced self-esteem can lead to difficulties adjusting to everyday demands and activities (Leonard-Zabel, 2018). There could be altered emotional self-control with poor frustration tolerance. Anger and aggression may escalate necessitating anger management precautions both at home and in school (Morrison, 2010). There can be denial on what the student can do with the increasing overload on the cognitive learning system. Self-centered behavior may occur due to rigid wants and desires coupled with lack of reading verbal or nonverbal cues of others who also have needs and desires. Depending on the level of injury, the individual may appear apathetic and amotivational, leading others to believe the individual is lazy or lacks the ability to care about progress with learning. Most of all, professionals who are not fully aware of the after effects of TBI may confuse these symptoms with a suspicion of substance use or abuse (Morrison, 2010: Leonard-Zabel, 2018).

Common Lifestyle Consequences

Following the TBI event, the child or youth may experience variable academic achievement and appear to have gaps with previously learned material as well as new or novel material. What once was a good grasp of learning and consistent abilities across the academic domains may appear scattered and lackluster with work produced (Leonard-Zabel, 2018). This is commonly due to fatigue, inconsistent energy levels, and variable attention and concentration. There may be a lack of transportation alternatives with the school or family to stay after for additional learning or come in early to be tutored. The child or youth may experience inadequate recreational opportunities especially if he or she cannot resume his or her favorite activities.

Many individuals who have a TBI experience hypersensitivity in which they may have difficulties maintaining interpersonal relationships, which results in a loss of friends as a result of injury limitations or mood issues (Leonard-Zabel, 2018). For adolescents, there may be a breakdown of established love relationships that could result in breakups. There is grieving on the part of the child and youth along with their family concerning the loss of preinjury roles or independence (Morrison, 2010). There is compassion fatigue on the part of parents and/or educational professionals/staff, which may impact patience and understanding. (Morrison, 2010; Leonard-Zabel, 2018).

Exploring Memory to Understand Its Function to Learning

Children and youth with TBI experience complications with short-term, working memory and long-term retrieval (Dehn, 2010). Short-term memory is the immediate processing of information whereas working memory is the powerhouse of the memory system and processes on the average 5 to 7 pieces

of information at a given time. Short-term memory is thought to be embedded within the working memory system. It can operate independently from working memory, but whatever short-term memory content is being managed by the brain, working memory is performing as the "executor" of the brain, performing executive functioning skills sets necessary for planning, foresight ability, and ruled-governed ability.

Working memory is one of the significant features of cognitive processing that underlies thinking and learning. By utilizing the contents of various memory storage files, working memory assists individuals to determine and put together coherent thoughts and ideas. On the other hand, long-term retrieval is unlimited when information is successfully transferred from working memory (Dehn, 2010; Leonard-Zabel, 2018). Overall, when reading a medical or neuropsychological report, please keep in mind that short-term, working memory and long-term memory are areas that can be impacted significantly by TBI insult for quite some time in the healing brain. Therefore, it is of utmost importance to understand what specific roles each aspect of memory presents within the learning process in order to provide effective instruction and lessen frustration to the student (Leonard-Zabel, 2018).

Relationship with Academic Learning Involving Short and Working Memory

The similarities between short-term memory and working memory involve encoding of information, are susceptible to interference, connected to long-term memory, both are necessary for learning, and can be monitored well if parents and professionals know what to look for. Short term memory works on immediate storage of information with an average span of seven items; it passively holds onto information and requires little effort; it uses non-executive function skills, has automatic processing; it is involved in the encoding of information, not retrieval; and is enhanced by simple strategies (Dehn, 2010). The working memory's main function is processing with the average capacity of items stored is seven, plus or minus two; and it actively manipulates information for eventual long-term storage; there is effortful processing, it is involved in encoding and retrieval; and is enhanced by elaborate strategies (Dehn, 2010).

Relationship with Academic Learning Involving Short- and Long-Term Memory

Similar attributes between short-term memory and long-term memory involve verbal and visual components necessary for learning, interact with working memory, aid in the transformation of information, are affected by strategies and can be affected by interference making retained information

difficult to encode appropriately, can function automatically and monitor each other, are related to other cognitive processes, and when both not working to their maximum capacity can cause forgetting. The differences between short- and long-term memory are clear in that short-term memory has very limited storage capacity, retains information for just a few seconds, has conscious access to content, depends on attentional capacity, immediately forgets if encoding is interrupted, is agreeable to simple strategies, and has easy access to information (Dehn, 2010). Long-term memory, on the other hand, has limitless capacity, retains information from minutes to years, not all content has conscious access, is less dependent on attention, tends to be forgotten if not used, retrieval can be extended, agreeable to elaborate strategies, and difficulty in accessing information (Dehn, 2010).

Learning and Behavioral Processes Associated with Executive Functions that may be Impacted by a TBI/Concussive Injury

Within the developing brain of children and youth, TBI can impact every facet of attention and learning achievement. Executive functioning, performed by the prefrontal cortex in the brain, has a strong connection to overall memory; therefore, there are myriad skills that may be impacted from the aftereffects of a TBI (Christofori & Grafman, 2017). If the TBI is more moderate or severe, the student with TBI may experience the inability to sustain prolonged attention and focus, have frustration with increased complexity, experience the inability to sequence multiple steps towards a goal (e.g., such as packing a suitcase), have over-reliance on routines, loss of spontaneity, deep perseveration (e.g., getting "stuck" in a mental rut), have concrete thinking, experience difficulty understanding metaphor and humor and difficulty linking ideas such as abstraction (Leonard-Zabel, 2018).

Environmental Triggers-Precipitators of Negative Behaviors in the Student with TBI

Children and youth who suffer the effects of TBI experience numerous environmental triggers that may impact the learning process as well as behavioral adjustment; for example, high levels of stimulation (e.g., noise and simultaneous activities), each of which demands the child's attention (Goldman & Kramer, 2016). Crowded classes can lead students with TBI to become overstimulated, which in turn may decrease cognitive processing and increase emotional distress.

Rapid classroom pacing can result in dyscontrol for many students with TBI. Lack of predictability can cause anxiousness; thus, students with TBI need a clear structure of information. Due to deficits in the child's and youth's ability

to think flexibly and to problem solve, a student with TBI may respond negatively to unexpected changes (Goldman & Kramer, 2016). Physical and cognitive demands within school settings may overwhelm the student to the point of an emotional outburst. These types of outbursts are more common as the student's level of fatigue increases throughout the day. Negative social input is a common precipitator of challenging behaviors. The individual with a TBI is surrounded by fellow students and teachers, who may either become part of the problem (through ridicule, rigid demands and the like) or part of the solution through positive social supports (Goldman & Kramer, 2016).

Students with TBI may feel anxious without knowing exactly why (Model Systems Knowledge Translation Center [MSKTC], 2018). They may worry and become anxious about not achieving similarly to their peers or become worried about making too many mistakes and are concerned about anticipated criticism. Anxiety may heighten when being in crowds, being rushed, or a sudden change of plans occur. Panic attacks and sudden onset of anxiety may occur as a result of a very stressful situation or can be caused by replaying their injury in their mind's eye over and over if many questions are asked as to what happened or what caused an accident or injury (MSKTC, 2018). Difficulty reasoning, even when attending and concentrating, can be contributing factors making it difficult for the student with TBI to solve problems and feel overwhelmed. If there are too many demands and pressure on the student with TBI, this can increase their anxiety to overdrive (MSKTC, 2018).

Feelings of sadness, frustration, and loss are widespread after the injury and depression may set in well after the TBI (MSKTC, 2018). Often these feeling appear during the later stages of recovery especially after the student becomes aware of the long-term situation of healing. Symptoms of depression can include feeling sad, weepy, feeling worthless, having changes in sleep patterns, may gradually withdraw from others and want to be alone more, loss of interest or pleasure in things once gratifying, feeling tired and sluggish, and may have suicide ideation or thoughts of suicide. Temper outbursts and irritability often are described as having a "short fuse" or "flying off the handle." The child or youth with TBI may yell, use challenging language, throw objects, slam their fists into things, slam doors, or threaten or hurt another (MSKTC, 2018).

In order to assist the student with TBI to lower anxious, depressive, or irritability coupled with temper outbursts it is important to

reduce the environmental demands and unnecessary stressors.
 Provide reassurances to calm the individual.

- add structured activities into daily routine and prepare the individual for the transition to the next event or activity well ahead of time.
- allow light exercise to elevate mood if the physician agrees.
- reduce stress and decrease irritating situations to lower temper outbursts and irritability.
- teach and positively reinforce basic anger management such as selfcalming strategies, relaxation and better communication methods.
- try not to argue with the child or youth with TBI and not to take it personally.
- do not try to argue with the student with TBI during an outburst.
 Instead, let the student have a few minutes of quiet down time. Being irritable and getting angry easily is possibly due to the TBI.

(MSKTC, 2018; Leonard-Zabel, 2018)

Accommodations and Modifications to the Learning Process

Physical Symptoms

Depending on the level of TBI and the comfort of the student, there are ways to adjust the academic and environmental setting when in school. When a headache, light-headedness, and/or dizziness occurs, provide frequent rest breaks, identify irritants and reduce or eliminate exposure, provide rest in the nurse's office, give more time to leave the seat and for moving around the building, provide an elevator pass, and provide a copy of class notes (Golman & Kramer, 2016). Visual symptoms such as sensitivity to bright lights or blurred vision can be helped by reducing the exposure to technology, reducing the brightness on the computer screen, allowing the student to wear sunglasses, and possibly provide audio material. With noisy environments, allow lunch in a quiet place or area, have the student temporarily avoid noisy classes, consider early dismissal to avoid crowded hallways, and consider noise reduction headphones (Goldman & Kramer, 2016).

Effective Instruction

Challenges to learning new tasks and using cognitive resources are by far a belabored and frustrating task for the student with a TBI. Difficulty keeping pace with work demands, retaining and recalling learned materials, and difficulty processing, especially verbal information, are just a few of these concerns to address for remediation (Young, Jean, & Citro, 2018a; Young, Jean, & Citro, 2018b). A variety of instructional approaches are available to parents

and professionals to reduce frustration and foster learning comfort for the student with TBI to include communication supports, environmental and organization supports, motivational supports, social supports, use of a hidden instruction curriculum, know/want to know/learned charts, note taking and organizational support side modeling, speak and spin approach to combat any bullying that may occur due to vulnerability, communication applications, visual schedules and social skills applications along with reward tracking applications (Young et al., 2018a; Young et al., 2018b).

Technology Interventions to Aid in Educational Planning

There are hundreds of technology applications, programs, and websites to assist educators and parents for children and youth who have experienced a TBI. A few suggestions of technological applications that may support the student with learning include text to speech and speech to text applications, behavior trackers, breathing/meditation/mindfulness applications, recorders that suppress ambient background noise while recording conversations in noisy environments and can slow down conversations to a manageable pace, and audiobook applications (Brainline, 2018; Young et al., 2018b). There are also a number of applications to assist with daily work tasks such as time/fatigue/energy management, goal setting, note-taking and recording, brainstorming and graphic organizer, calendars, picture planners, as well as word prediction and other text functions (Young et al., 2018b).

There are also a variety of websites and centers that are able to assist those with TBI.

- The Wisconsin Assistive Technology Initiative (WATI) is a recognized leader in the provision of statewide support for assistive technology services and offers a wealth of practitioner helpful resources (http://www.watt.org).
- The National Assistive Technology (AT) Research Institute conducts
 AT research, translates theory to practice and provides resources
 (http://natri.uky.edu).
- The Quality Indicators for Assistive Technology (QIAT) is a website including recent work to develop a comprehensive set of quality indicators for effective assistive technology services (http://www. qiat.org).
- The TAM (Technology and Media) Division of the Council for Exceptional Children offers a variety of information about assistive technology and special education instructional technology (http://www.tamcec.org).

- Trace Research and Design Center includes software toolkits and many disability-related articles and papers (http://trace.wisc.edu/ world/computer_access/multi/sharewar:htm).
- The Family Village is a website designed to provide information for families with children with disabilities. It offers extensive resources on Assistive Technology (AT) (http://www.familyvillage.wisc.edu/).
- Rehabilitation Engineering and Assistive Technology of North America (RESNA). This project provides information and consultation to Assistive Technology (AT) programs. Please locate the AT program in your state and read articles relating to legislation and AT (http://www.resna.org/).
- ABLEDATA provides objective information about assistive technology products and rehabilitation equipment available from domestic and international sources (http://www.abledata.com/).
- CAST researches and develops ways to support all learners according to their strengths and needs through Universal Design for Learning (http://www.cast.org).
- TECH MATRIX provides matrices to serve as a resource that matches technology tools with supporting literature on promising practices for the instruction of K-8 mathematics and reading for students with disabilities (http://www.techmatrix.org).
- News-2-you.com is a weekly newspaper for ACC users and emergent readers. Communication symbols are used along with the text (http://news-2-you.com/).

Finally, the following websites might prove useful to those with TBI as well as those who are there to help an afflicted individual.

- Brain Steps: http://www.brainsteps.net
- Kids with Brain Injury: http://www.cokidswithbrainjury.com
- Brain Line: www.brainline.org/content/2011/09/brainstars.html
- The Concussion Toolkit: http://www.riil.org/files/394/0873/2535/Concussions in the concussion-toolkit
- Concussion Care: http://www/chop.edu/center-programs/concussion-care-minds-matter#.Vnre9dBiefQ

Final Thoughts

Traumatic brain injury (TBI) is a devastating injury that can be life changing affecting a student's educational and social-emotional adjustment. Children and youth who experience a TBI need nurturance, patience, kindness and true understanding of their issues to aid them with adjusting to difficulties in the educational arena. The use of technology can be an asset to many students with TBI to assist them in managing everyday life demands and events. It is vital to their educational career for professionals and parents to work toward their healing process and have realistic expectations in order for students with TBI to foster a self-esteem and self-worth that is realistic for them.

Points to Remember

- It is important to understand what a traumatic brain injury (TBI) is and how it can impact all facets of a student's educational and personal life.
- TBI students may qualify for an individualized educational plan (IEP) and/or 504 accommodation plan depending upon eligibility criteria involving state and/or federal educational laws.
- Parents and teachers need to keep vigilant on what constitutes inaccuracies surrounding TBI and what to do to get accurate information for educational planning.
- Be aware of the learning and behavioral consequences of TBI involving cognitive impairment, personality and behavioral changes, and common lifestyle consequences when formulating school psychoeducational and psycho-social adjustments planning and interventions.
- Know the relationship between short-term memory, working-memory and long-term memory retrieval as these relate to cognitive impairment in order to develop educational interventions.
- Use of technology can be a positive method of educational and lifeskills interventions for ease of adjustment to learning demands.
- Keep in mind that the effects of TBI cannot only affect the injured but has a major impact on families and educators on a daily basis.

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Multiple Disabilities

Rachel L. Seaman-Tullis, Ph.D., BCBA-D, *University of West Georgia,*John M. Schaefer, Ph.D., *Cleveland State University*

The Individuals with Disabilities Education Act (IDEA) defines multiple disabilities as concomitant impairments, the combination of which causes such severe educational needs that cannot be accommodated in special education programs solely for one of the impairments; however, the category of multiple disabilities does not include deaf-blindness (American Psychological Association, 2018; Parent Center for Information & Resources, 2017). Students with multiple disabilities will sometimes be referred to as students with severe disabilities, significant disabilities, profound disabilities, or even students with complex needs (Nakken & Vlaskamp, 2007). This includes any combination of autism spectrum disorder, deafness, emotional hearing impairment, intellectual disability, impairment, other health impairment, specific learning disability, speech or language impairment, traumatic brain injury, or visual impairment. A student who qualifies for an educational eligibility of multiple disabilities, for example, may have a co-morbidity of intellectual disability and visual impairment, autism and orthopedic impairment, or traumatic brain injury and hearing impairment.

When interpreting this definition, it is important to note that not every student who has more than one impairment receives multiple disabilities eligibility. The combination of impairments needs to be such that it causes the student to have severe educational needs (Nakken & Vlaskamp, 2007). Specifically, those educational needs must be severe enough that they cannot be addressed by providing special education services for only one of the impairments, and that the student needs specialized programs, equipment, instruction, or resources to succeed in the classroom (Nakken & Vlaskamp, 2007). This definition means that students with multiple disabilities will present with an incredibly wide range of physical characteristics, intellectual attributes, abilities, and severity levels. There is such a wide range of students, however, that multiple disabilities represent approximately 2.0 percent of all

students having a classification in special education; with 132,000 students (.03% of students) served under the multiple disability category in the 2014 school year (U.S. Department of Education, 2018).

Characteristics

In addition to their educational eligibility, students with multiple disabilities will often have one or more medical diagnoses such as Down Syndrome, cerebral palsy, hydrocephalus, or seizure disorder (Bruce, 2011). While students with multiple disabilities are a heterogeneous group and have a wide range of conditions and impairments, many students will have similar characteristics such as limited speech or deficits in communication (Bruce, 2011), difficulty with basic physical mobility or limited movement (Chang, Chen, & Huang, 2011), difficulty with functional and independent living skills, dependence on others (Nakken & Vlaskamp, 2007), challenging behavior (e.g., self-injurious behavior and stereotypical behavior) due to communication deficits and sensory issues, (Poppes, Van der Putten, & Vlaskamp, 2010), and health issues such as visual impairment, epilepsy, spasticity, and deformations (Van Timmeren et al. 2016).

Shelly is a 16-year-old high school student diagnosed with intellectual disability and an orthopedic impairment and has an educational eligibility of multiple disabilities. Shelly's teachers describe her as having a spunky personality, and always being excited to meet new people who come into the classroom. She loves to listen to rock music, watch Saved By The Bell, and greet customers who come to the class's after-school coffee cart. Due to complications with cerebral palsy, Shelly also has difficulty expressing her wants and needs to others and is unable to stand for extended periods of time. Shelly's new teacher this year, Mr. Ryder, is still learning how to accommodate Shelly's needs and use the most effective strategies to help her succeed.

Multiple Disabilities in the Classroom

Although deeply impactful for those that are diagnosed, multiple disabilities is among the lowest incidence disability categories served under IDEA. For this group of students, what a typical day looks like is largely determined by their classroom placements. Statistics from the Office of Special Education and Rehabilitative Services [OSERS] (2017) indicate that only about 13% of students with multiple disabilities are included in general education classrooms for 80% or more of their school day (OSERS, 2017). This is the least amount of inclusive education for any disability category. An additional 16.5% of students spend between 40%–79% of their day in inclusive settings (OSERS,

2017). The remaining students spend less than 40% of their day in inclusive settings (46%) or are placed in alternative settings (24%) such as separate schools or residential facilities (OSERS, 2017). Despite spending relatively little time in general education environments, about 50% of students with multiple disabilities still graduate with a regular high school diploma, whose requirements are identical to those earned by students without disabilities (OSERS, 2017).

Inclusion and Co-Teaching

For the almost 30% of students with multiple disabilities spending a significant portion (>40%) of their day in a general education classroom, instruction can vary widely based on the individual child's needs and abilities (Horn & Kang, 2012. Many students with multiple disabilities participate in reading, math, and other academic instruction along with their non-disabled peers. Like all children, students with multiple disabilities benefit from explicit instruction and other evidence-based instructional practices. Often these students just need the supplemental support of the types of tools and accommodations that we describe later in this chapter to be able to access the curriculum (Horn & Kang, 2012). Other times, especially those with concurrent intellectual disability, students with multiple disabilities may need the curriculum modified to be more appropriate for their cognitive level.

Browder, Mims, Spooner, Ahlgrim-Delzell, and Lee (2008) utilized universal design for learning principles and augmentative and alternative communication (AAC) supports to help students with multiple disabilities engage in shared story time with their general education classmates. Outside of traditional academic instructional time, students with multiple disabilities are often included for subjects such as music, art, and physical education that may require less curriculum modification. Regardless of class content, however, research indicates that students with multiple disabilities may engage in more communication and social interactions while in inclusive settings when compared to special education classrooms (Foreman, Arthur-Kelly, Pascoe, & King, 2004).

Special Education Classroom

For the majority of children with multiple disabilities, at least part of their day will be spent in a special education setting away from their peers without disabilities (OSERS, 2017). In these settings across low incidence disability categories, a debate continues as to the right balance of academic skills instruction and functional skills instruction (Ayres, Lowrey, Douglas, & Sievers, 2011). Specialized instruction on individualized academic goals is essential to improving long-term post-secondary education and employment

outcomes; however, students with multiple disabilities often need explicit instruction in many functional skills that their classmates without disabilities may not. The most important functional skills identified for students with low-incidence disabilities, such as multiple disabilities, are communication (Andzik, Schaefer, Nichols, & Chung, 2018), activities of daily living (Maes, Lambrechts, Hostyn, & Petry, 2007), employment skills (Cannella-Malone & Schaefer, 2017), and self-determination (Wehmeyer, 1996).

In the Community

Unfortunately, students with multiple disabilities have consistently poorer long-term outcomes when compared to peers without disabilities or more mild disabilities (e.g., specific learning disabilities) in the areas of postsecondary education, employment, and independent living (Wagner, Newman, Cameto, Levine, & Marder, 2007). This may be due to both structural and social barriers that students with severe disabilities face to accessing opportunities outside of the school building (Bedell et al., 2013). To support instruction in those areas, many transition-aged, 16-22-year-old students with multiple disabilities may also receive some instruction in community-based and employment settings. In fact, research indicates that participating in a paid job or internship while still in high school may be a strong contributing factor to future employment success (Carter, Austin, & Trainor, 2012). The need for community-based instruction only continues to grow as public policy (U.S. Department of Labor, 2018) and advocacy (Mansell & Beadle-Brown, 2010) continue to push for more access to inclusive living and working environments for adults with low-incidence disabilities.

Challenges and Barriers to Access

Students with multiple disabilities often face significant challenges and barriers to participating in more fully inclusive environments and accessing instructional supports. Significant speech and language impairments that require AAC supports are common among students with multiple disabilities (Andzik et al., 2018). Likewise, students with multiple disabilities have a high incidence of mobility impairments and chronic medical needs often requiring the support of assistive technology and related services (Bedell et al., 2013). Finally, students with multiple disabilities also have a high incidence of struggling with challenging behavior, both internalizing and externalizing (Poppen et al., 2010). These challenging behaviors can impede student learning and the learning of other children in the environment, creating further barriers to inclusive environments; therefore, it is important to detail evidence-based instructional strategies, tools, and accommodations tailored

to support students with the complex set of challenges common to students with multiple disabilities.

Evidence-Based Strategies

Students with multiple disabilities have a multitude of learning needs, and it is often difficult for them to participate in the classroom without supports. Fortunately, research has shown that students with multiple disabilities can learn not only academic skills (Spooner, Knight, Browder, & Smith, 2012), but also communication (Lancioni, Singh, O'Reilly, & Sigafoos, 2011), independent living (Bouck, 2010), leisure (Cannella-Malone, Miller, Schaefer, Jimenez, Page, & Sabielny, 2016), social (Asmus et al. 2017), and vocational skills (Canella-Malone & Schaefer, 2017) when evidence-based strategies are implemented with fidelity. These strategies and interventions can be put in place in the special education classroom, inclusive classroom, and even the community to teach this group of students the skills needed to be successful throughout their lives.

Explicit Instruction

Explicit instruction—sometimes referred to as systematic instruction or direct instruction—is an instructional strategy that can be used to teach almost any type of skill, from social communication with peers to application of the scientific method. Contrary to implicit instruction where the student is presented with the problem and left to come to an answer on his or her own, explicit instruction is an errorless learning strategy that uses a quick-paced instructional script. In this type of instruction, students learn examples and non-examples through teacher or peer modeling (Bursuck & Damer, 2007). This may look like the "I do, we do, you do" strategy where the student is first shown exactly how to perform the skill (i.e., the specific response), the student practices doing the skill with guidance, and then once successful with guidance, the student has the opportunity to perform the skill independently (Archer & Hughes, 2011).

Specific responses will fall into two main categories; discrete responses and chained responses (Spooner et al., 2012). A discrete response is a singular response such as an answer to a math problem, a vocabulary definition, or a simple communication response (Spooner et al., 2012). A chained response consists of multiple responses or steps, in which one response needs to be completed before the next one can begin (Spooner et al., 2012). Chained responses are typically found in independent living skills, leisure, social, and vocational skills as these types of skills are more complex and have multiple steps.

Systematic Prompting

A prompt refers to any action or material that will increase the likelihood of a student giving a correct response. In instruction, prompts are generally given by an adult or peer before or as a student attempts to use a skill and can be used in combination with explicit instruction (Wong et al. 2015). Systematic prompting can be used in any type of skill that requires a discrete response such as the answer to a math problem, the spelling of a sight word, or the definition of a vocabulary term. Verbal, gestural, or physical prompts can be given to learners to assist them in acquiring or engaging in a targeted behavior or skill.

Time delay. Time delay is a systematic prompting procedure that consists of two strategies; simultaneous prompting and time delay (Wong et al., 2015). First, simultaneous prompting, or errorless learning is used. This means that the prompt is given before, or at the same time as the instruction. Once the student becomes successful with the skill, a 2 to 5-second delay is inserted. The brief delay occurs between the opportunity to use the skill and any additional instructions or prompts (i.e., instruction, delay, prompt, student response). The purpose of the time delay is to allow the student to respond without having to receive a prompt and focuses on fading the use of prompts during instructional activities (Wong et al. 2015). Time delay has successfully been used to teach skills such as word and picture recognition (Browder, Ahlgrim-Delzell, Spooner, Mims, & Baker, 2009) and telling time (Falkenstine, Collins, Schuster, & Kleinert, 2009) to students with multiple disabilities. Using time delay to teach new skills also has several benefits such as ease of implementation and increasing positive interactions during instruction (Wolery & Gast, 1984).

System of least prompts. The system of least prompts is a systematic prompting procedure in which teachers use increasingly more intrusive prompts only if necessary (Cooper, Heron, & Heward, 2007). This gives the student the opportunity to perform the response with the least amount of assistance. If the learner is unable to give the correct response with the first level of prompt after a set period of time (e.g., 3 seconds), a more intrusive prompt is given. If the learner is still unable to give the correct response with this more intrusive prompt, an even more intrusive prompt is given, and so on (Cooper et al., 2007). Mims, Hudson, & Browder (2012) used a system of least prompts to improve text-dependent listening comprehension for students with intellectual disability and autism spectrum disorder during read-alouds of adapted grade-level biographies. While levels of prompt intrusiveness will vary by student and skill, a least-to-most intrusive prompt hierarchy could move from a verbal prompt, to a gestural prompt, to a model prompt, and finally to a physical prompt if necessary.

Stimulus prompts. In contrast to the previously mentioned prompt types, a stimulus prompt is a type of prompt in which the material is modified in some way to help the student give the correct response (Cooper et al., 2007). This type of prompt can take many forms, but frequently used stimulus prompts consist of movement prompts (e.g., tapping the correct response), positional prompts (e.g., the correct response is placed closest to the learner), and redundancy prompts (e.g., color, size, or shape is paired with the correct answer).

Task Analysis

A task analysis, or the process of dividing a complex activity or behavior into small, manageable steps in order to assess and teach the skill, can be used to help teach any type of chained response (Wong et al. 2015). Writing a task analysis is especially useful for teaching skills that have many steps involved such as independent living skills (e.g., cooking a meal), vocational skills (e.g., sorting files and then alphabetizing), social skills (e.g., asking a friend to play), and leisure skills (e.g., painting a picture). Task analyses can easily be used in combination with other strategies, such as in the example below.

Shelly enjoys helping her peers with the coffee cart they run after school to practice vocational skills; however, Mr. Ryder noticed that Shelly is not always sure how to make the coffee orders that customers request. As participating in the coffee cart gives Shelley the opportunity to practice important vocational and social skills, Mr. Ryder researches strategies he can use to help. Mr. Ryder has decided that since making coffee is a chained response, he is going to make a task analysis of the steps that are needed to make the three most popular drinks that are ordered, and then use explicit instruction, systematic prompting, and visual supports to help Shelly learn the steps for each of the drinks.

Communication

When students with multiple disabilities have difficulty with communication or limited communication, challenging behavior can emerge because students are unable to communicate their wants and needs, such as when a student hits the table when he would like a snack because he is unable to verbally communicate that he would like a snack. Evidence-based practices such as the Picture Exchange Communication System (PECS) and Functional Communication Training can help teach students who otherwise would be unable to communicate.

Exchange Communication Systems (PECS). PECS is an evidence-based practice in which students learn to engage in communication through the use

of picture icons (Bondy & Frost, 1994), and has been shown effective with a wide range of learners from severe developmental disabilities (Cannella-Malone, Fant, & Tullis, 2010) to autism spectrum disorder (Battaglia & McDonald, 2015). When implementing PECS, students are initially taught to give a picture of a desired item to a communicative partner in exchange for the actual desired item. PECS consists of six phases; (1) making requests through picture exchange, (2) persistence in initiating communication (3) discrimination between pictures (4) introduction of sentence structure, (5) answering questions with a request, and (6) commenting. These phases are taught in succession and allow a student to communicate not only their wants and needs, but also interact with their peers (Bondy & Frost, 1994).

Functional Communication Training (FCT). When using FCT, an interfering behavior that has a communicative function is replaced with a more appropriate form of communication that accomplishes the same function (Wong et al., 2015). In the above example, the student is hitting the table (i.e., interfering behavior) when he would like a snack (i.e., the communicative function) because he is unable to verbally communicate that he would like a snack. In this scenario, the replacement response (i.e., the more appropriate communication) would be to teach the student to choose a picture icon of a snack rather than hitting the table when he would like a snack. To help the student learn that this is the appropriate response to use when he would like a snack, the teacher would ignore the hitting behavior, and prompt the student to use his communication system instead; ensuring to only give the student the snack when he uses the replacement response (Wong et al., 2015).

Visual supports. When combined with systematic instruction, visual supports have been shown to increase skill acquisition, independence, and can be easily incorporated into systematic instruction for students with multiple disabilities (Cohen & Demchak, 2018). Visual supports are a communication and teaching aid that refer to any visual display that supports the student's engagement in a desired behavior or skill. Examples of visual supports include pictures, written words, objects within the environment, arrangement of the environment or visual boundaries, schedules, maps, labels, organization systems, and timelines (Wong et al. 2015).

Tools and Accommodation

Maximizing Each Student's Individualized Education Program (IEP)

In addition to the evidence-based instructional strategies described above, school teams also rely on a range of tools, accommodations, and services to support students with multiple disabilities. In order to make sure that

supports are available to the student and school team when needed, it is important that these supports are explicitly laid out in a student's IEP (Horn & Kang, 2012). To ensure that can happen, school teams must be diligent in evaluating and documenting their students' abilities and needs. Matching the right tool to an identified need often takes strong assessment and multiple trial periods.

A related central theme in supporting students with multiple disabilities is the necessity of collaborating with a team of professionals at every step of the way from assessment and planning to implementing an educational program (Horn & Kang, 2012). Students with multiple disabilities are often supported by a team of educators, general education teachers, special education teachers, and paraprofessionals. Students with specific limitations are often supported by related service providers as well. For example, a student with complex communication needs may need a speech and language pathologist to assess his or her communication skills to help design and implement AAC supports. A student with physical mobility impairments may need a physical therapist to assess his or her gross motor movements and to help design and manage an accessible environment.

Assistive Technology

Among the most common supports for students with multiple disabilities, assistive technology refers to a broad range of tools used to support a broad range of needs (National Institute of Child Health and Human Development, 2018). Simple tools, often referred to as low-tech, can be used to support physical assessment such as an adapted pencil grip for a child with low grip strength or a slant board to reposition a computer key for a child using a wheelchair (National Institute of Child Health and Human Development, 2018). More complex tools, referred to as high-tech, can often be used for more complex tasks, such as a speech generating device that a student who is not speaking can use to compose messages that the device will say out loud for any typical communication partner to hear (National Institute of Child Health and Human Development, 2018).

Like other tools and accommodations, when choosing which assistive technology may benefit a student, research recommends a thorough assessment of the student's needs, assets, and barriers (Copley & Ziviani, 2005). A team-based approach to designing and implementing assistive technology is also recommended (Copley & Ziviani, 2007). Zabala (1995) suggests assessing and choosing assistive technology for a student through guiding questions using the SETT framework. This framework asks pointed questions about the student's needs and assets, the demands and barriers posed by the environment, the tasks that the student is going to be asked to

accomplish, and the available tools that might best fit the first three areas (Zabala, 1995).

Supporting Augmentative and Alternative Communication (AAC)

Designing meaningful communication support starts with a thorough assessment of the student's needs and partnering with a speech and language pathologist. Large standardized developmental inventories, such as the Vineland Adaptive Behavior Scales, may offer a large-scale picture of a child's overall communication skills as compared to their typical peers (Markusic & Gromisch, 2015). More targeted assessment of specific areas of communication may also be helpful in determining a student's needs, such as using the Peabody Picture Vocabulary Test, to assess a child's receptive vocabulary (Markusic, Gromisch, 2012).

For students who score well below their typically developing peers in communication skills, follow-up assessment may be necessary to gather information for planning. Chung and Douglas (2014) recommend using their Communication Competency Inventory (CCI) to pinpoint areas of need for intervention. For students with very limited or no spoken word vocabularies, Sigafoos, Arthur-Kelly, and Butterfield (2006) recommend their Inventory or Potential Communicative Acts (IPCA). Complex cases may also benefit from using multiple sources assessment in the planning process.

When building an intervention plan from the results of the communication assessment, the first choice for students with multiple disabilities is between augmenting speech the child does have and teaching the student to use an alternative method of communication other than speech (Johnston, Reichle, Feeley, & Jones, 2012). Augmenting speech may take simple tools such as teaching social scripts or using video models and explicit instruction to improve a child's intelligibility and comprehensibility. Teaching a child with multiple disabilities to use an alternative method of communicating can be much more complicated.

These systems range from low-tech solutions, like the PECS described above, to high-tech solutions, like a speech generating device. Regardless of which approach a team takes, it is necessary to also teach students the social skills necessary to use their AAC practically in their natural environment. For example, learning to repair communication breakdowns (i.e., correct a message when it is not received or understood) is imperative to making any AAC supports used or communication skills learned function pragmatically for children (Sigafoos et al., 2006).

After conducting a communication assessment, the speech and language pathologist and Mr. Ryder collaborate to find a way to better help Shelly

communicate her wants and needs. They decide that they will begin with PECS, and then transition Shelly to a speech generating device once she has learned to successfully engage in the reciprocal nature of communication. They immediately develop a plan to incorporate PECS into her daily schedule so that she will have multiple opportunities to engage in appropriate communication throughout the day.

Mobility and Physical Access

Supporting students whose multiple disabilities present with mobility impairments also often requires a team approach; this may require working with physical therapists to focus on gross motor movements and collaborating with occupational therapists to work on fine motor control and increasing independence in functional skills. For a student with a concurrent visual impairment, partnering with an orientation and mobility specialist may also be helpful. A central theme in supporting mobility for students with multiple disabilities is focusing on both technology solutions to support access, but also considering environmental arrangement (Egilson & Traustadottir, 2009). Surveying and systematically removing the physical barriers to mobility is important to promoting independence for a student with physical limitations. This may be as simple as measuring the width between furniture placement in a classroom to ensure that a student will have an unobstructed turning radius while using a wheelchair.

There are many assistive technology supports to increase a student's physical access to tasks and environments. Low tech examples include adaptive grips for writing implements or utensils, stands to hold reading material at eye level, or braces to help a student isolate a single finger to press buttons on a device; while high tech solutions include two common tools to access a computer or other digital device: switches and using scanning and eye gaze (National Institute of Child Health and Human Development, 2018). Micro-switches are simple machines that complete a circuit that can be used to directly activate an appliance or device; for example, Lancioni and colleagues (2006) successfully taught children with severe multiple disabilities to use two separate micro-switches connected to devices that said "yes" and "no" aloud. Switches can also be used with scanning software to operate a variety of computer programs through a series of highlighting options and making selections (Bache & Derwent, 2008). Schaefer and Andzik et al. (2016) describe a systematic method of training a student to use switches starting with teaching a simple cause and effect, through teaching a student to discriminate between multiple switches. Similarly, eye gaze tracking has also been used successfully with scanning software to teach individuals with

severe multiple disabilities to operate complicated devices, such as AAC systems (Ball et al., 2010).

Feeding, Sensory Impairment, and Medical Needs

Many children with multiple disabilities may also struggle with a combination of feeding issues, sensory impairments and choric medical conditions. The specific related symptoms for impacting each child will vary widely depending on that child's diagnoses; however, they may include: pica, food aversion, impaired shallowing, hearing impairment, visual impairment, orthopedic impairment, and impaired breathing. These additional challenges often lead to chronic absences from school, instructional time lost while providing basic care making it all the more vital that instructional time is used efficiently (Zijlstra & Vlaskamp, 2005). The first step to serving a child with multiple disabilities with associated medical needs is to seek the support of a collaborative team of professionals with expertise in the individual child's unique needs. Generally, these issues affecting the child's health and wellbeing will need to be addressed by a combination of instruction and medical intervention. A child with impaired swallowing may have a gastronomy tube through which they take in food or need the support of a ventilator to breathe properly. These needs would have to be supported by a nurse while in school (Frazeur-Cross, Traub, Hutter-Pishgahi, & Shelton, 2004). Feeding disorders like pica (i.e., the compulsive ingestion of inedible material) or food aversion may need to be addressed through behavior intervention (Matson, Hattier, Belva, & Matson, 2013).

Final Thoughts

When given the appropriate tools, accommodations, and supports, students with multiple disabilities can thrive in the classroom and far exceed expectations. When equipped with the right strategies for assessment and intervention, teachers can rise to meet the varied and complex needs of students with multiple disabilities. This unique disability category does present unique challenges with an infinite diversity of needs and abilities. Perhaps more than other groups, in many important ways students with multiple disabilities embody the adage 'no two children are the same.' The trick for special education teachers serving students with disabilities is to thoroughly assess each student and have a broad enough toolkit and a diverse enough collaborative team to be able to make the perfect match between each need and each support.

Points to Remember

- Multiple disabilities encompass a heterogeneous group of students, with a wide range of abilities.
- Proper supports and planning are key for student success.
- Collaboration with other professionals is necessary to meet the varied needs of students with multiple disabilities.
- Using systematic instruction and other evidence-based strategies is necessary to help students with multiple disabilities succeed in the classroom.
- Ensuring that students have a mode of communication is crucial to their well-being and success in the classroom.

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About the Authors

Nicholas D. Young, PhD, EdD

Dr. Nicholas D. Young has worked in diverse educational roles for more than 30 years, serving as a teacher, counselor, principal, special education director, graduate professor, graduate program director, graduate dean, and longtime psychologist and superintendent of schools. He was named the Massachusetts Superintendent of the Year; and he completed a distinguished Fulbright program focused on the Japanese educational system through the collegiate level. Dr. Young is the recipient of numerous other honors and recognitions including the General Douglas MacArthur Award for distinguished civilian and military leadership and the Vice Admiral John T. Hayward Award for exemplary scholarship. He holds several graduate degrees including a PhD in educational administration and an EdD in educational psychology.

Dr. Young has served in the U.S. Army and U.S. Army Reserves combined for over 34 years; and he graduated with distinction from the U.S. Air War College, the U.S. Army War College, and the U.S. Navy War College. After completing a series of senior leadership assignments in the U.S. Army Reserves as the commanding officer of the 287th Medical Company (DS), the 405th Area Support Company (DS), the 405th Combat Support Hospital, and the 399th Combat Support Hospital, he transitioned to his current military position as a faculty instructor at the U.S. Army War College in Carlisle, PA. He currently holds the rank of Colonel.

Dr. Young is also a regular presenter at state, national, and international conferences; and he has written many books, book chapters, and/or articles on various topics in education, counseling, and psychology. Some of his most recent books include Acceptance, Understanding, and the Moral Imperative of Promoting Social Justice Education in the Schoolhouse (in-progress); The Empathic Teacher: Learning and Applying the Principles of Social Justice Education to the Classroom (in-progress); Educating the Experienced: Challenges and Best Practices in Adult Learning (in-press); Securing the Schoolyard: Protocols that Promote Safety and Positive Student Behaviors (2019); Sounding the Alarm in the Schoolhouse: Safety, Security and Student Well-Being (2019); The Soul of the Schoolhouse: Cultivating Student Engagement (2019); Embracing and Educating the Autistic Child: Valuing Those Who Color Outside the Lines (2019); From Cradle to Classroom: A Guide to Special Education for Young Children (2019); Captivating Classrooms:

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Educational Strategies to Enhance Student Engagement (2019); Potency of the Principalship: Action-Oriented Leadership at the Heart of School Improvement (2018); Soothing the Soul: Pursuing a Life of Abundance Through a Practice of Gratitude (2018); Dog Tags to Diploma: Understanding and Addressing the Educational Needs of Veterans, Servicemembers, and their Families (2018); Turbulent Times: Confronting Challenges in Emerging Adulthood (2018); Guardians of the Next Generation: Igniting the Passion for Quality Teaching (2018); Achieving Results: Maximizing Success in the Schoolhouse (2018); From Head to Heart: High Quality Teaching Practices in the Spotlight (2018); Stars in the Schoolhouse: Teaching Practices and Approaches that Make a Difference (2018); Making the Grade: Promoting Positive Outcomes for Students with Learning Disabilities (2018); Paving the Pathway for Educational Success: Effective Classroom Interventions for Students with Learning Disabilities (2018); Wrestling with Writing: Effective Strategies for Struggling Students (2018); Floundering to Fluent: Reaching and Teaching the Struggling Student (2018); Emotions and Education: Promoting Positive Mental Health in Students with Learning (2018); From Lecture Hall to Laptop: Opportunities, Challenges, and the Continuing Evolution of Virtual Learning in Higher Education (2017); The Power of the Professoriate: Demands, Challenges, and Opportunities in 21st Century Higher Education (2017); To Campus with Confidence: Supporting a Successful Transition to College for Students with Learning Disabilities (2017); Educational Entrepreneurship: Promoting Public-Private Partnerships for the 21st Century (2015); Beyond the Bedtime Story: **Development** during the Middle Promoting Reading School Years (2015); Betwixt and Between: Understanding and Meeting the Social and Emotional Developmental Needs of Students During the Middle School Years (2014); Learning Style Perspectives: Impact Upon the Transition Classroom (3rd ed., 2014); and Collapsing Educational Boundaries from Preschool to PhD: Building Bridges Across the Educational Spectrum (2013); Transforming Special Education Practices: A Primer for School Administrators and Policy Makers (2012); and Powerful Partners in Student Success: Schools, Families and Communities (2012). He also co-authored several children's books to include the popular series *I am Full of Possibilities*. Dr. Young may be contacted directly at nyoung1191@aol.com.

Angela Fain, PhD

Dr. Angela C. Fain has worked in the field of special education for the past 20 years. She received her Ph.D. and M.Ed. in special education at Georgia State University, as well a B.S. in Therapeutic Recreation. She earned national certification as a Nationally Certified Therapeutic Recreation Specialist (TRS) and worked as a therapist for several years with children who had severe

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emotional/behavioral disorders (SEBD) and/or autism. Dr. Fain has worked in some of the most restrictive educational environments that students with disabilities are served, as a both a TRS and special education teacher. She worked as a clinical instructor at Georgia State University while earning her doctorate and at the University of North Georgia while concurrently serving as an assistant professor. She is now an assistant professor at the University of West Georgia.

Dr. Fain is a regular presenter at state, national, and international conferences and she is an active board member of Learning Disabilities Worldwide. She has authored several book chapters and articles on various topics in special education ranging from classroom management to successful academic interventions for students with disabilities.

Teresa Allissa Citro, PhD

Dr. Citro is the Chief Executive Officer, Learning Disabilities Worldwide, Inc. and the Founder and President of Thread of Hope, Inc. She is a graduate of Tufts New England Medical School and Northeastern University, Boston. Dr. Citro has co-edited several books on a wide range of topics in special education and she co-authored a popular children's series *I Am Full of Possibilities*. Dr. Citro is the co-editor of two peer review journals including *Learning Disabilities*: A Contemporary Journal and Insights on Learning Disabilities from Prevailing Theories to Validated Practices. She is the mother of two beautiful children and resides in Boston, Massachusetts.