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An Operational Definition of Twice-Exceptional Learners: Implications and Applications

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Abstract

In this article, a new definition of twice-exceptional children is proposed. In addition to introducing this new definition, the authors provide a research-based rationale for the definition, offer a clear profile of twice-exceptional youth, and summarize the development of new programs and practices to enable these students to develop their gifts while simultaneously compensating for their deficits.

Keywords

twice exceptional, gifted/LD, definition of giftedness and learning disability

During the past three decades, a population of students who have been characterized by their extraordinary abilities and talents as well as the challenges they encounter in learning, attention, and behavior has captured the attention of scholars, practitioners, and parents. During this time period, the numbers of these dually diagnosed students have increased, as estimates of students who are both gifted and have a disability range from approximately 180,000 (Davis & Rimm, 2003) to a high of 360,000 students in America's schools (National Education Association, 2006). Generally labeled twice-exceptional (2E), these students often have educational journeys that are fraught with challenges, as they do not fit the traditional definitions of either exceptionality. They have seemingly paradoxical sets of needs that often result in a denial by some educators that children with specific disabilities can actually be gifted and talented (Foley Nicpon, Allmon, Sieck, & Stinson, 2011; Vaughn, 1989; Webb et al., 2005).

More recently, however, increasing evidence from scholars, practitioners, and families has gradually led to an acknowledgement that students with gifts and talents can and do simultaneously have deficits in learning, attention, social awareness, and behaviors (Baum & Owen, 2004; Foley Nicpon et al., 2011; Trail, 2010). Correspondingly, students who are first identified with specific learning or attention deficits or social and emotional disabilities can also have extraordinary gifts and talents. In an extensive review of the empirical evidence concerning 2E youth, Foley Nicpon et al. (2011) conclude that there is no question "that gifted students can have a coexisting disability" (p. 13). Increasing numbers of research studies have also contributed to an evolving understanding of the complexity these students

experience as they navigate their academic, social, and emotional worlds (Baum & Owen, 2004; Foley Nicpon et al., 2011; Trail, 2010).

Despite this growing awareness and knowledge about 2E students, identification systems and appropriate services have yet to be fully developed or implemented for this population of learners. The term *twice-exceptional* continues to result in both confusion and criticism about efforts to meet students' needs (Cohen & Vaughn, 1994; Lovett & Lewandowski, 2006), especially outside of the field of gifted education (Foley Nicpon, Assouline, & Colangelo, 2013). Some practitioners still consider the terms *deficit* and *giftedness* to be incompatible (Baum, Rizza, & Renzulli, 2006). Schultz (2012), for example, found resistance from educators to enable 2E students access to advanced-level programs. Schultz further noted that even if 2E students are admitted to advanced classes, their teachers remained reluctant to implement appropriate accommodations to support their learning challenges despite these accommodations being explicitly stated in their Individual Education Plans (IEP) or 504 Plans.

Educational practices that withhold services to 2E students can be considered discriminatory. In a letter dated December 26, 2007, for example, the Assistant Secretary for

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Civil Rights, Stephanie J. Monroe, chastised district administrators for developing and/or adhering to policies that resulted in discrimination against 2E students. The referenced policies included (a) the refusal to allow qualified 2E students to participate in challenging academic programs, (b) a requirement that these students give up the services that have been designed to meet their individual needs, or (c) schedule conflicts that require that a student choose between remedial services and advanced academic programs. Monroe (2007) further stated that these practices are inconsistent with Federal law (Section 504 and Title II) that require qualified 2E students be given the same opportunities to compete for and benefit from accelerated programs and classes as are given to students without disabilities (34 CFR 104.4[b][1][ii] and 28 CFR 35.130[b][1][ii]) and that “the Office for Civil Rights in the U.S. Department of Education will continue to act promptly to remedy such violations where they occur.”

While research on this population has increased, a lack of consensus of the characteristics and needs of this population of youngsters still exists for some educators. Despite a history of successful interventions over the past 30 years (Brody & Mills, 1997; Foley Nicpon et al., 2011), recent publications and position papers by state departments of education and professional associations, including Colorado Department of Education (2009); Idaho State Department of Education (2010); Montgomery County Public Schools, MD (2002); National Educational Association (NEA; 2006); and two national newsletters that advocate for 2E learners, this population of students is not systematically identified or offered programming options that address their educational and emotional needs. The absence of these options is related to the complexities of the traits and the characteristics of 2E learners, which are complicated to address. Successful identification and programming depend on both the depth of educators’ understanding about giftedness and disabilities and their intersection or comorbidity.

A definition of 2E is needed that will provide a clearer portrait of the traits and needs of this population with specific implications to help address their often paradoxical sets of needs, including the effects of coincidence of disability and gifts and talents not usually mentioned in other definitions. In addition, confusion about giftedness and talent as well as inconsistencies in identifying specific disabilities have resulted in the underidentification of this population of students (Foley Nicpon et al., 2013). The purpose of this article is, therefore, to propose a definition that will enable professionals to both identify 2E learners and develop programs to address their needs. We begin with a brief background about the definitional dilemma, and then introduce a new conceptual definition for this population of students initially developed by members of a Joint National Commission of researchers and scholars, educators, and policymakers, and modified in this article, to offer strategies for operationalizing this definition in both gifted and special education programs.

Background: What Do We Know?

Students who are 2E, that is, gifted in particular areas but extremely challenged in others, is not a new concept. Historically, the concept of 2E became more obvious to scholars who investigated a variety of exceptionalities—Asperger syndrome, hyperactivity disorders, specific learning disabilities (SLD), and the gifted and talented (Asperger, 1979; Cruickshank, 1977). Observations led these scholars to understand that some talented individuals also suffered from pathology or neurology differentiating them from their peers. In 1944, Hans Asperger (1991) described a set of behaviors characterized by pedantic speech content, impairment of two-way interactions, excellent logical abstract thinking, isolated areas of interest, repetitive and stereotyped play, and ignorance of environmental demands (known today as Asperger syndrome). In 1979, he suggested that this set of behaviors was more likely to appear in children of high intelligence and superior abilities. During the same time period, Cruickshank, Bentzen, Ratzeburg, and Tannhauser (1961) investigated the traits of and approaches used to teach students who were hyperactive and exhibited neurological deficits. In their seminal work on teaching methods for brain-injured and hyperactive children, they noted that many of the sample also possessed superior intelligence. Cruickshank (1977) later hypothesized that hyperactivity and distractibility may describe the way high-ability students navigate the environment, suggesting that their attention to all stimuli in their environment enhanced their knowledge base as well as their perceptions about the world.

Years later, when definitions of learning disabilities first appeared in the research literature, the Association for Children and Adults with Learning Disabilities (1985) acknowledged the coexistence of high ability and SLD when they proposed their definition. This definition claims that SLD can occur in individuals with average to superior intelligence.

In research about giftedness conducted decades ago, the reality of a dual diagnosis as gifted and talented and learning disabled was clearly suggested. For example, Mildred and Victor Goertzel (1962) examined the childhoods of 300 gifted adults through biographies and found that a considerable number of gifted individuals had not excelled in school, and many disliked their educational experiences, with some documenting that they struggled with conventional learning experiences. These early pioneers concerned with exceptionalities hypothesized the likelihood that giftedness and deficits in learning, attention, and social behaviors could coexist.

With the advent of PL94-142, The Education of All Handicapped Children Act of 1975, attention in special education was focused on students who were of at least average intelligence but who were not learning because of an identified learning disability. Some had above average and even superior intellectual abilities. Scholars such as June Maker

(1975), Jo Ann Whitmore (1979), and Abraham Tannenbaum (1983) became concerned with the diagnosis and underdiagnosis of gifted students with learning disabilities and the types of interventions made available to these students. In a well-documented review of literature on gifted students with learning disabilities, Brody and Mills (1997) concluded that these dually diagnosed youngsters had needs that differed from their gifted peers with no disabilities and their learning disabled peers with average cognitive abilities, arguing that this population of youngsters could be considered the most misunderstood of all exceptionalities. “They are often not identified and continue to be a severely misunderstood and underserved population” (p. 292). Assouline and Whiteman (2011) and Foley Nicpon et al. (2011) provide extensive reviews of empirical studies, including their own, related to the definitions and diagnoses of 2E students based on these empirical reviews as well as on other studies that have been conducted.

Critics, however, have found fault with the body of research on gifted or academically advanced students with learning disabilities. Vaughn (1989), for example, conducted a comprehensive review of the extant research, calling for new and improved research on both the identification practices used as well as on the intervention programs implemented. Noting that much of the published work on this population relied on case studies and observations, Vaughn challenged researchers to conduct more systematic empirical studies. In 1994, Cohen and Vaughn again reviewed newly published research and reached similar conclusions, suggesting that although gifted students with learning disabilities do exist, few reliable and valid ways exist to identify these students. McCoach, Kehle, Bray, and Siegle (2001) concurred, arguing that most identification practices were based on clinical and professional judgment rather than on empirical research and warned against using profile analysis of intelligence tests like the Wechsler Intelligence Scale for Children or subtest scatter to identify gifted students with learning disabilities. They proposed using both federal definitions of learning disabilities and giftedness to identify students who are gifted and learning disabled even while they acknowledged that federal definitions of giftedness and learning disabilities were both ambiguous and controversial. McCoach et al. also recommended a focus on students’ academic potential as opposed to an identification of their creative, artistic, and leadership potential even though research has shown that adults with both gifts and learning disabilities have contributed to areas such as the sciences, arts, leadership, and creative and entrepreneurial professions (Baum, Cooper, & Neu, 2001; West, 1997).

Lovett and Lewandowski (2006) also criticized professionals in the field of gifted students with learning disabilities, arguing that professionals have failed “to offer a clear working definition of G/LD students, except by separately advocating certain views of giftedness and LD” (p. 516). They accurately note that most recent research about gifted

students with learning disabilities has avoided offering a comprehensive definition, except to say that gifted students with learning disabilities meet criteria for both giftedness and learning disabilities. They acknowledge that Baum (1988) offered one exception when she defined this group as exhibiting remarkable talents or strengths in some areas and disabling weaknesses in others. In their analysis of both definitions and assessment of this population, Lovett and Lewandowski (2006) state,

Optimally, definition guides assessment, and so definitions must provide accurate characteristics, symptoms, and measures of a disorder or disability. Such definitions should be empirically validated by being shown to distinguish those who have the exceptionality from those who do not. (p. 517)

Muddying the Waters: Twice Exceptionality

Many challenges exist when attempts are made to formulate a specific definition of gifted students with SLD, and these challenges become even greater with the introduction of the term *twice-exceptional*. Technically, 2E refers to students who are identified as gifted and talented and also diagnosed with one or more of the special education categories defined by the Individuals with Disabilities Education Act (IDEA), with the exception of those students with cognitive disabilities. For the purposes of this article, we focus on gifted students with SLD, attention deficit/hyperactivity disorder (ADHD), and high functioning students on the autism spectrum disorder (ASD)—conditions prevalent among 2E learners attending public schools (Assouline & Whiteman, 2011). These particular subsets of the population, while alike in many ways, manifest diverse behaviors and needs aligned to a specific diagnosis. Any definition, then, must be broad enough to offer guidance in understanding, identifying, and meeting the commonality of their needs and simultaneously caution against dismissing the characteristics idiosyncratic to any particular type of 2E.

According to Lovett and Lewandowski (2006), definitions must articulate and distinguish among traits and symptoms to guide assessment and interventions. This seemingly simple truth creates complex nuances when examining 2E populations, however, as behaviors alone can be misleading without understanding the characteristics of each exceptionality, the context in which a behavior occurs, and the effects of comorbidity on the combinations of giftedness with diverse disabilities.

Characteristics and Context

An absence of understanding about the needs and characteristics of gifted students with disabilities can lead professionals to draw false conclusions about the observed behaviors of this very heterogeneous group, as characteristics seemingly

belonging to one syndrome can often define the traits of another. In addition, there is wide variance related to accepted characteristics of gifted and talented students, who represent a very heterogeneous group (Foley Nicpon et al., 2013; Neihart, 2002; Renzulli & Reis, 1997). For instance, a student with high cognitive ability who has difficulty concentrating during a lesson may blurt out answers and be unable to sit quietly. First impressions may indicate the presence of ADHD to teachers and even parents, but a clear understanding that many bright students need challenging content in order to remain attentive in class could also lead to an alternative explanation related to the lack of challenge needed by most academically gifted students (Reis et al., 1992). However if a student's restlessness and inability to focus occurs in all settings under most circumstances, this child may be eligible for identification as 2E (Assouline & Whiteman, 2011).

Many teachers and parents of academically talented students have questioned whether these students are displaying similar characteristics of ASD (specifically, high functioning ASD), as some of these students have limited or seemingly no social skills at all and are narrowly focused on specific areas of interest. When viewed through a different lens, the same characteristics have been found to be associated with overexcitabilities (Budding & Chidekel, 2012; Neihart, 2008; Webb & Lattimer, 1993). A simple observation of behaviors associated with a definition can lead to misidentification or underidentification without examining the context in which these behaviors occur and the ability to view the behavior through multiple lenses and possibilities (Baum, Olenchak, & Owen, 1998). In Table 1, the similarities among characteristics manifested across multiple exceptionalities are summarized.

Comorbidity

The most glaring omission of existing definitions is the lack of clarity about the effects of coincidence. Definitions that capture the variability of the 2E population of students must include the interactive effects of *comorbidity*, a term that originated by researchers in general medicine to explain "any distinct additional, clinical entity that has coexisted or that may occur during the clinical course of a patient who has the index disease under study" (Feinstein, 1970, pp. 456-457). Comorbidity often applies to the co-occurrence of two or more different mental disorders (e.g., depression and alcohol dependence), which are defined in terms of their characteristic symptoms rather than their underlying causes (Hall, Lynskey, & Teesson, 2001). These researchers argue that individuals with comorbid diagnoses are distinct from either syndrome occurring alone. Larson, Russ, Kahn, and Halfon (2011) report that cognitive functioning declines, and the need for additional services rises, with increasing numbers of comorbidities. Little research, however, has been conducted on the comorbid effects of 2E students whose exceptionalities may contradict each other.

In their review of literature, Foley Nicpon et al. (2011) identified studies in which the cognitive and nonintellectual traits of 2E students were compared with students who were not 2E. In some instances, they found the 2E population was being compared with students who were gifted but not disabled, and in other studies to students who were disabled but displayed average abilities. In most cases, differences were noted in cognition, identification traits, and social/emotional concomitants. In all cases, the 2E group displayed significant differences from other populations. For example, Antshel (2008) found that children with high IQ and ADHD were moodier and had higher rates of anxiety and disruptive behavior disorders, and that ADHD was found to be a predictor of more impairment in social, academic, and family functioning. Antshel et al. (2009) also found that high-IQ adults with ADHD reported lower quality of life, poorer familial and occupational functioning, more functional impairments, and increased comorbidities.

Understanding the resulting factors of combinations of exceptionalities is critical in meeting the educational and emotional needs of 2E learners. If educators use traditional criteria to diagnosis giftedness or disabilities, they must consider the research about how one disability affects the other, for a student with 2E may or may not display the same characteristics with other gifted peers or with peers with identified disabilities. The effect of comorbidity results in individuals with a set of needs that differ from either of the contributing exceptionalities, as students with 2E have a specific set of cognitive and psychosocial needs. The intersection of the traits from the exceptionality may result in greater intensity of one characteristic, the inhibition of trait expression, or the emergence of a new trait not necessarily found in either of the exceptionalities, as described below.

Greater Intensity. Budding and Chidekel (2012) discussed the comorbidity of giftedness and ADHD as intensified curiosity in which the combination of giftedness and ADHD traits contribute to children's inability to inhibit or shift focus. For instance, Ellen Winner's (1996) description of the "rage to master" exhibited by some gifted children, described a persistent and intense focus on a specific area of interest. This trait can interact with an ADHD trait, manifested as difficulty in shifting focus and sustaining effort to complete a less desirable activity. In some students, the impact of these competing traits may result in a demonstrated stubbornness that borders on defiance.

Related to the area of inhibition, some ADHD students blurt out answers and experience difficulty waiting their turn. The greater knowledge base and rapid assimilation of information attributed to giftedness when combined with ADHD can increase the difficulty a 2E student has with impulse control. According to Brown, Reichel, and Quinlan (2009), students with high-IQ scores tend to have significantly greater impairments in these types of executive functions than do those in the general population, compounding

Table 1. Sample Characteristics for Diverse Twice-Exceptional Students.

	Attention deficit/hyperactivity disorder	Specific learning disabilities	Autism spectrum disorder (Asperger type)
Academic difficulties	<ul style="list-style-type: none"> • Difficulty beginning, listening to, or completing tasks, as well as expressing ideas in writing • Strengths in critical and creative thinking • Preference for spatial tasks 	<ul style="list-style-type: none"> • Verbal precocity but poor reading; confusion about similar letters and words • Dysgraphic • Dyslexic • Dyscalculia • Problems with short-term memory • Strengths in critical and creative thinking • Knowledgeable about specific areas • Preference for spatial tasks 	<ul style="list-style-type: none"> • Appropriate cognitive development with no delay in language • Difficulty with abstract concepts or with tasks that involve critical and creative thinking • Preference for spatial tasks • Preoccupation with one or more stereotyped and restricted patterns of interests that is abnormal in either intensity or focus
Attention Issues	<ul style="list-style-type: none"> • Fidgets, squirms, is restless • Difficulty remaining seated • Easily distracted 	<ul style="list-style-type: none"> • Short attention span, easily distracted • Overactive, inactive, or listless 	
Organizational issues	<ul style="list-style-type: none"> • Difficulty following directions and finishing tasks 	<ul style="list-style-type: none"> • Difficulty understanding or following directions • Difficulty in expressing or organizing thoughts verbally or in writing • Difficulty functioning when there is no structure or predictability (nonverbal learning disability) 	<ul style="list-style-type: none"> • Apparently inflexible adherence to specific nonfunctional routines or rituals • Stereotypical or repetitive motor mannerisms • Persistent preoccupation with parts of objects
Social issues	<ul style="list-style-type: none"> • Difficulty in understanding social contexts 	<ul style="list-style-type: none"> • Problems reading the social context (nonverbal learning disability) 	<ul style="list-style-type: none"> • Quantitative impairment in social interactions (manifests at least 2) • Lack of nonverbal behaviors • Failure to develop peer relationships • Lack of spontaneous sharing of interests, joy, or achievement • Lack of social or emotional reciprocity
Behavioral issues	<ul style="list-style-type: none"> • Often interrupts or intrudes on others 	<ul style="list-style-type: none"> • Clumsy 	<ul style="list-style-type: none"> • Restricted, repetitive, and stereotyped patterns of behavior, interests, and activities
Impulsivity	<ul style="list-style-type: none"> • Often engages in physically dangerous activities without considering possible consequences—not for purpose of thrill seeking (e.g., runs into street without looking) 	<ul style="list-style-type: none"> • Impulsivity and inability to foresee consequences 	
Emotional volatility	<ul style="list-style-type: none"> • Blurts out answers to questions 	<ul style="list-style-type: none"> • Oppositional and defiant as a coping skill 	<ul style="list-style-type: none"> • Emotional fragility • Clinical or significant impairment in social, occupational, or other important areas of functioning

the impact on a student’s ability to control his or her behavior.

Trait Inhibition. A second consequence of comorbidity may occur when the trait of one exceptionality inhibits the expression of another causing professionals to underdiagnose 2E (Kaufmann, Kalbfleisch, & Castellanos, 2000; Webb et al., 2005). For instance, a highly verbal student may demonstrate complex understandings of concepts but simultaneously

display difficulty in organizing ideas on paper because of slow processing speed and limited working memory. This dual set of competing behaviors often results in minimal production by students of work that is not commensurate with his or her high levels of understanding (Baum, 2004; Reis, Neu, & McGuire, 1995). This may be one reason why gifted students who have learning disabilities or attention issues underachieve and seldom qualify or are nominated for gifted programs (Minner, 1990; Reis et al., 1995; Senf, 1983).

The high cognitive ability of 2E learners with disabilities may lead them to perform at or even slightly below grade level during elementary years hiding the need for services even when a disability is present (Brody & Mills, 1997; Reis et al., 1995). Some gifted students with attention difficulties tend to perform better on tests of variable attention than ADHD students with average abilities; they may miss the cutoff score on that test for ADHD identification (Brown et al., 2009).

Emergence of a New Trait. A third result of comorbidity is the appearance of behavioral manifestations or emotional overlay caused by the dual diagnosis, which is typically not found in gifted students without disabilities or in average students with disabilities. Nonintellective traits—motivation, academic self-efficacy, anxiety, and disruptive behaviors—comprise many of these differences. Schiff, Kaufman, and Kaufman (1981), for example, found these students to feel powerless and more emotionally unhealthy, vengeful, and troublesome than expected. Reis et al. (1995) confirmed these observations noting that some college age gifted students with learning disabilities were disruptive and off task in elementary school and that they also exhibited low feelings of self-worth. Baum and Owen (1988), in an empirical study comparing the traits of students with superior abilities, learning disabled students with average intellectual abilities, and learning disabled students with high abilities found unique differences among the groups. The learning disabled students with superior abilities had significantly lower academic self-efficacy and feelings of failure than the other groups. In addition, they were the most disruptive of the groups and reported more in-depth interests than the other two groups. Mendaglio (2002) argued that these differences might suggest that 2E students need to receive differentiated counseling and support services. Reis et al. (1995), for example, found that half of their sample of college age 2E students had sought psychological counseling, but additional research is needed to better understand the types of counseling necessary for this diverse group.

In summary, a definition of 2E must acknowledge that giftedness can coexist with any of the 14 disabilities identified by IDEA with the exception of intellectual disability and encourage researchers and practitioners to understand the complexities caused by comorbidity or dual diagnosis. Recommendations that 2E students can be identified for giftedness or disabilities according to guidelines established for students who are not 2E (Lovett & Lewandowski, 2006; McCoach et al., 2001) will fail to reflect the nuances associated with this population. Designing programs for these students without understanding how these exceptionalities influence each other may produce less than desirable results (Baum & Novak, 2010; Moon, 2002). Accordingly, any definition must take into account the nature and needs of this population and include information about how these students' performance or potential is greater than their age

mates, how the disability is manifested, and the effect of the dual diagnosis as part of the characteristics being studied.

An Operational Definition of 2E Students

A National Commission on Twice Exceptional Students was convened during a weekend symposium 4 years ago, and three subsequent meetings were convened at the National Association for Gifted Children annual conference. The Commission included researchers and practitioners from The National Research Center on the Gifted and Talented, the Association for the Education of Gifted Underachieving Students, Bridges Academy (a school for 2E students), the Belin-Blank Center of the University of Iowa, and several universities, including the University of Connecticut, the University of Iowa, Sacred Heart University, and the University of New Mexico. Several clinical psychologists, educational therapists, state association presidents, and graduate students also participated in the conversations at all or most of the meetings. The purpose was to discuss the current state of research related to 2E students and to adopt a new definition based on available research and scholarly discourse. In addition, many members of this group and other interested researchers and practitioners convened meetings at three subsequent annual conventions of the National Association for Gifted Children and the 2E Center for Research and Professional Development at Bridges Academy in Los Angeles. The new definition and recommended interventions address a need suggested in the critical analysis by Lovett and Levandowski (2006), who argue that "the G/LD population is so poorly defined as to make it difficult to see who should be given access to these interventions" (p. 523). The new definition is based on the Commission deliberations, subsequent meetings, and a summary of supporting and related research that is outlined and reviewed in the sections that follow.

Twice-exceptional learners are students who demonstrate the potential for high achievement or creative productivity in one or more domains such as math, science, technology, the social arts, the visual, spatial, or performing arts or other areas of human productivity AND who manifest one or more disabilities as defined by federal or state eligibility criteria. These disabilities include specific learning disabilities; speech and language disorders; emotional/behavioral disorders; physical disabilities; Autism Spectrum Disorders (ASD); or other health impairments, such as Attention Deficit/Hyperactivity Disorder (ADHD). These disabilities and high abilities combine to produce a unique population of students who may fail to demonstrate either high academic performance or specific disabilities. Their gifts may mask their disabilities and their disabilities may mask their gifts.

Identification of twice-exceptional students requires comprehensive assessment in both the areas of giftedness and disabilities, as one does not preclude the other. Identification, when possible, should be conducted by professionals from both

disciplines and when at all possible, by those with knowledge about twice exceptionality in order to address the impact of co-occurrence/co-morbidity of both areas on diagnostic assessments and eligibility requirements for services.

Educational services must identify and serve both the high achievement potential and the academic and social-emotional deficits of this population of students. Twice-exceptional students require differentiated instruction, curricular and instructional accommodations and/or modifications, direct services, specialized instruction, acceleration options, and opportunities for talent development that incorporate the effects of their dual diagnosis.

Twice-exceptional students require an individual education plan (IEP) or a 504 accommodation plan with goals and strategies that enable them to achieve at a level and rate commensurate with their abilities. This comprehensive education plan must include talent development goals, as well as compensation skills and strategies to address their disabilities and their social and emotional needs.

Operationalizing the Definition: Rationale and Cautions

This definition is broad in its scope. Its purpose is to increase recognition of the needs of this special population of learners across disabilities and conceptions of giftedness. The inclusiveness of the new definition will enable a broader pool of students to be considered for identification as 2E (Renzulli, 2005; Sternberg & Davidson, 2005; Subotnik, Olszewski-Kubilius, & Worrell, 2011). The detailed rationale that follows supports the inclusion of each section of the definition.

The Term Twice-Exceptional

The first phrase of the definition acknowledges the existence of the term *twice-exceptional* as a means to discriminate gifted students with disabilities from their gifted peers and their peers who may have one or more disabilities but are not gifted or talented. Assouline and Whiteman (2011) argue that the term unites two special education categories seemingly disconnected. In addition, federal and state authorities and other professional groups involved with the identification and education of these students use this term. Despite the position papers published by the National Association for Gifted Children (2009) and The Council for Exceptional Children (2007), the term *twice-exceptional* is still not universally accepted. Some are still reluctant to accept that giftedness and disabilities can coexist. Uneasiness about the apparent contradiction stems primarily from faulty ideas and stereotypical images associated with giftedness and disabilities, such as the belief that if you struggle with reading, you cannot be identified as gifted. In addition, the inclusiveness of the term may blur some of the differences between and among the possible combinations of dualities.

Specific Gifts/Talents

To counteract stereotypical beliefs about giftedness as high IQ, high achievement, and possession of positive learning traits, professionals need to consider the more broadened and inclusive conception of giftedness that has emerged in the past few decades. In the recent past, psychologists and educators regarded giftedness as being equivalent to a high IQ. More recent research provides support for the broadened and expanded definitions of intelligence and giftedness (Gardner, 1983; Renzulli, 1977, 2005; Sternberg, 1997; Sternberg & Davidson, 2005; Subotnik et al., 2011) as well as less fixed views of intelligence (Dweck, 1999), suggesting new understandings that intelligence is developmental. Contemporary psychologists and educators define giftedness more broadly, include multiple qualities, and disregard the use of IQ score as the sole measure of giftedness.

More inclusive, broadened conceptions of giftedness, such as the one proposed by Renzulli (1986, 2005) and the broader federal definition of giftedness used in schools across the country have helped both define and identify 2E students. Broader definitions enable both potential and performance to be considered across domains and within specific areas of giftedness more typical for students who have gifts in some areas and challenging weaknesses in others (Baum & Owen 2004; Brody & Mills, 1997). The definition proposed in this article reflects the intent of these approaches.

Incorporating meanings from both the Federal Definition and the 3-ring Conception of Giftedness (Renzulli, 1986, 2005) will enable 2E students to be considered for their gifts and talents, but caution must be advised, as professionals must understand that certain traits of giftedness like creativity, leadership, and task commitment can also be manifested negatively. For many 2E students, school is difficult, and as a result, their gifts and talents may be exhibited in differing ways to survive the hostile environment they encounter (Baum & Owen, 2004; Reis et al., 1995; Webb et al., 2005). Leadership may take the form of bullying, creativity may be used to generate excuses for nonproduction, and task commitment may be manifested as a hyper-focus on interests and talents (Baum & Owen, 2004; Kaufman et al., 2000; Reis, Neu, & McGuire, 1997). When 2E students fail to achieve academically at a superior range, cannot complete work in a timely fashion, and behave inappropriately, their gifts and talents may be overlooked (Brody & Mills, 1997).

An Overview of Disabilities

To be identified as 2E, gifted and high-aptitude students must also qualify as having a disability as operationalized by state and local districts. In previous research, however, potential difficulties have been found in diagnosing these types of students (Assouline & Whiteman, 2011; Silverman, 1989; Webb et al., 2005). These difficulties may occur when the diagnosis depends on students' below-grade-level performance (Baum

& Owen, 2004; Brody & Mills, 1997) or when discrepancy models between ability and potential are used to identify learning issues. The response to the intervention model (IDEA, 2004) no longer requires significant discrepancies between potential and performance, and it has become increasingly difficult to recognize learning issues in gifted students and provide them with needed support (Assouline, Foley Nicpon, & Whiteman, 2010; Assouline & Whiteman, 2011). Without the cognitive potential demonstrated by ability tests, it may be difficult to find or predict expected achievement levels. Using discrepancies between potential and performance has been shown to be particularly helpful (Assouline & Whiteman, 2011; Baum & Owen, 2004; Brody & Mills, 1997), especially when alternative hypotheses for this discrepancy have been ruled out (McCoach et al., 2001).

Need for Comprehensive Assessment of Both Conditions: Taking Into Account the Comorbidity Issues

A complexity of diagnosis exists with this population, as the identification of giftedness remains difficult because of comorbidity challenges. Researchers recommend that multidisciplinary teams familiar with both giftedness and disabilities must collect a body of evidence to support the diagnosis of 2E (Perles, Omdal, & Baldwin, 2009), including test score analyses, profile analyses, observations of behaviors across situations, and product evaluations, which all contribute to amassing relevant information.

Even with this approach, many factors interfere with appropriate diagnosis and identification, because of the stereotypes of both gifted students and students with learning disabilities (Bianco, 2005; Trail, 2010). A lack of willingness to nominate students with learning disabilities for gifted programs (Minner, Prater, Bloodworm, & Walker, 1987) and inappropriate or lack of training of professionals may also contribute to the limited identification of this population (Coleman, Gallagher, & Foster, 1994; Davis & Rimm, 2003; Foley Nicpon et al., 2013; Johnson, Karnes, & Carr, 1997; McCoach et al., 2001).

More specifically, comorbidity has a negative effect on traditional identification strategies. The difficulties of identifying giftedness in 2E students is summarized in a recent study by McClain and Pfeiffer (2012), who report that most state guidelines continue to require full-scale IQ scores and cutoff criteria to determine eligibility for gifted programs. 2E learners may not meet the IQ cutoff score requirements if full-scale scores are used as these tests include multiple and different cognitive abilities. Many 2E learners' low scores in subtests tapping working memories and processing speed will negatively impact the overall score even if performance in subtests requiring conceptual thinking and problem solving fall in the superior range (Assouline & Whiteman, 2011; Baum & Owen, 2004; Brody & Mills, 1997). In addition, checklists of behavior are often phrased in positive terms that do not meet the profile of many gifted students with

disabilities, who may be anxious, defiant, or who may use their creativity to avoid academic challenges they cannot master because of their learning disabilities (Baum & Owen, 2004; Webb et al., 2005). Identifying disabilities among gifted and talented students can be equally problematic, as some gifted students face learning and behavioral challenges, which may be because of SLD, ADHD, or social issues associated with ASDs. Because they have been identified as gifted, their issues may be attributed to the lack of motivation or asynchronous development (Baum & Olenchak, 2002; Kaufman et al., 2000; Neu, 2003; Neihart, 2000).

Gifted Students With SLD. Gifted students are at great risk of not being identified with a specific learning disability because of the common perception that to be identified as having SLD one must be failing or working well below grade level. Currently, early identification of learning disabilities relies on observations of student performance when offered research-based interventions. This response to the intervention approach may be discriminatory for students with high cognitive abilities especially if student expectations are contingent on achieving grade-level benchmarks (Assouline & Whiteman, 2011).

According to IDEA (2004; 24:05:24.01:19. Criteria for specific learning disability), SLD refers to disorders in one or more of the basic psychological processes involved in understanding or using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. As stated in one part of the federal IDEA regulations cited below, however, grade-level standards are the benchmark for qualifying for services.

The child does not achieve adequately for the child's age or to meet State approved grade-level standards in one or more of the following areas, when provided with learning experiences and instruction appropriate for the child's age or state-approved grade-level standards: oral expression, listening comprehension, written expression, basic reading skills, reading fluency skills, reading comprehension mathematics calculation, and mathematics problem solving. (IDEA, 2004)

Many gifted students with SLD can perform at grade level and in some instances earn high grades if the curriculum they encounter is too easy (Assouline & Whiteman, 2011) or if they consistently put forth more time and effort on task completion than should be required for their ability level. The regulation, however, also includes language that allows professionals to use a discrepancy model that compares performance with intellectual ability to identify learning disabilities as shown below.

The child does not make sufficient progress to meet age or State-approved grade-level standards in one or more of the areas identified in 34 CFR 300.309(a)(1) when using a process based on the child's response to scientific, research-based intervention; or the child exhibits a pattern of strengths and

weaknesses in performance, achievement, or both, relative to age, State-approved grade-level standards, or intellectual development, that is determined by the group to be relevant to the identification of a specific learning disability, using appropriate assessments, consistent with 34 CFR 300.304 and 300.305; and the group determines that its findings under 34 CFR 300.309(a)(1). (IDEA, 2004)

The law also states that students do not have to be failing or achieving below grade level to qualify for special education services. According to IDEA, states must make a free appropriate public education available to any individual child with a disability who needs special education and related services, even if the child has not failed or been retained in a course or grade and is advancing from grade to grade. The use of a discrepancy model—that includes an analysis of differences between potential and performance—to identify 2E students may enable practitioners to better understand the learning frustrations experienced by this special population of gifted learners (Assouline & Whiteman, 2011; Baum & Owen, 2004).

Gifted Students With ADHD. ADHD is characterized by a pattern of behavior present in multiple settings (e.g., school and home) that can result in performance issues in social, educational, or work settings. Symptoms include behaviors like failure to pay close attention to detail, difficulty in organizing tasks and activities, excessive talking, fidgeting, and an inability to remain seated in appropriate situations (American Psychiatric Association, 2013). Concerns exist among professionals and practitioners that the characteristics of gifted learners can be confused with those of people with ADHD, contributing to missed or underdiagnosis by persons who are unfamiliar with both ADHD and giftedness (Baum et al., 1998; Webb et al., 2005). For instance, a broad consensus of individuals have observed that gifted students who are unchallenged often become inattentive and may daydream or become distracted by ideas or activities that are of greater interest. However, high-ability students may also have ADHD, and the diagnosis is very similar to that of average-ability students with ADHD (Baum & Owen, 2004). It is, therefore, critical that diagnosticians become aware of the characteristics of ADHD and understand that they are often present among the gifted population. This awareness can help prevent missed diagnosis or misdiagnosis (Kaufmann et al., 2000; Webb et al., 2005).

Gifted Students on the Spectrum. ASD is a developmental disability characterized by severe communication difficulties, social impairments, and behavioral difficulties, which complicates the identification of gifted students with ASD (Gallagher & Gallagher, 2002; Neihart, 2000). In a similar manner to ADHD, some identifying characteristics of high-functioning students with ASD overlap with some characteristics of students who are gifted especially in the case of gifted students who were formerly identified as students with mild Asperger syndrome—a type of ASD formerly

identified prior to the publication of the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.) (*DSM-5*; American Psychiatric Association, 2013). The National Institute of Neurological Disorders and Stroke (2012) describes the behaviors of children with Asperger syndrome. Unlike the withdrawal from the rest of the world that is characteristic of autism, children with Asperger syndrome are isolated because of their poor social skills and narrow interests (National Institute of Neurological Disorders and Stroke, 2012).

As with any social, emotional, or behavioral difficulty, environmental factors must be considered especially with young students. A student who seems to have difficulties with socialization may be unable to find intellectual peers. A gifted child may become extremely focused on a topic of interest or may appear inflexible if he or she has concluded that his or her answer or idea is perfect. Because of the comorbidity effect of dual diagnosis as explained earlier, assessment teams must be familiar with the impact of these diagnoses and be willing to adapt identification criteria and strategies as indicated theoretically. An appropriate identification model must employ a more holistic approach by a team of informed professionals who can evaluate the results of individualized ability tests, the results of achievement test scores, and classroom observation combined with information from parents as well as the student (Foley Nicpon et al., 2011).

Most recently, for example, Foley Nicpon, Assouline, and Stinson (2012) examined the cognitive and academic profiles of high-ability students with ASD finding within a restricted range of cognitive abilities. Students diagnosed with Asperger syndrome had significantly higher Verbal Comprehension Index scores than did students with autism. However, they also found that students with autism had significantly higher scores on tests of math fluency and written expression than did students with Asperger syndrome. This may suggest that a different profile of abilities exists between those identified as high ability on the autism spectrum.

Need for Comprehensive Services

Twice-exceptional students, even if identified, often fail to receive services for both their giftedness and their disabilities. Consensus among scholars confirms that 2E students need access to enrichment activities in their area(s) of interest and strength. Many argue that talent development is the most critical aspect of their education (Baum & Owen, 2004; Baum, Schader, & Hébert, in press; Hallowell, 2005; McCoach et al., 2001; Neihart, 2008; Nielsen, 2002). Research also suggests that these students also require special education services for their difficulties, including instruction in compensation strategies. These strategies will enable 2E youngsters to manage their disabilities better thus enabling them to thrive in an academically challenging environment (Baum, 2008; Brody & Mills, 1997; Reis et al., 1995, 1997; Reis, McGuire, & Neu, 2000). Finally, there is

a growing consensus among clinicians and educators indicating that 2E youngsters require social and emotional support because of the emotional difficulties resulting from their asynchronous development (Baum, Dann, Novak, & Preuss, 2010; Baum et al., in press; Brody & Mills, 1997; King, 2005). Many students with this profile have difficulty accepting their own dualities and live with anxiety. Their sensitivities, for instance, may result in their refusing accommodations even if needed as some view an accommodation as intellectually cheating (Abeel, 2003; Baum et al., 2006).

Requirement of an IEP or 504 Accommodation Plan

Most IEPs or 504 Accommodation Plans do not differentiate services based on the intellectual levels of the students or include talent development goals. Recent quantitative studies conducted by Crim, Hawkins, Ruban, and Johnson (2008) illustrate the problems related to services for this population, as they studied IEPs for over a thousand students receiving services for specific learning disability across three groups: (a) 112 high-ability students (IQ score of 116 or above; $n = 112$), (b) 708 average-ability students (IQ score between 85 and 115; $n = 708$), and (c) 225 low-ability students (IQ score of 84 or below; $n = 225$). Of the 112 high-ability students, not one student was either referred for gifted and talented services or recommended to receive different educational modifications different from students in the average- or low-ability groups. This is unfortunate because research about successful interventions for 2E students suggests the need for a focus on strengths as opposed to deficits (Baum, 2008; Lovecky, 2004; Moon, 2003; Neihart, 2008). As Neihart (2003) explained,

Effective interventions are always those that are tailored to the unique strengths and needs of the individual. There is wide agreement in the literature on gifted children with learning problems that, as a general strategy, interventions should focus on developing the talent while attending to the disability. Keeping the focus on the talent appears to yield more positive outcomes and to minimize problems of social and emotional adjustment. (p. 4)

Baum and Owen (2004) found that when educators implement comprehensive programs to identify and develop individual gifts and talents, 2E students more often emulate the social, emotional, and academic characteristics of gifted students without disabilities rather than nongifted students with learning disabilities. In other words, as educators diminish the attention to and importance of the disability and focus on the strengths and gifts, 2E students become more engaged in school and find success in creative activities in areas of personal choice and interest. Likewise, typical interventions found to support remedial students may be counterproductive

for these students. Too much attention paid to review activities, simple assignments, and remedial activities have been found to be unchallenging and boring for 2E students who subsequently succeeded in college (Reis et al., 1997).

Students with attention issues are at particular risk when the curriculum is not sufficiently challenging (Moon, 2003; Neihart, 2008). Furthermore, traditional remedial practices, such as making tasks simpler, providing less stimulation, and proceeding at a slower pace can result in more frustration and inattention for 2E students (Moon, 2002). Placing 2E students into either traditional remedial or gifted programs may exacerbate the emotional fragility of these students. Gifted programs should align to the strengths interest and talents of the students, and under those conditions, fewer accommodations may be necessary for these students. However, when the advanced opportunity requires skills in students' deficit areas, these students need to access appropriate accommodations to avoid embarrassment and humiliation (Abeel, 2003; Baum et al., 2006; Schultz, 2012).

Many 2E learners experience high levels of anxiety, poor self-concepts, and deficits in executive functioning because of the discrepancies between what they can and cannot do. Appropriate interventions, therefore, should address both the academic and the social emotional needs of 2E learners. Comprehensive programs using a strength-based focus have been shown to have positive effects on academic achievement and self-concept (Baum, Renzulli, & Hébert, 1995; Baum et al., in press; Olenchak, 1995, 2009). These programs often embed compensation strategies into an enriched environment. For instance, Olenchak (1995, 2009) implemented yearlong interventions using a strength-based approach while also addressing weaknesses. When enrichment techniques were used in the classroom and integrated into students' individualized education plans, students showed significant improvements in attitudes toward school and self-concept. In another study, Olenchak (2009) implemented a counseling approach focusing on Talents Unlimited (Schlichter, 2009) to strengthen critical thinking skills, self-concept, and metacognition. Weekly individual and group counseling sessions were found to be valuable for students' self-concepts. Baum and colleagues (in press) found highly positive results in academic, social, and emotional growth in 2E students who attend a school for 2E students. The school uses a strength-based, talent-focused approach where academic, executive functioning, and social skills are contextualized within a rigorous and enriched curriculum as well as within talent development opportunities.

Conclusion

This article responds to a call for a clear definition to guide identification and programming for the growing number of students identified as 2E. These high-potential, talented students with learning and attention disabilities as well as social impairments comprise a unique population of young people

who are at special risk for social/emotional difficulties and underachievement in school and subsequently in life unless educators and counselors are fully aware of their existence and needs. This awareness includes the idea that 2E students are not simply gifted and disabled—that is, conditions discrete from each other but rather should be viewed as complex combinations of dualities.

In this article, a new definition suggested by the Joint Commission on Twice Exceptionality is presented that is broad enough to represent the diverse group of students comprising the 2E population but definitive enough to allow for appropriate services. The definition offered four key components, including guidelines for identification and programming. Each component was supported with a rationale, available research, and guidelines for implementation. The definition supports evolving research showing a fundamental shift of focus on these students' strengths rather than weaknesses and reinforces the need for educators of 2E students to focus less on the remediation of weaknesses and more on the enhancement of students' strengths and interests and the development of gifts and talents. One thing is clear, unless teachers and counselors identify and develop the strengths of these students, many may fail to develop their talents and instead become underachievers frustrated with the remedial nature of the instruction and interventions they receive in school. We hope that this definition will encourage policy-makers, professionals, and parents to work together to identify more 2E students and develop comprehensive programs that address their complex needs.

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Sally M. Reis is the Vice Provost for Academic Affairs and Board of Trustees Distinguished Professor of Educational Psychology at The University of Connecticut. She has served as department head of Educational Psychology Department at the University of Connecticut where she was a principal investigator for the National Research Center on the Gifted and Talented. She was a teacher for 15 years, 11 of which were spent working with gifted students on the elementary, junior high, and high school levels. She has authored or coauthored more than 250 articles, books, book chapters, monographs, and technical reports. Her research interests are related to special populations of gifted and talented students, including students with learning disabilities, gifted females, and diverse groups of talented students. She is also interested in extensions of the Schoolwide Enrichment Model for both gifted and talented students and as a way to expand offerings and provide general enrichment to identify talents and potentials in students who have not been previously identified as gifted. She is the co-director of Confratute, the longest running summer institute in the development of gifts and talents. She is a past president of the National Association for Gifted Children. She has received many honors, among them the Distinguished Scholar Award from the National Association for

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