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Critical Issues in Servicing Twice Exceptional Students

Socially, Emotionally, and Culturally Framing Learning Exceptionalities

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Foreword

My name is Marc Smolowitz, and I am a proud independent filmmaker, multi-platform storyteller, and lifelong activist based in San Francisco. I also happen to be *the filmmaker* who is making THE G WORD documentary, the most ambitious and comprehensive non-fiction feature-length film ever undertaken on the topic of gifted, talented, and neurodiverse education and populations in the United States. The values of diversity, inclusion, and social justice are at the heart of my film, and we are asking a larger equity question: "In the twenty-first century, who gets to be 'gifted' in America and why?" When attempting to find answers to that question, especially here in the United States, we have embraced the notion that a person's giftedness and larger journey with intelligence are interwoven with all aspects of their identity, demographics, and lived experience, including their race, class, gender, sexuality, culture, language, and geography. Not surprisingly, there have been countless moments whereby the global implications of these sorts of inquiries have become both apparent and urgent. It seems that every country around the world is facing the very real crisis of how to best serve its most diverse and disenfranchised learners with high potential.

When I began making my film about giftedness in 2015, I must confess that I had never heard of the terms neurodiversity, twice-exceptionality, and thrice-exceptionality. Much like the larger mainstream culture, I have been on a journey of my own that involves uncovering just how complex, nuanced, and personalized twenty-first-century intelligence can be in contemporary society. As a storyteller who is interested in how giftedness connects to equity and interacts more broadly with the world and the education system, it didn't take long for me to uncover families and educators at every income level who were struggling to meet the unique needs of their children who were both bright and facing a range of learning challenges. In fact, over the past 6 years, I have encountered a large and lively social movement developing in real-time around these populations, one that is growing in visibility, momentum, and sphere of influence. This is, in part, because it has been estimated that there are no less than 300,000 students in the United States who fit the profile of twice-exceptional. That surprisingly large number alone compels us to sit up and take notice of these students. Yet, after decades of overall invisibility, we

are only just starting to understand the extent to which our twice-exceptional learners are trapped inside schools that don't address their needs. In many instances, their outlier status makes them vulnerable to bullying, social isolation, self-harm, addiction, and suicidal ideation. Many end up in prison. When issues like poverty, racism, gender dysphoria, and other identity-based challenges enter into the mix, their giftedness can feel like a fulcrum of crosses to bear. In short, we are living in a century with a dangerously high number of neurodiverse kids from all backgrounds who are underachieving, affecting our prospects for global long-term prosperity. If we start to look at our twice-exceptional children as a clear and addressable group of students with challenges whom we can help, we may start to tackle the enormity of this moment in ways that are useful for both the education sector and the larger civil society.

In this century, our understanding of intelligence and the brain is radically changing. Historically, we've focused on IQ as the sole measurement of intelligence, but thanks to the good works of scholars and advocates across a range of disciplines, we've managed to upend this notion in recent years and push for the broader acceptance of neurodiverse brains, especially inside the workforce where advocates have made great strides when it comes to articulating the value that these individuals can bring. Yet, most schools remain overburdened by a legacy focused on addressing student deficits over cultivating strengths, perpetuating a sense of being "less than," having a profoundly negative effect on neurodiverse kids as they move into adulthood. To make the system work for everyone, we need to consider education models that embrace neurodiversity, which includes twice-exceptionality and thrice-exceptionality, as a new vertical of identity and experience that commands our attention. Ideally, there would be comprehensive, expert-guided federal mandates for gifted, talented, and neurodiverse education. School districts would have the necessary funding for teacher and counselor training, and identification practices would embrace universal screening methods that contemplate both the cultural backgrounds of students as well as the very real possibility that they might be neurodiverse. Legislation and policy would be consistent across municipalities, and education leaders would be supported to bring equity into all aspects of the school experience. Finally, the entire community around these learners – administration, teachers, counselors, parents, and alumni – would work together to provide individualized child-appropriate opportunities for growth and fulfillment.

When it comes to understanding people who learn differently, neurodiversity, twice-exceptionality, and thrice-exceptionality are rightly among the newest and most important concepts available to us right now. The following compendium of scholarship and writing features some of the most potent and powerful voices from around the globe who are working hard to help us better understand those learners who, simply put, learn differently and yet are poised to be on a trajectory of success with the right support. For my part, I have had the great honor of meeting many of them in recent years, and several have sat with me for documentary interviews that demonstrate just how dynamic and exciting the field of neurodiversity is right now. Certainly, in an intersectional world where multiple intelligences inevitably converge with multiple identities, books such as this one emerge as essential reading

that helps steer educators, families, advocates, policy makers, and the generally curious into a place of deeper compassion for those with multi-exceptional minds. We desperately need to "get it right" for these neurodiverse and underserved gifted learners. Among their midst, we may just uncover the kind of greatness that this extremely troubled century needs now more than ever.

Los Angeles, CA, USA Marc Smolowitz

Introduction

> Critical issues in education represent topics that deal with problems and their need for solutions in the best interest of the student, as well as a need for raising stakeholder awareness. Critical issues for many special and gifted education scholarly pursuits such as inconsistent definitions, identification methods, policies and practices, appropriate services, appropriate curricular, teaching approaches, and so on have historically plagued most educational systems since their inception. Among the problems, are appropriate, interpretative operationalization and culturally responsive[1] implementation of intervention and enrichment strategies that best serve the educational and individualized needs for a diverse group of students for a variety of developmental aims … Servicing students who require special education services (intensive remediated enrichments) in addition to gifted education services (intensive accelerated enrichments) beyond general classroom instructional practices is another critical issue in education. Students who consistently require both are traditionally referred to as twice exceptional (2e) students, emphasizing at least two identified learning exceptions to be made to the general educational approach when servicing their academic needs. No matter how one may define or interpret twice-exceptionality, adequately servicing the needs of 2e students with a continuum of services is mandatory. (Collins, 2021)[2]

Gifted students with other learning exceptionalities represent a vastly diverse group in terms of social, emotional, and cultural background, which can challenge many educators who are not always able to identify or serve them properly. Peters (2013)[3] suggested that a common myth exists that gifted individuals are advanced and uniformly developed in all skills – intellectual, academic, social, and emotional. While

[1] Culturally Responsive Teaching (CRT) is a pedagogy that recognizes the importance of including students' cultural references in all aspects of learning (Ladson-Billings,1994).

[2] Reprinted with permission from Multicultural curriculum development, teaching approach & learning taxonomy: Using Bloom-Banks matrix [Unpublished Resource]. CI 5359 Curriculum for Depth and Challenge, Department of Curriculum & Instruction, Texas State University. See also, Collins, K.H., Coleman, M.R., & Grantham, T.C. (2022). A bioecological perspective of emotional/behavioral challenges for gifted students of color: Support needed vs. Support received. In T. Farmer, Z. Serpell, L. Scott, & S. DeVlieger (Guest Eds.), *Social justice and equity perspectives of emotional behavioral difficulties of youth of color [Special Issue]. Journal of Emotional and Behavioral Disorders.* https://doi.org/10.1177/10634266221076466

[3] Peters, D. (2013). *Make your worrier a warrior: A guide to conquering your child's fears*. Gifted Unlimited, LLC.

there are certainly those who are gifted with this profile, it is common for gifted individuals to experience asynchrony of development, or uneven development, resulting in gaps between their advanced skills and their normative skills development. When the gap or delay is large enough to cause functional limitations at school, at work, or in life, the gifted individual is usually given a diagnosis to explain the area of challenge, delay, or deficit as well.

Understanding the elements and influence of interpretation, *Critical Issues in Servicing Twice Exceptional Students: Socially, Emotionally, and Culturally Framing Learning Exceptionalities* addresses this critical issue and offers solutions through a social, emotional, and cultural lens based on a variety of interpreted perspectives. *Critical Issues in Servicing Twice Exceptional Students* offers a discourse for an expanded view of twice exceptionality that extends beyond the historical cognitive discussion within the domains of special and gifted education, which conceptually frame 2e as disconnected learning [dis]abilities and the intersectionality of giftedness and other learning exceptionalities, respectively (Montgomery, 2017).[4]

Offering a global, multidisciplinary perspective, *Critical Issues in Servicing Twice Exceptional Students* frames this important discussion through a more inclusive and culturally responsive lens that recognizes all exceptionalities as socially constructed categories influenced and shaped by society. As such, we have coordinated, co-authored, and edited a text that provides a critical review and expanded social, emotional, and cultural context for this phenomenon. Aligned with the premise that the social, emotional, and cultural context of development should not be separated from the cognitive contexts, a synthesis of theoretical, conceptual, transversal, and analytical understanding provides critical considerations for important scientific and practical discussions about the difficulties that gifted students can present as twice exceptional students.

Critical Issues in Servicing Twice Exceptional Students features leading authors, experts, and specialists from several countries and from different academic disciplines and backgrounds, uniquely positioning it with a global, multidisciplinary perspective. It offers a balance between theoretical/methodological and empirical chapters, and explores the different meanings and interpretation as note above.

The first three chapters (Part I) set the tone by illuminating the socialized constructs of twice-exceptionality, interconnected systems of environmental influences that influence personal development, and its educational implications. Uncovering the historical perspective as well as most relevant and current research, the authors offer a bioecological framework to explore the contextual factors (i.e., process, person, context, and time) that contribute to the complexity and possible misunderstandings about twice-exceptionality. In addition, an outline of a systematic review of international perspective is shared, which was used to underpin and inform a newly developed framework for the advancement of existing limiting understanding of 2e in Argentina. This section highlights the contextual conceptions (and issues

[4] Montgomery, D. (2017, June 17). Dual and multiple exceptionalities. Special World. http://www.specialworld.net/2017/06/07/dual-and-multiple-exceptionality/

for gaps in definitions) of twice exceptionality in Chapters, "The Intersectionality of Twice-Exceptionality: Historic, Current, and Future Perspectives", "The Complexity of Twice Exceptionality and Its Educational Implications", and "Bibliographic Review of 2e Literature and Application in Argentina: The Children´s Area of the Neuropsychology Service". Part II follows with a discussion of the characteristics and talents that 2e students bring with them into any social situation (Person) along with social-emotional support strategies (Chapters, "The Upside of Being Atypical: Twice-exceptional Gifted with Neurologically Based Achievement Difficulties", "Supporting Gifted Students with Anxiety, Dyslexia, or Attention Deficit/Hyperactivity Disorder (ADHD) in School Settings", and "Supporting the Emotional Well-Being of Twice-Exceptional Students Using Literature"). Part III extends this "Person" discussion with educational structures (Chapters, "Trauma Induced Twice-Exceptionality: Preventing Psychological Injury of Gifted Children in the Classroom", "Twice or thrice? Identification Issues and Possibilities Related to Students with Exceptionalities in Australian Schools", "Strength-Based Approaches to Recognize and Develop Talent in Twice-Exceptional Learners", and "Comprehensive Social Emotional Learning: Embedding Skill Development Program-Wide") that impact their academic development and emotional well-being. Implications and recommendations are detailed for comprehensive educational experiences of students that can help to inform practices and support systems rendered by parents, educators, and mental health professionals. Beyond the educational structures, the intersectionality of broader social issues (Process) is presented in Part IV with chapters, "The Social-Emotional Impact of Living 2e: It's Not Just a School Thing" and "See Me! Recognizing and Addressing the Invisibility of Gifted Black Girls with Other Learning Exceptionalities". An examination of interventions that work are offered, including but not limited to, strength-based talent development strategies, facilitation of therapeutic discussions, counseling sessions, and a model from a specialized school for 2e students, which implements an embedded approach built upon deliberate structures, norms, rules, policies, expectations, and communications to engender positive outcomes of student attitudes and behaviors. Special topics, such as executive functioning, trauma in the classroom, ADD, and other learning exceptionalities, are highlighted followed by discussions of the dilemma of adequate identification and services specific to additional special populations to include, but not limited to, African American, female, and Australian students. *Critical Issues in Servicing Twice Exceptional Students* concludes with Part V (Chapter, "Reframing The Future of 2e Research: An Introduction to Arnstein's Spiral Model of Development") by revisiting some of the earlier topics through a different lens, which reframes, challenges, and offers promise for the changes (Time) in servicing twice exceptional students. Servicing 2e individuals in schools, in psychology and counseling offices, in medical facilities, and in workplaces requires learning and studying their profiles to recognize their specific needs. Peters et al. (2020)[5] explained that, once recognized, a promising system of support to

[5] Peters, D., Reid, L., & Davis, S. (2020). *The warrior workbook: A guide for conquering your worry monster*. Gifted Unlimited, LLC.

include an accommodation plan can be created and implemented. In short, educational interventions and raising awareness about 2e individuals are essential to promote a quality of life, appropriate growth, and development for maximum contribution and fulfillment.

Critical Issues in Servicing Twice Exceptional Students serves as a fundamental resource for researchers, educators, teacher-trainers, mental health professionals, and families of gifted students at all grade levels. As a supplementary text for university-level and professional learning courses, it can serve to frame focus-area discussions of social emotional learning and interventions, talent development, and comprehensive program development. As a reference text in educational psychology, special education, and related fields, it can provide additional and in-depth information for interested graduate students, postgraduates, researchers, scholars, and practitioners serving gifted students with other exceptionalities.

It is our aim that *Critical Issues in Servicing Twice Exceptional Students* will be the basis for scientific studies and use from universities, schools, and other educational institutions. As noted in the blind review of the text, this book serves towards adding and building diverse knowledge and perspectives in the twice-exceptional area to move the field towards building contextually sensitive interdisciplinary thinking and research, and move the field towards thinking about consolidating conceptions (e.g., 2e and 3e vs 2E and 3E or ME, twice-exceptional vs twice exceptional as interchangeably used throughout the text). We recognize that these distinct illustrations have larger implications and warrants more thought and discussions to make a case one way or another to move the field towards more cohesive strands for future research to be accumulatively useful.

After completing the readings, readers will understand the importance of knowing and attending to the social, emotional, and cultural dimensions of 2e students while simultaneously fostering the appropriate cognitive skill development for whole-child well-being.

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Contents

About the Editors

Karen Arnstein EdD, is the core faculty at Bridges Graduate School of Cognitive Diversity in Education. She earned a Doctor of Education in curriculum and instruction in gifted education from the University of Denver. She has worked with K-12 teachers for over a decade and holds a California K-8 multiple subject credential and gifted endorsement. Her research examined how parents, teachers, psychologists, and the educational environment impact the developmental transitions of preadolescent twice-exceptional (2e) students. She has presented to multiple groups across the United States and internationally on topics such as the nature and needs of twice-exceptional students, the masking effect, overexcitabilities, the parental experience of grieving, communication support for 2e students, and effective differentiation for twice-exceptional learners. Dr. Arnstein currently serves as chair of the research sub-committee of Supporting the Emotional Needs of the Gifted (SENG). She also serves as a founding IRB Committee Member for Bridges Graduate School of Cognitive Neurodiversity.

Kristina Henry Collins PhD, is the core faculty for talent development and the associate director of LBJ Institute for STEM Education and Research at Texas State University. She earned her PhD in educational psychology and EdS in gifted and creative education from the University of Georgia, Athens. Dr. Collins currently serves as immediate past president of Supporting Emotional Needs of the Gifted (SENG) and is former member-at-large of the NAGC board of directors. Her research foci include multicultural gifted education, culturally responsive STEM identity and talent development, and STEM mentoring across the lifespan. Dr. Collins is the proud recipient of the NAGC's 2021 Early Leader Award, Special Population Network of NAGC 2020 Early Career Award, Bridges 2e Education 2020 "Person to Watch" Award, and Georgia Association of Gifted Children's 2011 Mary Frasier Equity and Excellence Award, to name a few, all presented for her work in advancing educational opportunities for under-represented students in gifted education.

Fernanda Hellen Ribeiro Piske EdD, earned a Doctor of Education from the Federal University of Paraná (UFPR) in cognition, learning, and human development along with a Master of Education and Bachelor of Arts in Pedagogy from the Federal University of Paraná. She completed postgraduate studies in special education and inclusive education from the UNINTER International University Centre. She also holds a higher technology education degree in foreign trade from the Curitiba International Technology Faculty. Dr. Piske is president and founder for the Institute Criatividade & Superdotação (C&S) in Curitiba, Paran. She also works for Municipal Secretariat of Education of Curitiba, Brazil, and serves as a member of the UFPR Creativity and Giftedness Research Group. She is a researcher, author, and editor of books on themes relating to creativity, giftedness, autism, twice-exceptionality, affectivity, socio-emotional development, bullying, teacher training, and human rights.

Part I
Introduction: Context and Social Constructs (Macrosystem)

This section on *Context and Social Constructs (Macrosystem*) serves as a preamble to clarify a shared understanding by which this section and the rest of the text is grounded. Context involves five distinctly interrelated systems, or social constructs; the macrosystem is a broader system of shared values, culture, attitudes, and behaviors as well as far-reaching current events. The conceptual understandings presented and referenced holdfast to the notion that a holistic approach is required to understand the multiple identities and systems with which students bring to the classroom each day. Bronfenbrenner's (2005) bioecological model utilizes a holistic approach to understand potential and child development while emphasizing an awareness of the interactive and cooperative nature of relationships. This model allows educators and parents to understand the interconnectivity of biological, psychological, social, and cultural factors influencing child development.

Chapters "The Intersectionality of Twice-Exceptionality: Historic, Current, and Future Perspectives", "The Complexity of Twice Exceptionality and its Educational Implications" and "Bibliographic Review of 2e Literature and Application in Argentina: The Children´s Area of the Neuropsychology Service" set the tone by illuminating the socialized constructs of twice exceptionality; this section clarifies the interconnected systems (and its educational implications) between environmental influences and an individual, which influences personal development. Confirming Foley-Nicpon and Kim (2018) stance for integrating Bronfenbrenner's (2005) bioecological framework to explore the contextual factors (i.e., context, person, process, and time) and considering the sociocultural perspective of Subotnik et al.'s (2011) talent development mega-model positionality (i.e., developmental trajectory of opportunities, competences, expertise, and creativity), which recognizes talent from its innately, latent status to full nurtured and developed talent status within an individual is critically situated. We posit that both frameworks, together, suggest not only important roles/influences as well as the intersectionality between one's development, the various societal systems, and the changes presented in both of these over time. Also suggested is the complexity that comes along with these in any attempt to identify, label, and adequately service the whole child.

This broadened conceptual understanding reaffirms the strength of the book as noted by a blind peer-review to illustrate a "wider range of perspectives addressing different aspects of the 2e experience from different viewpoints, different scale, and experts with diverse training" (Unknown, 2021), as well as addresses "hidden or historically discriminated/understudied group within this field (e.g. gifted, Black females with ADHD, gifted Latinx students, gifted 2e Native Americans/Indigenous Peoples in US public, 2e Asian students from low income background, 2e adults in the workplace, etc). A distinguished acknowledgement and discussion of thrice-exceptionality and multi-exceptionality (ME) as an expanded discussion of twice exceptionality further illuminate the intersectionality of human development, systemic ecosystems, and perceived exceptionalities to support a discussion for the impact of hidden and historical bias, discrimination, and one's positionality in society. (ME, as defined later in the text by the authors in Chapter "Reframing The Future of 2e Research: An Introduction to Arnstein's Spiral Theory of Development", also offers a new perspective that challenges the historically color- and culture-blind approach in addressing concerns of twice exceptionality to include considerations underrepresented and underserved populations in gifted education - i.e., socialized status and subgroups such as race, ethnicity, abilities, multi-language learners, socio-economic status, more inclusive gender categorizations, etc.). ME is framed as a social construct, aligned with the suggestions and an approach toward future directions for contending to the needs of these individuals.

The Intersectionality of Twice-Exceptionality: Historic, Current, and Future Perspectives

Karen B. Arnstein

Abstract Generally speaking, twice-exceptional students are those who qualify for both special education and gifted education services. However, special education and gifted education in the U.S. educational system was developed and continue to operate in isolation. Twice exceptional (2e) students come from every cultural, socioeconomic, racial, and ethnic group, and it can be difficult to identify and serve them in schools. They require an interdisciplinary collaboration between informed teachers, specialists, and parents to achieve their potential. This introductory chapter offers background information that sets a foundation for understanding the complex nature of twice exceptionality. It highlights a synthesis of working definitions, key concepts, and the subsequent development of programs designed to service 2e students. The history of twice-exceptionality as a construct is presented through multiple lenses to provide developmental context and further explore the concept of multi-exceptionality. Bronfenbrenner's bioecological theory, as a system-level framework, is used to explore twice exceptionality within the context of intersectionality of school, family, culture, and economic structures to inform the changes necessary in current teaching and parenting practices. Leveraging and strengthening the family–school relationship through communication and collaboration have shown to reduce cultural discontinuity and implicit bias from decades of misinformation regarding giftedness and other learning exceptionalities. The chapter concludes with a global perspective for recommendations toward future twice-exceptionality research.

Keywords Twice-exceptional · Multi-exceptional · Gifted · Bronfenbrenner bioecological theory · Intersectionality · Family-school relationships

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The term, *exceptionality,* implies an outlier or exception to the rule or the norm. Within the context of educational settings that would include students who require additional support outside beyond the universal instruction within the mainstream classroom. In the most general sense of the term, twice-exceptional, or 2e, students are those who qualify for both gifted education and special education services (Neumeister et al., 2013). U.S. based organization, National Association for Gifted Children (NAGC), more specifically defines twice-exceptional learners as "gifted children who have the characteristics of gifted students with the potential for high achievement and give evidence of one or more disabilities as defined by federal or state eligibility criteria" (2016, p. 1).

The federal eligibility criteria for disabilities have been established by the Individuals with Disabilities Education Improvement Act (IDEA). IDEA identified 13 categories under which a student could be eligible to receive services and protections (U.S. Department of Education, 2004). These categories include learning disability, speech/language impairment, intellectual disability, emotional disturbance, hearing impairment, visual impairment, orthopedic impairment, and other health impairment. Many disabilities comprise the "other health impairment" category, including attention deficit hyperactivity disorder, autism spectrum disorder, traumatic brain injury, multiple disabilities, and deaf-blindness (National Center for Special Education Research (NCSER), n.d.; Special Education Guide, n.d.). According to IDEA (U.S. Department of Education, 2004), a specific learning disability is

> A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. Specific learning disability does not include 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. (Specific Learning Disability Sec. 300.8(c)(10), 2018)

Historical Overview: Defining Giftedness and Twice-Exceptionality

Definitions of giftedness have transformed over time, influenced by psychology, historical events, and the political and economic landscapes of the era. Decades after Terman, Stanford-Binet, and Hollingworth pioneered the field of gifted education, the understanding and definition of giftedness continue to expand and become more inclusive. The Marland Report (1972) recognized 3–5% of the school population as gifted and talented, formalizing the need for special services. As of this writing, the 1993 U.S. federal definition is the most culturally responsive and equitable of all federal definitions:

> Children and youth with outstanding talent perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience, or environment. These children and youth exhibit high performance capacity in intellectual, creative, and/or artistic areas, and unusual leadership capacity, or excel in specific academic fields. They require services or activities not ordinarily provided by the schools. Outstanding talents are present in children and youth from all cultural groups, across all economic strata, and in all areas of human endeavor. (https://eric.ed.gov/?id=ED359743, p. 11)

Educators began to realize that failure to meet the academic needs would place gifted students at risk for psychological harm (Assouline et al., 2006), yet there were no legal mandates enacted (Colangelo & Davis, 2003). NAGC (2016) declared that "gifted" in a school setting "means that when compared to others his or her age or grade, a child has an advanced capacity to learn and apply what is learned in one or more subject areas, or in the performing or fine arts" (NAGC, 2016). NAGC states, "Gifted does not connote good or better; it is a term that allows students to be identified for services that meet their unique learning needs" (NAGC, 2016).

The Columbus Group was composed of professionals with experience educating, testing, and counseling gifted children to discuss how the same word - *gifted* - could mean different things. During the summer of 1991, Dr. Christine Garrison (now Christine Neville), Dr. Linda Silverman, Kathi Kearny, Dr. Martha Morelock, and Dr. Stephanie Tolan gathered to combine their knowledge and describe the developmental differences these children experience that defy expectations, norms, and averages. It was during this gathering they agreed upon the term *asynchronous development* as a clear, direct, and inclusive term for their observations. The Columbus Group defined *asynchronous development* as

> advanced cognitive abilities and heightened intensity combine to create inner experiences and awareness that are qualitatively different from the norm. This asynchrony increases with higher intellectual capacity. The uniqueness of the gifted renders them particularly vulnerable and requires modifications in parenting, teaching, and counseling in order for them to develop optimally. (Tolan & Piechowski, 2013, p. 3)

At the time of this writing, there is no one definition upon which all states agree. Instead, individual state leaders are responsible for determining how to identify and serve gifted students in their school districts. Gifted learners occupy all cultures, ethnic backgrounds, and socioeconomic groups; however, many do not have the opportunity to maximize their potential. (NAGC, 2016).

Some states find themselves grappling with the inequities of their policies and practices. For example, New York City's Department of Education is working to abolish gifted programming due to the perception of elitism. Entrance into gifted and talented education (GATE) programs is dependent on a single, high-stakes exam given to 4-year-olds. Critics assert that the exam measures privilege, not talent, as more well-off families often hire tutors for their preschool children (Jorgensen, 2021). Parents and other program supporters have argued that the city should respond to the high demand by increasing the number of available spots. Each year, approximately 15,000 students apply for one of 2500 kindergarten slots, with GATE programs seen as a track for admission to the city's most competitive

middle and high schools. The New York City Department of Education will spend the next year gathering feedback from communities about desired programming that is "more inclusive, enriching, and truly supports the needs of academically advanced and diversely talented students…[and] how to best integrate enriched learning opportunities…so that every student—regardless of a label or class that they are in—can access rigorous learning" (Jorgensen, 2021). This task force is an example of communication among all stakeholders and is recommended as the most effective way to provide equity for all learners.

When each state creates their own definition or interprets differently who qualifies for gifted and talented programming, identifying twice-exceptional students is even more challenging. Maker (1977) used the term "gifted handicapped" as the dual diagnosis of children with exceptional abilities and talents who also experienced physical and cognitive disabilities, necessitating special programming. Despite the removal of the term "handicapped" from modern vocabulary, the need to describe and recognize these students remains (Arnstein, 2017). "Twice-exceptional" has only recently entered the educational lexicon to describe students who are intellectually gifted and have a coexisting disability (Assouline et al., 2006). It was not until the 2004 reauthorization of the Individuals with Disabilities Education Improvement Act (IDEA) that the federal government acknowledged that a child with a disability might also have exceptional learning potential (U.S. Department of Education, 2004). The ongoing goal for legislators and educators is to find a balance between the needs of the child, the needs of society, and the benefits created for all upon the delivery of a successful education (Millman, 2007). The number of twice-exceptional students is unknown. Baum and Owen (2004) found that approximately 300,000 twice-exceptional students attended public schools in the United States in 2004. In 2015, Assouline et al. placed the number closer to 385,000. The most recent data from the U.S. Department of Education, National Center for Education Statistics (2021), showed 7,282,000 students served under the Individuals with Disabilities Education Act (IDEA) during the 2019–2020 school year. With an average 6% of this population also academically gifted, there would be 436,920 twice-exceptional children in U.S. schools.

Barriers to Proper Identification and Services

The masking effect is a significant phenomenon that complicates identifying and supporting twice-exceptional students with appropriate interventions (Pfeiffer, 2013). Masking can occur in three major groups of twice-exceptional students:

1. The first group identifies as gifted by demonstrating high IQ or high achievement; however, these students could have subtle learning disabilities not yet recognized.

2. The second group includes those who are both gifted and have a learning disability, with neither quality identified because the gifts and disability mask one another.
3. The third group is students with an identified learning disability who are also gifted yet only classified for what they are unable to do, leaving their potential unrecognized. (Foley-Nicpon et al., 2013; Reis et al., 2014; Wormald et al., 2015).

It is a mistake for professionals to continue to incorrectly assume that exceptional academic ability and learning difficulties are mutually exclusive when both are present. In the next chapter, Piske and Collins further postulates the intersectionality of disabilities and giftedness as coexisting learning exceptionalities. They offer a visual representation for how these intersections of a student's exceptional ability (EA) and exceptional disability (ED) threaten appropriate identification and services. Each of the circumstances described result in either one exceptionality dominating the other and thus minimizing it, both masking the other, or both evident and adequately identified. Implications for educators are discussed in each of the four highlight cases.

The expectation in the school setting is that school psychologists and teachers have the most knowledge about growth and development; however, research indicates otherwise. In a survey of 300 U.S. school psychologists, Foley-Nicpon et al. (2013) found that only 39.86% reported moderate to considerable familiarity with twice-exceptionality, whereas 60.14% had little to no familiarity. The enormous diversity that exists among gifted students is not recognized when professionals have little to no familiarity with twice-exceptionality and the primary means of identification is through global or composite standardized test scores. These two factors increase the potential to perpetuate discrimination against students, preventing them from receiving targeted interventions and challenging curriculum. In addition, gifted students who enter the school year having already mastered at least half of the grade-level curriculum, experiencing boredom and frustration, can lead to low achievement, despondency, or unhealthy work habits (NAGC, 2016). Like gifted youth, twice-exceptional students have an asynchronous developmental trajectory regarding their academic and psychosocial development (Silverman, 1997).

Asynchronous development is the mismatch among cognitive, emotional, and physical development in gifted individuals where development occurs unevenly across skill levels. In addition to uneven development, asynchrony includes "complexity, intensity, heightened awareness, risk of social alienation, and vulnerability" (Silverman, 1997, p. 36). For example, intellectual skills can be quite advanced while fine motor or social skills are delayed (Morelock, 1995; Silverman, 1997; Webb et al., 2007). It is this asynchrony that makes these youth deviate from the typical student population (Terrassier, 1985). Meisgeier et al. (1978) identified the unique emotional needs of students who face a marked discrepancy between their strengths and their disability manifesting as low self-concept. The irony is that for twice-exceptional students, academic success is closely tied to social and emotional development (Foley-Nicpon, 2016), yet the primary focus remains on academic success (Arnstein, 2020).

Gifted and twice-exceptional students exhibit asynchronous development (Tolan & Piechowski, 2013) contributing to a sense of increased vulnerability due to feeling out of sync with others. They may also feel vulnerable when their emotional maturity may appear advanced at times and immature at others (Silverman, 1993). It is due to this asynchronous development that the whole-child approach is needed for twice-exceptional students to thrive and reach their potential. The whole-child approach "recognizes the interrelationships among all areas of development and designs school policies and practices to support them... All aspects of children's well-being are supported to ensure that learning happens in deep, meaningful, lasting ways" (Darling-Hammond & Cook-Harvey, 2018, p. 1). This broad approach to education was curtailed to align with the new priorities of raising academic achievement through student test scores during the No Child Left Behind (NCLB) era.

Despite children exhibiting giftedness across all racial, ethnic, and income levels, they remain underrepresented in gifted and talented programs. As psychology, education, and policy professionals have noted, implicit bias directly affects the under identification of twice-exceptional students for gifts and talents (Coleman et al.; 2021; Worrell, 2013) and the overrepresentation of students of color in special education programs (Collins, 2021). For culturally diverse learners, "If disabilities are not addressed, their academic performance may become a barrier to their eligibility for gifted services" (Woods & Davis, 2016, p. 2). In addition to implicit bias in the referral process, outdated professional training, lack of teacher support, and policy lagging behind research are the major factors preventing identification.

What Is Multi-exceptionality?

Multi-exceptionality is defined as an individual with high learning potential and one or more concurrent special educational needs due to a learning difference or disability. In many countries, dual or multiple exceptionality (DME) refers to a student who is both gifted and has multiple learning disabilities that follow comorbidity patterns. Multi-exceptionality is more than defining a student with two or more learning disabilities in addition to giftedness. The disability, or learning difference is one exceptionality, giftedness is another, and belonging to a group outside of the majority (race, class, ethnicity) within society would constitute the third defining exceptionality. This third exceptionality can be language or economic differences or other social barriers such as the parents' level of education that can influence their child's academic success (Woods & Davis, 2016). The intersectionality framework (Crenshaw, 1989, 1991) is primarily concerned with issues of inequality, power, and politics. This framework highlights the complexities of discrimination that occurs as a result of two or more identities.

A New Social and Emotional Perspective: Thrice Exceptional (3e)

Particularly vulnerable are gifted and 2e students who belong to a historically marginalized ethnic group, including Hispanic, African American, and Native American (Johnsen, 2011). If gifted students' abilities and interests are not aligned with their cultural values (e.g., racial or ethnic group) values, children will struggle to have their giftedness accepted by society and members of the subgroup (Gollnick & Chinn, 2012). Multi-exceptional students encounter difficulties developing social capital within the gifted, learning differences/special education, and cultural identity subgroups. The more areas, or exceptionalities, different from the dominant culture, the more likely the gifted student will display characteristics outside the norm of the dominant culture, thereby preventing identification (Johnsen, 2011).

Underrepresentation in gifted and talented programs is due to four major factors: (a) exclusive definitions of giftedness requiring students to score a superior performance on a single standardized test, (b) the negative perceptions or misperceptions teachers hold that prevent them from recognizing the gift or talent; (c) issues of test fairness, such as the characteristics of the norming population (building versus state or national norms), norming on White populations that reflect middle-class backgrounds that assume all students have an equal opportunity to learn; and (d) standardized test item bias, and language demands within the test (Johnsen, 2011; Mayes & Moore, 2016; Orlinsky, 2010). Standardized tests have been shown to be poor instruments to assess overall academic potential in African American students (Ford & Helms, 2012).

Society is at an intersecting moment in time, considering equity issues in education, policing, and inclusion. Researchers need to consider a different theoretical framework to understand human development and the systems in which it occurs. This chapter proposes using a systems-level framework to understand the intersectionality of school, family, culture, economic structures, and social constructs, such as race, gender, giftedness, and disability.

Socially Framing Twice Exceptionality: Bronfenbrenner's Bioecological Model and Theoretical Framework

Humans are multifaceted creatures shaped by external and internal influences that drive personal growth. To refer to a child as a twice-exceptional student is to ignore the multitude of factors that influence growth and development. Children are more than the labels assigned to them. A holistic approach is required to understand the multiple identities and systems with which students bring to the classroom each day. Bronfenbrenner's bioecological theory of human development utilizes a holistic approach to understand potential and child development while emphasizing an awareness of the interactive and cooperative nature of relationships. Bronfenbrenner's

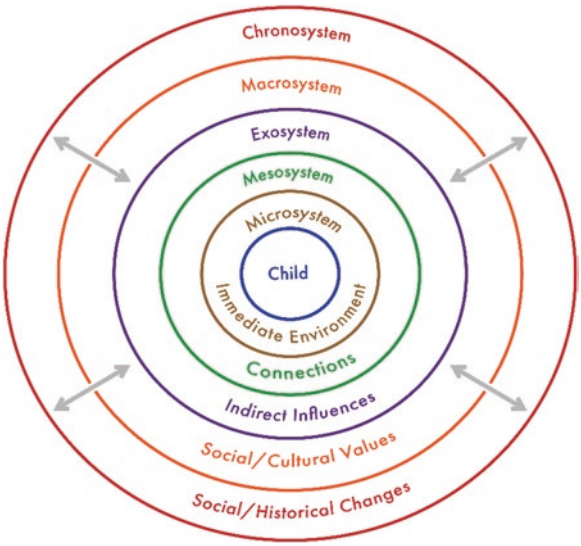

Fig. 1 Bronfenbrenner Bioecological Model of Human Development. (Source: Guy-Evans (2020). Reprinted with permission. https://www.simplypsychology.org/Bronfenbrenner.html)

(2005) bioecological model (see Fig. 1) allows educators and parents to understand the interconnectivity of biological, psychological, social, and cultural factors influencing child development (Foley-Nicpon & Kim, 2018). It is a means to examine how the exceptionalities of giftedness and disability within other social constructs such as race, class, and gender, intersect and influence these students' developmental outcomes.

Figure 1 shows five interrelated systems (micro-, meso-, exo-, macro-, and chrono-) that influence and form *Context* for human development. The child is affected by the interaction of the bidirectional movement of each environmental system. Bronfenbrenner's (1979) early work, defined by expanding concentric circles representing the increasing interaction between environmental systems, facilitated understanding of the contextual and environmental influences on child behavior (Wasik & Coleman, 2019).

Although the chronosystem represents changes that occur over time, the macrosystem comprises broader cultural beliefs, attitudes, and behaviors as well as far-reaching current events such as migration patterns and ongoing social strife. One example of a migration pattern in the macrosystem is the climate and geopolitical struggles in Central America, forcing many to seek asylum in the United States. Another example of social upheaval and racial reckoning occurred after the murder of George Floyd, solidifying the Black Lives Matter movement that has articulated the need for change to create a more inclusive society. It is critical to note that race, class, and gender are merely social constructs within the macrosystem, but have powerful impact on a child's development. Socially constructed labels are more than individual identities or experiences; they are a consequence of cultural beliefs and attitudes, which serve as the fabric of social structures woven into society and fosters systemic forms of inequality (Andersen & Collins, 2016).

The exosystem encompasses the people and institutions that preserves or challenges the social structures. These include the local and national economy, political system, educational system, local and national government, and religious affiliations. Local politics, neighbors, and mass media as well as the local police and school district are a part of the exosystem. An example is mass media's enormous influence on children and their self-concept, which automatically disadvantages historically marginalized group within the macrosystem. Next, the mesosystem represents the interactions among various variables within microsystem, which are the settings in which the child lives (i.e., family, school, playground, peers, and religious affiliation, etc.). An example of the mesosystem would be the systematic open dialogue that occurs between school personnel (e.g., teachers, staff, administration) and the family.

Impacted by the previously mentioned systems, the interconnected nature, or intersectionality, of the variables within them as they apply to the development of the child can create overlapping and interdependent systems of advantage or disadvantage. By the early 1990s, Bronfenbrenner proposed the process-person-context-time model, with the child seen as influencing and influenced by the environment (Bronfenbrenner & Morris, 2007). In 2005, the original term *ecological model* was replaced with *bioecological model*, asserting that the child played an essential role in his or her own development by initiating and responding to persons, objects, or symbols in the immediate environment (Tudge et al., 2009). This implies that the proximal processes are the most critical, having the greatest influence on the child's development, and consequently should receive the most attention. As early as 2000, VanTassel-Baska recognized that ecology – relationship between biological (child) and environmental (microsystem, exosystem, and macrosystem) factors impact the manifestation of giftedness. More importantly noted, it is the relationships between the Process-Person-Context-Time that plays the crucial role in human development.

Case and point regarding exceptionalities, a twice-exceptional student who may be viewed as advantaged due to their giftedness and talent (Person) possesses potential, which can only be stimulated and nurtured through *proximal processes* of engagement in interactions or activities (e.g., learning a musical instrument) with someone in their immediate proximity (e.g., a sibling or teacher) on a consistent basis (Time) (Foley-Nicpon & Kim, 2018). The Person, illustrated by the personal characteristics and talent that individuals bring with them into any social situation, are further divided into three types: demand, resource, and force. The first type, *demand,* are those characteristics (age, gender, race, and physical appearance) that may influence initial interactions with another person because of immediate expectations, bias, or stereotype. The *resource* characteristics are not immediately evident and are comprised of mental and emotional resources such as past experiences, skills, and intelligence, and also to social and material resources (access to healthy food, housing, caring parents, healthcare). The third type, force, refers to temperament, motivation, and persistence (Foley-Nicpon & Kim, 2018; Tudge et al., 2009). All three of these personal characteristics that make up the individual (Person) interact within the environment, or Context, and influence development. To illustrate these characteristics, Context must be taken into consideration. For example, two 10-year-old (*demand*) twice-exceptional students both living with intellectual

giftedness in mathematics and attention deficit/hyperactivity disorder (ADHD; *resource*), from the same neighborhood and apartment building (*resource*), with variable motivation (*force*), could very well have different developmental trajectories (Foley-Nicpon & Kim, 2018). These students may have different teachers where one is focused on behavior and the other is focused on student strengths.

Leveraging Family–School Relationship to Strengthen Interdependent Systems

Cultural perceptions of gifted and talented might not align with the dominant culture's view of the gifted and talented programming a school district offers (Lewis et al., 2012). It is incumbent on the school district and educators to establish a common understanding of giftedness to gain family and community support. Often extolled and promoted yet rarely practiced, communication is the key to successfully strengthening and building family–school relationships specific to race, class, language, giftedness, and disability. The communication must be bidirectional where parents, teachers, and team members supporting the twice-exceptional student value the information each can provide.

Arnstein (2020) conducted a qualitative collective case study to examine the perceptions of developmental transitions in preadolescent twice-exceptional students. In the interviews with parents, she confirmed the findings of Besnoy et al., where initially, parents were eager to work with school officials. Parents in both studies reported that they lived in a "good school district" and felt confident that educators and school administrators would help nurture their twice-exceptional child's gifts (Arnstein, 2020; Besnoy et al., 2015). As reported, parents in the sample groups from several studies, believed school officials would ease their anxiety by delivering appropriate support for their child's disability while providing a challenging curriculum to stimulate their child's giftedness. Many parents struggle with contradicting education professionals and share negative experiences when trying to convey their child's needs to school personnel (Neumeister et al., 2013).

Communication can serve as both an unexpected barrier and support for gifted and twice-exceptional students (Arnstein, 2020). There are three key areas where communication between school and family acted as an unexpected barrier, hindering developmental transitions in preadolescent twice-exceptional students. The first is the lack of oversight to ensure accommodations were implemented with fidelity in the classroom and school environment. Second was the lack of patience for student asynchrony (physical, emotional, and social development) displayed that did not match their age peers. Finally, previous negative school experiences for the twice-exceptional student led to issues of refusing to go to school (i.e., "school refusal") and instances of bullying by peers and adults.

Communication as a barrier to development emerged in both obscure and obvious ways. Inadvertent communication between the school and family occurred daily

as students received messages from the broader culture (macrosystem) about what success and giftedness should look like (Arnstein, 2020). Communication can begin with a diagnosis regarding learning differences, which can be devastating for parents and caregivers, even under the best conditions. If school psychologists conduct the testing, they can set the tone to strengthen the family–school relationship from the outset, using a positive frame, providing resources, and including the parent as an integral member of the team. Parents can provide key target areas for improvement, valuable information about their child's interests, and additional perspectives on their child's strengths and challenges.

One individual interviewed for Arnstein's (2020) study was "Mr. Clark," a teacher for 8 years. Arnstein observed,

> In his early years of teaching, he thought that communication was overly time-consuming and did not see the value. Today, he stresses the need for teachers to be proactive about communication with parents and other teachers. Twice-exceptional students frequently miss social cues, putting teachers and parents in the position of having to notice those cues. Frequent communication between the team gives teachers the ability to create an environment for scaffolding individual students based on their needs. (p. 207)

Another finding from Arnstein's (2020) study confirmed that effective communication between the family and school is bidirectional. Assessments are another form of communication between the student and school, whereby teachers can gather information, such as environmental preferences and student-determined goals. Social-emotional language is a type of communication that strengthens the family–school relationship. The school–parent team must discuss the language they use at home and school to discover what is most effective for that student. As teachers determine the level of language, parents can use the same phrases and levels at home to provide consistency and stability. Psychologist, Dr. Dan Peters, shared that individuals with the ability to be social can observe and see what is going on around them. Even without having the words for the action, students can copy social behavior without language. Peters asserted, "Language often helps to give form to all of these abilities, which is why so many of the interventions are based in language-based [therapy or] interventions" (Arnstein, 2020, p. 219). The ability to copy social behavior without language is an example of human development through the person-process-context-time model.

An open line of communication with a designated point of contact is essential for parents to know what to expect or where to look for resources if an evaluation is required. A parent might not always recognize the gifts and talents their child expresses or if a disability begins to appear, as was the case with Dr. Peters (Arnstein, 2020). Neither he nor his wife recognized their oldest daughter's struggles with dyslexia and processing issues. Teachers want to have as much data as possible, and daily communication between parents and teachers of twice-exceptional students proved an essential resource. For example, students may have growth spurts that can affect the efficacy of current medications or the asynchrony manifests where the student may perform poorly due to anxiety in one subject but excel beyond grade level in another.

Strengthening the family–school relationship is possible through several avenues. Collaboration among the team is key to success for twice- and multi-exceptional students. In addition to individualized education programs, psychological reports, and IQ test results, parent anecdotes and goals are critical, providing different perspectives to determine the most appropriate and beneficial accommodations. In addition, for a multi-exceptional student, determining English language proficiency, identifying past school experiences, and gathering data from the microsystem can help educators provide a culturally responsive, strengths-based learning environment. Also helpful could be simple acts such as displaying images of successful people throughout history believed to be twice-exceptional. When twice- and multi-exceptional students see role models, they can visualize a successful path to persevere, avoiding emotional problems, depression, and underachievement.

For the multi-exceptional student, strengthening the family–school relationship requires school and district leaders to utilize culturally responsive programming and invite diverse families to participate (Ford, 2013). As educational leaders focus on student success, Davis (2014) recommended effective engagement mindful and respectful of cultural differences, with schools soliciting feedback from the families of culturally diverse learners to improve school programs.

Conclusion

Foley-Nicpon and Kim (2018) considered both Bronfenbrenner's (2005) Bioecological Model and Subotnik et al.'s (2011) Talent Development Megamodel (TDM) when they suggested the "importance of sociocultural and historical factors that influence the ability identification, opportunity, and psychosocial skill development among twice-exceptional students" (p. 20). Bronfenbrenner's macrosystem encompasses broader cultural beliefs that include societal and institutional values, ideologies, attitudes, and behaviors that can have a powerful bidirectional impact on a child's development. When gifted identification is limited to single consideration of referrals (teacher, parental, self, etc.) without additional resources such as universal screening and local norms, the macrosystem can serve as barrier preventing twice-exceptional students full benefit of elements outlined in the talent development megamodel. Likewise, Subotnik et al.'s TDM model notes development of performance as a growth development trajectory and insinuates there exists a given baseline toward access to opportunities that lead to attainment of competencies that can be nurtured into a level of expertise and creative productivity. I contend, however, when gifted or talent identification is limited to a talent development model alone, it relies heavily on the matching of innate or latent talents to a complementing environment and opportunity. Yet, a consideration of both takes into consideration a more comprehensive and interdependent systems model for development, and consequently identification of strengths and struggles that is considers environment, individual positionality, and cultural/societal values.

All of these factors should be considered in terms of "the relationships between learners, educators, parents/guardians, communities, and/or immediate and indirect sociocultural contexts, as well as the histories in which they are situated" (Foley-Nicpon & Kim, 2018, p. 351). It is this statement that the editors of the text situate critical issues with servicing twice-exceptional students as well as frame the challenge to scholars for further research grounded in global perspectives such as those presented in this text. Effectively and appropriately servicing students of multicultural identities with twice- and multi-exceptionalities does not lie in understanding a single theory or concept, rather it requires an integrated systems approach. Cairney (2013) refers to this approach as "super-synthesis" where insights of multiple theories, concepts, or models are combined to create a new theory. Bring this book full circle, the last chapter of this text features my introduction of "Spiral Theory of Development" which does just that.

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The Complexity of Twice Exceptionality and Its Educational Implications

Fernanda Hellen Ribeiro Piske and Kristina Henry Collins

Abstract As a conceptual backdrop for the book, this chapter aims to uncover the most relevant and the most current research that highlight factors that contribute to possible misunderstandings about twice-exceptionality as well as the educational implications and recommend practices to positively affect twice exceptional students' comprehensive educational experiences**.** Twice-exceptional (2e) students are those who have exceptional abilities and disabilities. The complex nature of twice exceptionality requires that all educational professionals are trained to recognize and address all characteristics that may occur due to the lack of appropriate identification in terms of both the students' exceptional abilities and the student's exceptional disabilities. This is particularly important when one of the student's learning exceptionalities dominate, overshadow, minimize, or make invisible the other learning exceptional; practices and interventions, in these cases, will inevitably dismiss the causal relationship between any adverse outcomes influenced by the minimized exceptionality. The authors conclude, in order to unveil the complexity existing in twice-exceptionality and to provide a quality education to these students who remain invisible, it is essential to have more scientific research that investigates how to identify and serve twice-exceptional students effectively.

Keywords Intersectionality · Twice-exceptionality · Learning exceptionalities · Giftedness · Misdiagnosis · Social and emotional learning

Baldwin et al. (2015) suggested that twice exceptional students are those that have exceptional skills and disabilities. This oversimplified understanding of the term 'exceptional' limits it to a single definition of "better than average; superior", and dismisses that 'exceptional' also means "deviating from the norm such as having

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above or below average intelligence and physically disabled" (see Merriam-Webster Dictionary https://www.merriam-webster.com/dictionary/exceptional). The latter, more comprehensive consideration of the term 'exceptional' which is more appropriate in an educational setting, creates a complex set of circumstances.

Pfeiffer (2015) offered a more comprehensive characteristic of twice exceptional students to include those who have, simultaneously, high capacity and a disability or disease; the author also pointed out that the coexisting disability can be physical, medical or psychological. The term 'capacity' most relevant to this context refers to "mental or physical ability (aptitude/skill); the faculty or potential for treating, experiencing, or appreciating; and/or the facility or power to produce, perform, or deploy (capability; also maximum output)" (see Merriam-Webster Dictionary, https://www.merriam-webster.com/dictionary/capacity). While this definition is more comprehensive in characterizing exceptionalities, it also relies on recognizing and understanding how 'potential' might manifest itself since, by definition, the students need only to possess the faculty or facility to perform. Even more, this potential must be teased out among coexisting disabilities.

Assouline et al. (2009, 2011) more specifically stated that twice exceptional individuals are those that are identified as 'gifted' and have other special needs at the same time (Assouline et al., 2009; Assouline & Whiteman, 2011). In this context, giftedness is the primary exceptionality identification with a consideration for extended educational services within the protected domain of special education to meet the other exceptional needs of the gifted student. As such, many professionals outside of the gifted and talented (G/T) domain may not be familiar with the term twice exceptional. In addition, while there is an appropriate focus on comprehensive educational services is a benefit, a major issue remains - the G/T community is fraught with inconsistent definitions of 'giftedness', and subsequently, controversial policies and practices related to equitable measures for identifying gifted students. According to Foley-Nicpon et al. (2013) gifted, twice exceptional students have needs that are usually met in special education environments or environments dedicated to servicing gifted students. However, when these students are not identified they attend school within the general population and are not adequately serviced at all.

Evident by the above discussion, twice exceptionality, also referred to as 2E, is very complex. We characterize twice exceptional students, within a cognitive context, as those who exhibit at least two or more polarizing learning exceptionalities on a continuum of abilities ranging from varying degrees of above grade level to below grade level. This definition will serve as the foundation for shared understanding as this chapter aims to uncover the educational implications and recommend practices that contribute to twice exceptional students' comprehensive education. Twice exceptional research, common traits of 2E students, and known misunderstandings and misconceptions about twice exceptionality are highlighted.

Framing Twice Exceptionality's Educational Implications

The complex nature of twice exceptionality requires that all educational professionals are trained to recognize and address all characteristics that may occur due to the lack of appropriate identification both in terms of the students' exceptional abilities and the student's exceptional disabilities. We postulate that the intersectionality of learning exceptionalities must be considered rather than merely recognizing that they coexist as polar opposites. Academically speaking, Fig. 1 illustrates each of the following circumstances that may occur for students with learning exceptionalities. In all of the circumstances, there exists a threat for lack of identification, misidentification, and/or misdiagnosis to take place, and inadequate referral for educational services.

Teacher training programs in gifted education, general education and special education, alike, often lack explicit guidelines for meeting the needs of twice exceptional students. Effective strategies lie within a shared responsibility, and require collaboration between different areas of expertise in teacher education and student services. Recommended practices that contribute to comprehensive educational services for 2E students must be informed not only by current research (within 10-11 years), but also address the persistent gaps in the research that have limited the teacher training programs and created inadequate educational services.

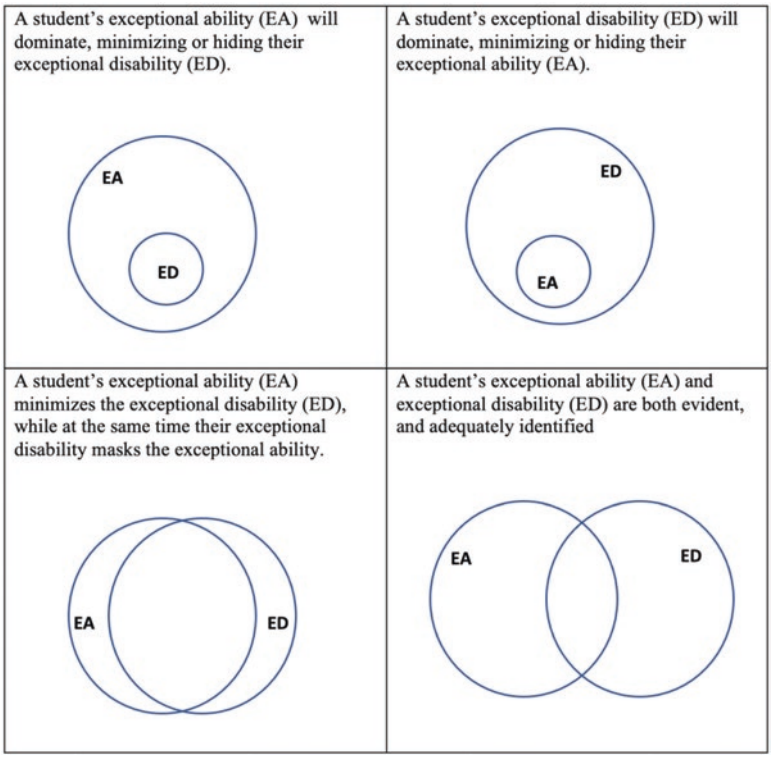

Fig. 1 The intersectionality of learning exceptional abilities and disabilities

Social and Emotional Context

The cognitive implications within a social and emotional context are important to also understand. Many times, the complexity of 2E is grounded within social norms and expectations of how the student should manifest giftedness and/or learning disabilities. Socially speaking, gifted, 2E students fall into three common performance categories (Baum et al., 2017; see also Beckley, 1998):

1. Gifted, 2E students whose level of success is below expectations - They may be diagnosed as gifted, but also exhibit learning challenges. These children may experience little academic accomplishment, and maintain a weak academic perception of themselves. Perceived insufficient motivation and indolence are often noted as the reason for the learning challenges that they experience and therefore they are not diagnosed with an exceptional disability. Circumstances become tougher over time, and increased academic challenges give rise to other learning difficulties.
2. Gifted, 2E students whose strengths are ignored - They may be diagnosed with learning difficulties, and even though characteristics of giftedness may be observed it is not explored or considered. Typically they will not be explored because assessment data and test measurements made on the students may show low IQ scores and/or analysis of intellectual data is considered insufficient. These students are evaluated based on a deficit lens – they stand out at first sight not for their talents, but for what they cannot accomplish.
3. Gifted, 2E students who are performing, at least minimally, on-task or at grade level – These students are not identified as gifted or being serviced for learning disabilities - They are services in the generalized classroom, and do not stand out one way or the other. These children are considered not to have the skills required for the services offered to gifted children. Their performance may borderline, which, incidentally, may be considered below their potential, but not enough to be considered a learning disability. This generates immense complexity.

Research has revealed that five (5) factors contribute to underlying student cognitive growth; these are psychological security, tolerance for asynchrony, time, positive relationships and the consistent use of a method based on strengths and focused on philosophy talents (Baum et al., 2014). In their 2014 study, Baum and colleagues sought to understand the experiences of a group of 2E students who entered a private high school based on their strengths and successfully completed graduation requirements. Using a case study approach, the researchers analyzed data collected in interviews with students and teachers, parent focus groups, educational records and psychological reports. The results indicated that there were areas of change and development in cognitive, social, emotional, and behavioral domains. The data also revealed four benefits from talent development opportunities offered by the school. Participation in talent development activities allowed students to become part of a social group; overcome some social, emotional and cognitive challenges in the

context; develop continuous mentor and professional relationship with people in the areas of talent; and develop expertise in a talent area. The research by Baum et al. (2014) supports the incorporation of a social and emotional approach to cognitive development based on strengths and focused on individual talent for twice exceptional students.

More Recent Research About Twice Exceptionality

In 2015, Pfeiffer's research on twice exceptionality revealed growing academic literature about exceptionality. It is important to note, however, that included only a small number of empirical research carried out with gifted students who presented anxiety, depression, bipolar disorder, attention deficit/hyperactivity disorder (ADD/ADHD), eating disorders, behavioral problems, and/or physical or sensory disabilities. There is still a need for more scientific research on this topic, which still remains incipient in several contexts. This is particularly important when one of the student's learning exceptionalities dominate, and minimize or make invisible the other learning exceptional; practices and interventions, in these cases, will inevitably dismiss the causal relationship between any adverse outcomes influenced by the minimized exceptionality. More so, there is no research that indicate that a student is served in general population education setting as a result of masked exceptional ability and minimized exceptional disability; this circumstance is typically discussed within the context of issues related to recruitment and retention within gifted education.

Dominant Exceptional Abilities and Minimized Exceptional Disabilities

Ritchotte and Zaghlawan (2019) investigated the impact of training and guiding parents to use a higher-level questioning strategy during shared reading time at home on their 2E child's expressive language. Four parents were trained to use higher-level questions, based on Bloom's revised taxonomy, with their children in domestic settings during a shared reading routine. The single-case multiple-poll project was used to examine the parents' ability to learn and implement the higher-level questioning strategy. The results indicated that all parents were able to learn and implement the strategy, and the complexity (demonstrated level of Bloom's taxonomy) of expressive language for each child's responses increased. In addition, these findings have been maintained over time and have demonstrated that single case research can be used with gifted student populations to establish causal relationships between interventions and significant results.

Dominant Exceptional Disabilities and Minimized Exceptional Abilities

Gallagher (2009) found that "twice exceptional" students can be clearly gifted and have learning difficulties, with specific blocks in auditory or visual perception or the ability to master some mathematical processing or even spelling. Other students were identified as having Asperger's syndrome, a form of mild autism spectrum disorder (ASD) that interferes with the development of social and communication skills. Twice exceptional students whose disabilities dominate need to have individualized education plans to help them reduce their disability and leverage their high ability skills for more effective use. For example, gifted students with visual or hearing impairments that affect capacity for learning have achieved impressive results when recognized and stimulated appropriately.

Ng et al. (2016) considered that twice exceptional students are characterized by the almost paradoxical combination of giftedness accompanied by learning difficulties that hinder their ability to reach their potential in a traditional academic environment. The authors conducted a qualitative study that examined the experiences of three twice exceptional students during transfer to a New Zealand high school from middle school. The findings were triangulated using student interviews, student journal entries, and the experiences of student participants in the transfer process. Successful transfer (academic success) was shown to depend on factors such as timely delivery of accurate and complete student records. Persistent barriers to successful transfer resulted in interruption of curriculum continuity, which was especially detrimental to students with special needs. These results suggested that the way in which twice exceptional students experienced transference influenced the development of their personal abilities as students in the educational environment.

Akar and Akar (2020) conducted a qualitative, case study on the educational and daily life of a gifted individual with albinism. The objective of this study was to examine the difficulties faced by this twice exceptional individual in his educational life, and how these difficulties were overcome. The research data were collected through semi-structured interviews conducted with the gifted individual, his mother and one of his friends. Data analysis revealed four distinct themes: (1) difficulties due to visual impairment and strategies to face them, (2) difficulties experienced by physical disadvantages and ways to overcome them, (3) being gifted, and (4) socio-emotional difficulties. More specifically, the twice exceptional individual, who has visual impairment due to albinism (90%), completed his formal K-12 education without attending inclusion classes, and encountered many specific difficulties related to being legally blind. The authors explained that the participant did not receive any gifted and talent development support as part of his educational services, and also faced many pyscho-social difficulties because of the distinct physical difference from others that individuals with albinism have. However, the data revealed that the support of the gifted individual's family throughout his K-12 educational process was a very influential factor that played a critical role in shaping the educational success for the twice exceptional individual.

Adequately Identified Exceptional Abilities and Exceptional Disabilities

Neumeister and colleagues (2013) used grounded theory to investigate the perceptions of primary caregivers about the role they play in influencing the academic success of students formally identified as twice exceptional. The interview data were coded and analyzed by themes. The results indicated that the primary caregivers (mothers) realized that they played an important role in the academic success of their 2E children, recognizing their children's gifts as well as their disabilities and then taking responsibility for the development of their student's potentials. They sought professional assessments, provided or secured educational support, shaped their children's healthy perceptions of their disabilities, taught them how to advocate for themselves, and maintained high expectations for their children, despite their disabilities.

Willard-Holt et al. (2013) carried out a mixed methods study to investigate the perspectives of twice exceptional students on learning strategies that were recommended for them in the literature based on and informed by previous research on effective 2E learning strategies. Participants, between the age of 10 and 23 years, represented students with a wide range of coexisting exceptionalities. The authors polled students about implementation of recommended learning strategies presented in the literature, including their perception of the benefits to help them learn. The in-depth interviews provided rich descriptions of which learning strategies that 2E students considered to be facilitators and barriers for learning and academic success. The results indicated that participants realized that their general school experiences did not help them to learn at full potential, although they could use their strengths to overcome their weaknesses. Willard-Holt et al. (2013) pointed out educational implications that allowed twice exceptional students to have more mastery over their learning and more choice and flexibility in the topic, learning method, assessment, pace and implementation of group collaboration.

Common Traits of Twice Exceptional Students

Observing and identifying the common traits of twice exceptional students can help in the diagnosis of these students for specialized care and appropriate educational services. In order to maximize their strengths and manage their weaknesses as determined within the academic settings, precision is needed to avoid misdiagnosis. Table 1 highlights a synthesized list of academic, cognitive, intrapersonal and interpersonal traits that twice exceptional students commonly present at school (see Coleman 2005; Higgins, 2012; Trail, 2010).

It is the intersectionality of the exceptional abilities/skills and the exceptional disabilities/difficulties that twice exceptional students possess that contribute to these common traits. Common traits such as difficulty in expressing feelings or

Table 1 Common academic, cognitive, intrapersonal and interpersonal traits of 2E students

Descriptions of Commonly Presented Characteristics	Categorical Traits		
	Academic Traits	Cognitive Traits	Intra-personal and Interpersonal Traits
Diversity traits (neutral)	Creative problem solver Autodidactic (ability to successfully teach one's self) Extraordinary perceptions and/or abilities in one or more areas Possesses a wide range of interest Possesses a variety of unequal academic skills	Slow processing speed and/or Long attention span when working in areas of high interest Passionate about areas of interest Enjoys codes, puzzles, games of strategy Unusual imagination	Has a good sense of fairness and understanding of other people's emotions Perfectionist Self-critical Lacks self-representation skills, among others Often believes that success is due to "luck" Sometimes prefer to be isolated from peers
Strengths (perceived positives)	Likes to explore wide ranging, often esoteric, subjects Responds well to academic flexibility and self-directed learning Demonstrates superior spatial skills	Fully focused and invested in areas of interest Approaches problems with fluency and automaticity Strong metacognitive (thinking about their thinking) skills Superior verbal and communication skills, compared to others. Advances fast in learning, especially in your areas of interest	Moved by people's feelings and tries to understand the situations Likes to make friends and understand the emotions of others Put himself or herself in the shoes of others and try to help people

Challenges (perceived negatives)	Appears to be/looks apathetic/ unmotivated and lacks academic initiative poor handwriting and problems completing paper and pencil tasks Avoidance of school work and often fails to complete assignments Difficulty expressing feelings or explaining ideas or concepts Extreme confusion or mismatch with work and/or job expectations	Unable to think in a linear fashion Deficits in auditory processing, and difficulty in following verbal instructions Deficits in executive functioning within planning, prioritizing and organizing Easily distracted - unable to maintain attention or demonstrates problems with short-term memory Problems with sensory integration Shows discrepancy between standardized test scores and academic success on individual assignments	Easily frustrated, quickly gives up on tasks Highly sensitive to criticism High levels of anxiety and/or depression Afraid of making a mistake or denies problems, blaming others for mistakes and problems Behaves impulsively Sometimes expresses lower self-esteem and self-efficacy, compared to others Sometimes may have difficulty in relating to colleagues, deficient social skills and/or antisocial behavior Does not participate in peer or school activities Cannot read social cues

explaining ideas or concepts, extreme confusion related to work or job expectations, appearance of apathy, perceived lack of motivation and academic initiative, a wide range of interests, having advanced vocabulary compared to other cage-group peers, and so on can certainly confuse educators and families of 2E students Presentation of high capacity, intellectual potential, and academic achievement concomitantly accompanied by deficiencies creates a complex learning situation.

Misconceptions and Misdiagnosis of Twice Exceptional Students

Twice exceptional students can easily be perceived and mislabeled as a student with low academic performance or a student with a disability only because their exceptional abilities and potential are masked (Assouline & Whiteman, 2011). To clarify, it is important to understand some frequent and common mistakes. It is a mistake to think that a student with good grades does not have the right to receive special education services. Despite having good grades, the student may have some associated disability. Each student needs to be assessed in full. Schools cannot use any single measure or assessment as the sole criterion for determining whether a child has a learning exceptionality, and for the purpose of determining an appropriate educational program for the child (Akar & Akar, 2020; Assouline & Whiteman, 2011; Willard-Holt et al. 2013).

Some teachers think that it isn't possible for a student to be gifted and have learning difficulties. Being gifted does not mean that the student will always excel in cognitive development for every area of knowledge. Understanding the needs of gifted, 2E students is not always easy because their potential and talents can, in some ways, hide their learning disabilities. In this sense, it is essential to prepare curriculum and teaching modalities that address both high capacity and learning disability. Many educational policies and practices will often, without any supporting research, refuse to give a student access to advanced learning opportunities if the student demonstrates an area of difficulty; there is a misconception that we must address and alleviate the student's areas of difficulty before having access to advanced learning opportunities. Students do not necessarily need to master all basic skills before having access to a high level curriculum and instruction. Instead, a strengths-based approach using an advanced curriculum with support and adaptations is more likely to result in higher performance.

Another issue is to erroneously think that all gifted students are self-motivated, and academic achievement occurs without much effort. Motivation is crucial to the development of every student. If a student does not feel that they are being encouraged, they may also have some social and emotional difficulties. In addition, if academic support is insufficient, the student may develop low self-esteem and be less willing to take academic risks. Contrary to that, when receiving necessary support, students feel understood by their teachers, and are motivated to take academic risks.

Finally, another common mistake is that educators consciously or unconsciously treat students with learning exceptionalities as if they develop cognitively and emotionally synchronously and at the pace, even when they are aware that they do not. Gifted. Twice exceptional students can have advanced intellect, but are considered immature, both socially and emotionally. As such, it should be emphasized that education professionals should attend to 2E hypersensitivity, executive functioning skills, and social-emotional skills, in order for students to maximize school performance.

Final Considerations

There are several detrimental mistakes that can be made if educators are not prepared to address different situations that arise when teaching twice exceptional students. In the current educational context, it is evident that, in most cases, teacher training programs that work with twice exceptional students, lack research-based practices to properly identify and serve them. Unfortunately, research on twice exceptionality is very limited, and still needs to advance in relation to practical strategies that will assist in the specialized care and educational service of 2E students who need to maximize their exceptional ability/skills while also managing their exceptional disabilities.

It is recommended that professionals who work with 2E students are very cautious, and seek information from scientific research to contribute to their development of educational services for students. It is important that families of 2E students are guided by trained professionals who understand identification and adequate care related to twice exceptionality, both for these students to advance in learning and to attend to their learning exceptionalities.

Current research indicates, in general, that the sooner the special needs of twice exceptional students are identified and met, better results will occur in the cognitive, social and emotional development of these students. However, there are only a few qualitative and even less quantitative research about twice exceptionalities. Scientific research needs to move forward showing more data with larger samples to help in the identification and assistance of servicing 2E students.

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Bibliographic Review of 2e Literature and Application in Argentina: The Children's Area of the Neuropsychology Service

Paula Irueste and Martina Gianola

Abstract In Argentina there are scarce scientific developments about twice exceptionality (2e). In this chapter we share key research from a bibliographic review of the literature that was conducted to further develop the theoretical compilation needed to advance research in Argentina. It highlights international theories and concepts that were consulted to build and frame the daily work of The Children's Area of Neuropsychology Service, (abbreviated SNPI for its Spanish translation: Servicio de Neuropsicologia Área Infantil) of the Faculty of Psychology of the National University of Córdoba (UNC), Argentina – a service aimed toward community and develops early evaluation and identification of gifted and talented children from ages, 4 to 10; SNPI develops free counseling and orientation activities for identified gifted and twice exceptional children and their families, teachers, health and education professionals, and educational institutions. For SNPI's work, the definition of twice exceptionality (2e) is adopted as the concurrent presentation of giftedness and some developmental difficulty (e.g., organic, cognitive, emotional, creativity, academic, among others) that may shutter the learning process, the reaching of high potential, and the wellbeing in the different areas where children can develop. Additional characteristics, types, difficulties in identification, and possible interventions of 2e from the literature are presented. Also briefly summarized are SNPI plans for continued research and development to promote appropriate learner engagement to offer 2e students a greater opportunity and likelihood to reach their highest potential, to experience high academic achievement, and to realize significant social and emotional relationships that privilege their integral wellness.

Keywords Twice exceptional · Early identification · Learning exceptionalities · Diagnostic confusion · Differential diagnosis · Bibliographical review

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This chapter provides the foundational literature that informed the inception for the daily work of The Children's Area of the Neuropsychology Service of the Faculty of Psychology of the National University of Córdoba (UNC), Argentina; it is abbreviated SNPI for its Spanish translation: Servicio de Neuropsicologia Área Infantil. SNPI is aimed toward community, offering evaluation for early detection of gifted and talented children from 4 to 10 years of age, who also have behavior and learning difficulties. Since its opening in 2015, the team has focused on research in the topic of giftedness in early childhood, offering scientific evidence which can further contribute to the construction of different developmental strategies to support families of 2e students in Argentina. SNPI is also a source for professional training for teachers and professionals related to the theme; it fosters an opportunity for them to build a network of interested people sharing knowledge and committed to the wellness and effective intervention of gifted children and their families.

Gaps with Conceptual Definitions

The concept of giftedness, or high abilities as we refer to it in Argentina's context and how it influenced the work of Irueste et al. (2018), does not present yet a univocal and finished definition. Nonetheless, numerous authors accord that this term is currently understood as a multidimensional phenomenon - a potentiality. In it, converges capacities, aptitudes, and intrinsic personality factors such as context in which a person is immersed, which can become a potentiator or an obstructive factor. The support and the education that children receive from their nearby environments as well as the interaction with their peers facilitate the growth of creative potential and the full development of high abilities (Bronfenbrenner, 2005). The concept of giftedness, thus raised, enables us to think in terms of possibilities (Monks, 1992).

In line with this definition, giftedness is understood as a construct, that considers high intellectual level that converges on another intrinsic variable (productive-creative capacities and task commitment; (Renzulli & Smith, 1977; Renzulli, 1986) as well as variables that are related to the revolutionary and social contexts where each person unfolds. The influence of social contexts (family, school, and peers) contributes to the full development of children (Alcon & Cruz, 2010). It can be affirmed that high abilities, or giftedness, in childhood refer to children who possess aptitudes and potentialities above the average expectation for their developmental age in combination with certain characteristics of personality and a propitious environment - all expressed in different ways (Gomez Perez et al., 2014).

In general terms, twice exceptionality is defined as the simultaneous possession of a high potential in specific areas such as cognitive, academic, or creative abilities. There is also a disability or additional need of support that can include learning difficulties, attention, and sensory deficit, socioemotional, or cognitive difficulties which obstruct their proper development (Assouline & Whiteman, 2011; Dixon &

Moon, 2006; Foley et al., 2011; Neihart, 2000; Oreck et al., 2004 cited in Gómez Arizaga et al. 2016).

Twice exceptionality (2e) is a phenomenon of great complexity, barely approached or developed in Argentina. For that reason, there is no extensive research or practical contributions about 2e. Twice exceptionality is defined as the concurrent presentation of giftedness and some developmental difficulty (e.g., organic, cognitive, emotional, creativity, academic, among others) that may shutter the learning process, the reaching of high potential, and the wellbeing in the different areas where children can develop. In other words, high ability (or giftedness) and learning difficulties can be presented at the same time in different areas and can be expressed with different characteristics or behavior manifestations; this can block the learning process of those who present it. The coexistence of two learning exceptionalities makes this phenomenon even more complex and, in consequence, the possibilities of proper identification and intervention to improve the life quality and the education of these children impact the reach of their highest potential and their wellness in different contexts where they operate. All of these can also be confused with other conditions, which hinder effective and specific approaches for educating such students. It can also generate misdiagnosis and unwanted labeling that obstruct the proper development of children, inhibiting the reach of maximum potential and the possibility of transit for different contexts that privilege their wellness. It is hard to realize an identification process that considers, with integrity, twice exceptionality considerate of potentialities, strengths, and difficulties. Thus, it is even more complex to attend to the specific needs of the both exceptionalities – giftedness and disabilities - within educational and psychological contexts.

Bibliographical and Systematic Review of the Foundational Literature

For the purposes of building a global point of view, recognizing the complexity of the phenomenon and the scarce background and development in Argentina about this topic, a bibliographic review of international publications enabled SNPI to uncover contributions and different perspectives on the field. In consideration of the above mentioned, we explored the literature on twice exceptionality, synthesizing contributions from different perspectives, authors, and places in pursuit of building a global point of view that allows us to lay the groundwork to continue investigating and deepening our understanding of twice exceptionality and its misdiagnosis.

Major Characteristics of Twice Exceptionality

Buica-Belciu and Popovici (2013) performed a bibliographic review about the main contributions of 2e, highlighting those proposed by Brody and Mills (1997), considered pioneers in the field. There are three subcategories of twice exceptionality in

which some of the needs of support can go unrecognized (Foley-Nicpon et al., 2011; Foley-Nicpon et al., 2013; Reis et al., 2014; Wormald et al., 2015):

Difficulty masks high ability.

Often it can be observed that students have a performance that is considered low or according to the average, it can be recognized that they possess a need for support, therefor giftedness is unrecognized. (Baum & Titone, 2014; Foley-Nicpon et al., 2011; Weinfeld et al., 2013).

In general, these difficulties are attributed to character development problems or personality, which could be enhanced by academic challenges and, eventually, reaching the point where they are overwhelmingly linked to a disability. (Buica-Belciu & Popovici, 2013).

High abilities mask the difficulty.

Generally, this phenomenon of masking difficulty is produced by instrumentation of compensatory strategies, which allows the student to offset their difficulties with their high cognitive capacities; that is to say, students can build problem solving strategies and achieve in challenging academic environments as well as in other contexts. (Brody & Mills, 1997; Conejeros-Solar et al., 2018).

Giftedness and difficulties interact reciprocally.

Intersecting gifted and difficulties can be presented as average performance both academically and behaviorally; the student's condition can go unnoticed because neither of their exceptionalities are recognized. (Conejeros-Solar et al. 2018).

Unnoticed, it can be said that these students "fall through the cracks" of the educational system with both of their educational needs unrecognized. (Buica-Belciu & Popovici, 2013).

Differential Diagnosis and Misdiagnosis

In Spain, Fernandez Vazquez (2015) led an investigation to verify the simultaneous existence of ADHD and giftedness in children and young population, conducting a review of the latest 20 years. He found significant differences between children with ADHD diagnosis, children identified gifted, and those who present both exceptionalities. For example, for students identified with ADHD, he highlighted the pronounced existence of low capacity in work memory and poor performance in math and writing, the appearance of social problems, and, in some cases, disrupted behaviors, mood disorders or learning difficulties.

Hue et al. (2014) as cited in Álvarez-Cárdenas et al. (2019) warned that gifted children with high abilities can exhibit behavioral characteristics much like the manifestations of ADHD. Among them, the following are offered in Table 1 as examples:

In Latin America, an incipient work was found with important developments in the last several years. Gomez Arizaga et al. (2016) conducted an exploratory analysis of experiences and auto-image, or self-image, through stories told by students (n = 4) identified with twice exceptionality; two of the participants presented giftedness and ADHD while another two presented giftedness and autism. The notion of a discrepancy of their condition was notorious for them, despite not knowing that

Table 1 Similar behavioral characteristics giftedness-ADHD*

ADHD	High Abilities
Sustained attention difficulty.	Little attention, usually by boredom.
Decrease capacity of hearing with attention.	Concern about own ideas and concepts.
Difficulties in the conclusion of independent tasks.	Proper conclusion of tasks related to personal interests.
Resistance to sustained mental activity.	Low persistence in tasks considered irrelevant.
Disorder and loss of elements needed for tasks; unstructured.	Organization can be perceived as unnecessary depending on the task.
Difficulties following instructions.	Question of rules, traditions, and directions.
Higher level of activity, labile.	Very sensitives.
Impulsive, wrong judgement in the interactions (Don't wait turns, interrupt).	Magnificent curiosity and need of probes, talk a lot.
Excessive talk.	Intensity, which leads to discussions with authority.
Problems on meeting standards of behavioral regulation.	

Note: *Author translation and interpretation of bibliographical information provided

for fact. In school, they were motivated to learn, but they were also bored with repetitive or few challenging tasks. Additional findings included characteristics of scholar, relational, and emotional contexts.

Scholar Context

In scholar context, twice exceptional students are usually perceived different from those who present giftedness alone. Winebrenner (2003) mentioned that 2e students often express contradictory learning behaviors. For example, in certain areas they can present problem solving efficacy and creativity (align with academic strengths and giftedness), and at the same time, present low performance in other activities, which aligns with learning difficulties. The disability concomitant to the talent can be different depending on how it is manifested. Some difficulties which could obstruct the learning process can be: auditive, visuals, from the sequential processing or executive functioning. As to cognitive difficulties specifically, Brown et al. (2011) found descended scores in working memory, processing speed, attention, and in organization. On the contrary, high levels of creativity and episodic verbal memory stand out as strengths; this suggests that high abilities could act as protective factors for difficulties associated with ADHD (Conejeros-Solar et al., 2018; Davis & Robinson, 2018; Fugate, 2018).

In consonance with the observations by various authors, the students chose practical activities where they could have an inductive approximation, in their learning process. As is common in students with giftedness indicators, they can be bored with low motivation when the curriculum goes slowly, and activities are not challenging and/or they do not correspond to their interests. When these variables are not taken into account, a permanent sensation of scholar failure could appear for "not being able" to solve certain tasks in the way that is expected. This, at the same

time, can be expressed in academic behaviors such as resistance to work in class, disruptive behaviors and distractibility, among others. Added to the fact that presenting inconsistent performance obstructs the possibility of appreciating their real abilities.

Relational Contexts

Some of the central ideas around the positive relationships in which these students established with their professors and their peers. Regarding relationships with their teachers, conflicts can be generated if students do not fulfill perceived expectations related to their academic performance. However, in general, they can establish significant relationships with those professors who share similar academic interests or socioemotional characteristics, which promote the involvement in academic tasks; in this case, the professor figure is essential.

Relations with peers are important part of their student life. Students highlighted the importance of reliance, loyalty, accompaniment, and respect. Many of them also reported bullying experiences at the hand of other classmates in the school. Willard-Holt et al. (2013) proposed the existence of certain ambivalence related to work in groups – on one hand, students recognized the importance for their scholarly experience, but on the other hand they preferred to work on their own because usually their classmates did not share the same rhythm and pace of academic effort.

Emotional Contexts: Socio-affective and Self-perception

The manifestation of this characteristic can be two-fold and considered contradictory. On one hand, some authors found that twice exceptional students may present low academic, self-concept because of the difficulties that they present in the scholar context that breeds low self-efficacy and low motivation for academic success (Baum & Owen, 1988) this can be expressed as aggressive behaviors or isolation (Foley Nicpon et al., 2011). On the other hand, some authors found that there were students who, in spite of experiencing difficulties, possessed a positive view of themselves, being conscious of their high abilities and with high expectations for their future (Vespi & Yewchuk, 1992). Gomez Arizaga et al. (2016) related experiences that converge between the previous positions. They posited that students' self-image is constructed as high-abilities persons with difficulties; they possess clear comprehension of their high capacities, but also recognize their difficulties. This allows them to create problem solving strategies in different contexts and recognize which behaviors to modify in order to adapt better to certain situations. In the academic field, as in social field for example, they are aware and put forth effort to get closer or communicate with their peers in the best possible ways.

In Chile, Conejeros-Solaret and colleagues continued to make contributions to the comprehension of this phenomenon, deepening understanding into the development of cognitive and differentiated socio-affective characteristics, incorporating considerations about identification and educational support. Conejeros-Solar et al. (2018) studied and presented in-depth studies of twice exceptionality specifically related to autism spectrum disorder (ASD), which is often defined and limitedly focused on a persistent deficit in the communication and social interaction through different and multiple contexts. There were many similarities with giftedness in this diagnostic category, but in order to achieve a differential diagnosis it is important to consider difficulties in sensory, verbal and social levels, which are more severe and neurological.

In the cognitive area, are observed difficulties in the selective attention, distractibility, and impulsivity. It is important to note that these children showed a preference of closed systems with more logic and structure, needing predictability of future events. As strengths can be noted, their highest performance was in speed and reading comprehension, specifically in spelling and creative writing. Higher abilities in calculation and problem solving were also probed, but not in quick solving of simple math operations.

At a socioemotional level, previous studies revealed characteristics typically associated with ASD – difficulties in reciprocal social interactions, particular facial expressions, involvement in conversations and play with imaginative partners, and sharing or change of routines. However, these stereotypical behaviors were not found as expected; the level of self-esteem was good, and these children were often conscious of their difficulties (not necessarily of their high abilities), and sometimes were considered leaders in their peer group.

More recently, Álvarez-Cárdenas et al. (2019) deepened their analysis of the dual traits of giftedness-ADHD through a review of articles published in within the last 5 years. The authors defined the limitations presented in context and coping strategies that these students can build. They established some characteristics and behavioral manifestations that are considered critical for differential diagnosis, describing the development in certain areas as social, emotional, familial and educational. For example, students with ADHD demonstrate frequent inattention whereas students identified as gifted, attention may be dependent upon interest and task commitment. Another interesting example is concomitant to the difficulty for following rules. For students with ADHD, it is related to obstacles in the comprehension of the order, and for students identified as gifted, it is connected to the necessity of clear and logical explanations for their expected actions.

Identification and Interventions

Twice exceptionality is a complex construct. Some scholars define it as a paradox which transcends the conventional definition of giftedness, with important educational implications. Both "giftedness" and "deficit" strongly depend on their

definitions, context, academic environment, and the perception of teachers. Both conditions are really difficult to recognize, for experts and especially for teachers (Conejeros-Solar et al., 2018). Thus, and even more so, identification and intervention processes can be complicated. Lastly, scholars have identified relevant aspects for efficient and novel interventions.

Chivers (2012) conducted a study in primary schools of Australia, with the objective to observe how teachers can overcome difficulties presented in the classrooms, emphasizing the importance of teachers having working comprehension of the condition, their characteristics, and a positive attitude. They concluded that receiving quality attention in primary school will assure student success in higher education and in work life.

In 2012, due to the scarce research on this topic by scholars in Argentina, Irueste focused attention to investigate the concomitances generated by simultaneous presentation of giftedness and Attention Deficit Hyperactivity Disorder (ADHD) or Autism Spectrum Disorder (ASD). Her observational and analytical study analyzed the existence of differential intellectual capacities in children designated by their teachers as "dispersed" and "hyperactive" (DH). Utilizing observation techniques, giftedness indicators were remarkably similar to manifested characteristics in ADHD, which can be overlapped and lead to diagnostic mistakes and incorrect labeling. This line of investigation of giftedness in combination with other variables fostered scholarly discussions and public inquiry, enabling Irueste's team to build boarding and accompaniment devices for gifted and 2e children and their families.

The main objective of Irueste's (2012) investigation was to probe if children designated by their teachers as "dispersed" or "hyperactive" (DH; also known as ADHD) presented intellectual capacities different from the control group (composed of children not identified with ADHD). It was confirmed that some children identified with ADHD possess an intellectual level over the average, which indicated absence of identification of giftedness in children who have other learning exceptionalities. Moreover, this also happened in the control group in accordance with previous investigations, which posed the existence of various profiles of giftedness with different characteristics. Some of them also presented scores above average in Creative Intelligence as well as in Motivation.

Cause for Implementing a Psychological Approach

Irueste (2012) conjectured that twice exceptionality is a topic that should be primarily approached by psychology and not education. When the teacher's conceptions about the topic were queried, that main characteristics considered in the designation of a child as "DH" were inattention, permanent movement, and/or impulsiveness. Mental absence and behavioral disruptions stood out as observed consequences. In addition, as schooling progressed, the number of children designated with ADHD increased could indicate that as a consequence of the increasing demand, difficulties could be deeper or more notorious. Alternatively, it could also be evident of the

limitations of the current educational system to address the demands and educational needs of a broad and imprecise diagnosis as ADHD.

Lastly, it was observed as a marked trend that teachers noticed deficits before and/or rather than potential, focusing on the negative instead of looking for positive, health, and the strengths of each child. Changing their point of view will enable teachers to revert the process of negative feedback that leads to the [mis]labeling of children based solely on difficulty in order to give place to their interests and potential. It should be noted that teachers recognized the need for formation of dedicated special education services for students identified as giftedness and ADHD; it is of critical importance to identify problems and potentialities, and to intervene effectively in their daily actions and feeling supported in the process.

Identification

In consonance with Irueste (2012), Conejeros-Solar et al. (2018) stated that social constructions around 2e are even more difficult to identify because social norms tend to make invisible this phenomenon, recognizing, at best, the difficulties while capacities remain unnoticed or dismissed. Additionally, in education and in clinical practice, professionals tend to pigeonhole or stereotype results and expressions of any of the exceptionalities, disregarding the multiple ways and areas in which both can be manifested.

Likewise, the importance of not equating or comparing students with a standardized norm has been well-documented, noting that comparisons should be intrapersonal and consider the strength and weakness of each student. Yet, the measure of Intelligence Quotient (IQ) for the identification of giftedness is still used, which is not the more sensitive tool for detection of twice exceptionality (Conejeros-Solar et al., 2018). It excludes a broad range of exceptionality areas and potentiality to consider in the evaluation.

Interventions

Among all the difficulties related to interventions, the fact that most students with twice exceptionality don't receive proper attention for both exceptionalities stand out the most. Many of them receive support for their difficulties, but not proper attention for their high abilities, which can comprehensively compromise not only cognitive development, but also socioemotional and general wellness.

In consonance with literature, Gomez Arizaga et al. (2016) noted the desired changes in educational experiences of children and adolescents identified with twice exceptionality. They found that students expressed the need for more challenges and flexibility incorporating exploratory and practical activities that allows learning by doing. As an example, Koshy and Pascal (2011) reported that teacher-participants

who implemented an enrichment project based on the development of superior abilities reviewed and adapted learning strategies, focusing on their student interests; they included improvements on evaluation practices and greater integration of parents in the educational process.

Among possible coping strategies, Álvarez-Cárdenas et al. (2019) counted the importance of 2e students developing self-knowledge, self-regulation, and study habits to discover strengths and create productive environments. This will reinforce their daily routine without falling into excessive repetition and low challenge. At the same time, it enables flexibility to approach and engage learning objectives in more differentiated, creative, and challenging ways.

Lastly, considering the observation of positive relationships that students establish with teachers who share the same academic interests or personal affinity, we assert that mentorship is an effective method of preventing low performance. It requires a person who can engage in working relationship with students with and open mind and non-judgement of learning styles and rhythms. Great benefit exists when one-to-one relationships can be established. Of course, this should be added to a tailor-made educational plan, which contemplates strengths and interests. Similarly, SNPI offers early identification services, and once identified students are referred to health and educational professional to create facilitate tailor-made educational plans with the families for the students.

Conclusion

The complexity of the identification and intervention of twice exceptionality lie in the different manifestation of this phenomenon, whereby multiple factors should be considered. As was posed before, difficulties and strengths are combined in different types and ways, adding personal and contextual factors.

Throughout this chapter we have shared a bibliographical review of the research that has shaped the development of the conceptual definition and approach to twice exceptionality in Argentina. We emphasized the conceptual definitions of both high abilities and twice exceptionality. We exposed the characteristics and different subcategories that exist regarding this topic in different contexts. Included in this review, we offered a difference between differential diagnosis and diagnostic confusion to effectively address the identification process and possible inventions.

In relation to identification and intervention, the literature shows that it is essential that the professionals who will carry out these processes have thorough knowledge and understanding of twice exceptionality and the differential diagnosis in order to reduce misdiagnosis that can later lead to inappropriate attention and mislabels for children with twice exceptionality. Based on our evaluation and interpretation of the literature in terms of educational intervention strategies, the singular curricular design as well as mentoring seem to be effective tools.

SNPI Plans for Further Research

The development of Emotional Intelligence specifically oriented to self-knowledge and self-regulation of emotions can contribute and enrich both the experience of schooling and the integral development of the person with twice exceptionality. *The Neuropsychology Service* has developed several graduate thesis projects in Psychology related to emotional intelligence. It also has a space for accompanying families and workshops on emotional intelligence and creativity for boys and girls from 4 to 10 years old. (for details see https://plataformas.ude.edu.uy/revistas/rifedu/index.php/RSEUS/article/view/43).

In 2020, as a result of the global pandemic, the "Create at Home" program (https://snpinfantil.wixsite.com/snpinfantil/crear-en-casa?lang=en) was created with daily activities on emotional intelligence and creativity. These encouraging results motivated us to continue creating activities aimed at the community and to this population in particular, positing that only by properly identifying the uniqueness of each case will it be possible to design an effective intervention strategy that is broad enough not to reduce the lives of children to a label or a diagnosis.

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Part II
Introduction: Person (Microsystem & Individuality)

Part II offers an introduction to Bronfenbrenner's lens categorized as "Person", which is inclusive of his microsystem and our integrated consideration of individuality within the context of talent development. Chapters, "Atypical Development and Giftedness: The Advantageous Side of the Neurological Based Achievement Difficulties", "Supporting Gifted Students with Anxiety, Dyslexia, or Attention Deficit/Hyperactivity Disorder (ADHD) in School Settings" and "Supporting the Emotional Well-Being of Twice-Exceptional Students Using Literature" extend the recognition of environmental influences and socialized status to include the personal characteristics and talents that students bring with them into any social situation and cultural interaction (*Person*) along with the social-emotional support strategies needed to support them. These chapters include an extended review of the literature around the concept of atypical development from a neurological perspective, a common learning exceptionality that is historically addressed as a deficit characteristic or weakness, and an effective and common strategy for addressing twice-exceptionality with priorities for academic, social, emotional, and well-being.

It is important to also note that technology is a dimension of the microsystem, recognizing the effect of digital technologies on cognitive growth during childhood. Johnson and Puplampu (2008) proposed an ecological techno-subsystem as a refinement to Bronfenbrenner's theoretical organization of environmental influences on child development. This ecological techno-subsystem comprises both child interaction with living (e.g., peers, parents, teachers) and non-living (e.g., hardware, gadgets) elements of communication and information in immediate or direct environments. In 2006, Jackson and colleagues conducted an experimental study of 128 children from 1st to 6th grade to assess their cognitive development, based on their use of internet at home and the SES (socioeconomic status/characteristics) of the family – measuring three constructs: child cognitive development (bioecology; associated with parent's employment), indices of child use of the Internet at home (techno-subsystem), and family socioeconomic characteristics (microsystem). Regarding development, they concluded that Internet use stimulates cognitive processes involved in interpreting text and images, which confirmed Tarpley's (2001)

stance that metacognitive processes such as planning, search strategies, and evaluation of information are exercised when navigating websites.

As such, the reader is challenged to be mindful of the impact and influence that individual positionality within a more intimate and proximal environment has on a child's development in terms of cognitive diversity (i.e., recognizing that prior knowledge, past experiences, and access to opportunities are resource characteristics that also influence thinking and openness to new knowledge and new experiences) and how it may affect schooling, especially when there may be a mismatch of an individual's microsystem and macrosystem. Cognitive diversity suggests that differences in perspective, as a by-product of cultural differences, cultivates talent development - creative problem solving, productivity and innovation that should be appreciated and valued.

The Upside of Being Atypical: Twice-Exceptional Gifted with Neurologically Based Achievement Difficulties

Eva Gyarmathy

Abstract In this chapter, we present a review of shared neurological developmental features of neurologically-based achievement difficulties and highlight important aspects of the executive functions, thereby informing complex developmental procedures. Specific learning difficulties, attention deficit disorder, hyperactivity disorder, and autism spectrum all involve some special mode of information processing and can be subsumed under the term atypical development. All of these phenomena have a neurological basis, which is usually identified in the early stages of kindergarten or primary education. Mild variants are not easy to identify and often the diagnosis is false, or the syndromes are mixed up owing to the overlapping symptoms. All these exceptionalities are independent of an individual's intelligence and motivation. However, early intervention and environment can be crucial in the development of these special brains. Particular care is required when neurological exceptionalities are coupled with high abilities and a strong drive for internal development. Many of the great creators show some atypical brain functioning that is usually associated with some form of dysfunction. A special cognitive structure, persistent and obsessive practising, commitment, or lack of social skills are all characteristics that are often mentioned in connection with people with outstanding talent. In most cases, they stem from a significantly different from usual brain functioning. In the provision of gifted children, these multiple exceptionalities should be considered as possible ways along which their talent can evolve. Particular attention should be paid to executive functions, which are key to achieving high performance, but often come into the spotlight as a major problem in neurologically-based achievement difficulties.

Keywords Early intervention · Neurological · Atypical brain structure · Neurologically-based achievement · Executive functioning · Profoundly gifted

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A talent's promise will not always manifest itself to us with a shining golden star on their forehead, a smile on their face and outstanding performance. The following are real-life examples that I have observed over the years as a researcher a for what might be considered achievement based on innate talents (all names are pseudonyms).

Meet Peter, Anna, Andrew and Sarah

***Peter**: At the age of six, he was diagnosed as mentally disabled. He later told his special needs teacher that he didn't like the person doing the assessment, and so he didn't reveal the correct answers to them. At the age of nine, he was already the winner at a county mathematics competition, and he would go on to regularly finish among the top few in country-level secondary-school competitions.*

***Anna**: She is eleven, and she is unable to achieve at school at all because of her hyperactivity and attention disorder. She has officially been diagnosed as mentally disabled. In intelligence tests, she is only able to correctly solve the easiest and the hardest tasks. But she usually doesn't make it to the difficult ones, which would finally engage her attention, because according to the protocol, once a subject gives 3 or 4 incorrect answers, the relevant level is taken as the level of their abilities. She has been writing fantasy novels since the age of ten.*

***Andrew**: Ever since early childhood, he would not even think of doing anything less than perfectly. He was already an excellent musician at six, but he didn't want to perform as long as he himself didn't find his performance appropriate. However, performing in public was obligatory at the music school, so instead he walked away from playing music. The situation was probably similar in public education. He says he would survive day-to-day life in a sort of half dream-like state.*

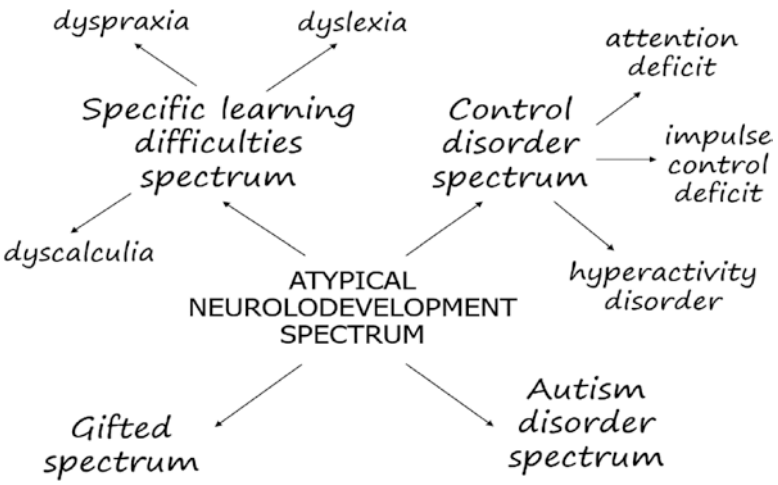

Fig. 1 Forms of Atypical Neurodevelopment

He was dyslexic, which made the possibility of being flawlessly perfect at learning even more remote. At ten, he was officially diagnosed as mentally disabled. He continued learning at a private school. In the meantime, he started caving, and finally found a field where only the perfect was acceptable. He has been regularly winning international competitions as a caver.

***Sarah**: She is thirty, and has a diagnosis of Asperger syndrome, hyperactivity, dyscalculia and mental disability. She is the author of several books, her poems are published regularly, and her paintings can be seen in various exhibitions.*

For the purpose of this chapter, 2e comprise individuals with any kind of physical, medical, psychological, or sociological disadvantage who at the same time also show signs characteristic of giftedness. I further contend that the term "twice-exceptionality" probably stems from a similar concept of medical science, namely, comorbidity, the simultaneous presence of medical conditions. For example, a heart condition might be accompanied by some other, possibly chronic disease, such as hypertension or asthma, which can hinder recovery and exacerbate the situation. The symptoms can also often mask each other.

Pfeiffer (2015) reported that in the vast majority of cases, twice-exceptional giftedness is accompanied by maladaptive symptoms and sometimes two or more separate psychological abnormalities, which probably appear as a result of the dual pressure. Research showed that twice-exceptional children attempt to deal with their difficulties using compensation techniques, but as a result, the problem will remain hidden, and they usually don't get enough support in areas that need development. At the same time, the difficulties and the struggle with their weaknesses mask their giftedness, and, consequently, their areas of giftedness likewise fail to receive reinforcement.

The Exceptionality of Giftedness: An Historical Depiction within Gifted Education

I posit that giftedness is not a trait, but a special mode of perception, attitude, perspective and reaction. In my research, I have found that gifted individuals are not interested in whether something is attainable, but in how it can be attained. Cognitive processes that differ significantly from the usual, intense and obsessive activity and persistent practice – which are requirements for outstanding achievement – result in a behaviour that is far removed from normality. The literature reveals that a lot of gifted individuals show a special cognitive structure, an unbalanced structure of abilities, hyperactivity, autism, right brain dominance, language difficulties, eating disorders or autoimmune diseases, etc. The exceptionality of the gifted has been looked at in diverse ways in the history of gifted education, as a function of the values of the relevant age and culture:

1. *Giftedness as a mystical force:* At the dawn of civilization, outstanding mental achievements and individuals in possession of special, highly different from normal abilities were regarded as having divine origins, just like other significant natural phenomena. The great figures of ancient times also considered outstanding achievements as supernatural. Many Greek philosophers believed that their wisdom was a gift from muses and demons. Pythagoras is primarily known today as a mathematician, but he was also a prophet and a magician, and his disciples revered him as one guided by divine inspiration. Socrates thought he heard the voice of a daemon, and that his actions were guided by this spirit. Although not considering him a god, Aristotle erected an altar dedicated to Plato. While knowledge was considered a gift from gods in ancient times, the Middle Ages brought diabolical knowledge and witchcraft. Alchemists would practise their science in secret, laced with a fair amount of mysticism. The Faust legend, which has taken deep roots in our culture, has the scientist wanting to know the unknowable consort with the devil (Grinder, 1985)

Mysticism is a part of great creations and creators to this day. Einstein himself remarked that "those individuals to whom we owe the great creative achievements of science were all of them imbued with the truly religious conviction that this universe of ours is something perfect and susceptible to rational striving for knowledge" (*Ideas and Opinions*, 1954, p. 52), and espoused what he came to call "cosmic religion". Newton, who had a difficult birth and later survived a plague, thought of himself as divinely chosen. Bohr believed that he was a chosen one to bring about a Danish scientific renaissance (Briggs, 1990). According to Briggs, a sense of chosenness is in general characteristic of great talents. Geniuses always have a tinge of mysticism in their thinking.

2. *Giftedness as a mental condition:* Renaissance physicians were already of the opinion that thinking was a functioning of the brain and the nervous system and believed that exceptional thinking abilities and behaviour were not inspired by demons or caused by other supernatural forces but were actually a change in neural energies (Alexander & Selesnick, 1966). Any deviation from the usual, either in the direction of insanity and mental illnesses, or in the direction of brilliance and talent, was thought of as a sign of mental instability. Although outstanding mental performance was acknowledged, exceptional mental energies were regarded as a misfortune. Geniuses were considered physically weak, frail and neurotic. Lombroso (1891) used biographical data to prove mental instability in several outstanding creators, including Mozart, Burns and John Stuart Mill, and characterised their genius along these lines. He argued that according to his data, talents are short, pale and slender, a lot of them are left-handed, alcohol- or narcotics abusers, or vagabonds. He strongly believed that the price for talent was melancholy, depression and neurosis.

At around the same time, Sir Francis Galton, while aware of the widespread view that talents are physically frail and neurologically weak etc., raised the point in his book "Hereditary Genius" published in 1869 that while many outstanding

individuals may indeed have poor outward features, this is not a general characteristic of talent. However, in the preface of a later, 1892 edition, in the wake of Lombroso's results, he did acknowledge that "Those who are over eager and extremely active in mind must often possess brains that are more excitable and peculiar than is consistent with soundness."

3. *Psychometric giftedness*. The assessment of and the scientific experimental approach to giftedness began with the work of Sir Francis Galton. Several laboratories were established and started operations, and thanks to Alfred Binet and his colleagues, the first intelligence tests appeared, as well. From then on, talent was thought to be identifiable with the help of intelligence tests. As a follower of Galton, Lewis Terman launched a research with a biologically-based, hereditary viewpoint, whose goal was to squash the earlier negative image of talent. What his longitudinal study showed was that several children with outstanding intelligence failed to live up to expectations in their adulthood, and in fact none of those in the test group ever won a Nobel prize

As a sign of how the way society sees talents changes, in just a few decades, talents went from being physically handicapped, and in terms their neurological and mental state imbalanced geniuses at best, as described by Lombroso, to being outstanding not only in terms of their intelligence but based on the studies of Terman (1925), being strong, healthy, socially mature, and morally above average, as well. However, I highly doubt that the geniuses studied by Lombroso and Terman's group with exceptional intelligence, together with the talents that continue to be identified with tests, belong to the same group of gifted individuals. Thus, tthe psychometric approach is only suitable for the identification of typical giftedness (excluding profound giftedness). The tests identify those exceptional individuals whose talent is revealed already in childhood and who are more or less able to fit into society. However, the individuals who are capable of significantly different-from-average, fundamentally new creations are those who are characterised by a thinking and personality which is significantly, and potentially unacceptably, different from the average. And it is far from certain that these individuals are revealed by their outstanding abilities in childhood.

Normality

Socially speaking, communities tend to equate what is common and lasting with normality. Thus, a bodily or mental characteristic differing from that which is common is often regarded as a deviation from the normal. It is important to note that deviation from normality should not interpreted invariably as a disability. Certain divergence from what is considered normal can actually be interpreted as evidence of creativity or excellence in certain cultures. Examples include a Shaman's ability for trance and hallucination to establish a connection with the spirits, or in the modern age, extreme perception abilities in artists, such as perfect pitch in a musician.

However, even positively perceived exceptionalities can present an obstacle for integration in certain situations, or environments. Having wings could be characterized as a disability if it inhibited an ability to walk on the ground. Such interpretations can be a potential basis for a deviation from the usual, and as such also for a different-from-usual behaviour, and, consequently, for different-from-usual achievements.

According to the earlier concepts of neurological heterogeneity, that is, neurodiversity, atypical neurological development is a normal biological difference in humans, and as such, is important for humanity in terms of survival (Blume, 1998). The concept used to be applied primarily to autistic individuals at the beginning, but its scope has broadened, and now encompasses individuals with attention disorder/hyperactivity, as well as those with specific learning difficulties, among others.

Atypical Development

Usually, specific learning difficulties, ADD, ADHD and autism are considered as being separate disorders. However, there is more and more evidence to suggest that they should be considered parts of the "atypical neurodevelopment spectrum" that appear in different combinations, levels and forms, like developmental delay or a special way of information processing. Recent research confirms that atypical brain structure is the norm rather than the exception among the most gifted (Duncan et al., 2018). Only autism is referred to in the literature as a spectrum, but learning difficulties, attention and hyperactivity disorders can also be considered as spectra because they all present at different levels and in different forms, while they show much overlapping.

Difficulties in motor planning and sequencing, keeping the beat and timing are relevant to ADHD, dyslexia, and autism spectrum disorders alike. Deficiencies in inhibition and in executive functions, which are involved in control and sequencing, are an important component of ADHD, but also other forms of atypical development. A variety of executive function deficiencies have been found in the case of dyslexia (Reiter et al., 2005), ADHD (e.g., Sergeant, et al., 2002) and autism (e.g., Hill, 2004; Hughes et al., 1994). Pauc (2005) reported that the patterns of comorbidity occurred with such a high frequency that there could be an argument for the downgrading of these conditions from individual disorders to symptoms and that the patterns of comorbidity may fit the criteria for a single developmental delay syndrome. In their study, Mrazik and Dombrowski (2010) described the common neurobiological basis of atypical neurodevelopment and the development of talent. On that basis we can consider the talent spectrum as part of the atypical neurodevelopment spectrum.

All of these exceptionalities are neurologically based and are usually identified early on in kindergarten or primary education. However, because of the overlapping, especially the mild versions are not easy to identify, the diagnosis can often be false, and sometimes the syndromes get mixed up. All of these exceptionalities are

independent of the individual's level of intelligence and motivation. Highly-able children with atypical neurodevelopment can compensate for their weaknesses more or less, but these weaknesses hinder their talent development. Early intervention and a developmental environment can be a crucial factor in their appearance.

An atypical development has several disadvantages and can lead to disorders and subsequently to diagnoses, but children with atypical development can also reach outstanding achievements in a suitable environment. What is more, both studies and experience show that atypical development is highly frequent in the gifted population. Individuals with dyslexia, dyspraxia, dyscalculia, attention-, hyperactivity- and autism spectrum disorder are overrepresented in great creators (Gyarmathy, 2009). The exceptionalities regarded as disorders can often not only appear together, but can also be accompanied by giftedness, which is considered an advantage. This suggests that we are dealing with a sort of "neurological package".

There is no fool-proof identification tool, which is a general problem of diagnosis. Identification of atypical development itself is already incidental to begin with, and the mixing of its different forms makes the diagnosis itself atypical. The "label" a child gets depends often only on the field of expertise of the professional doing the assessment. Of course, the main goal is not about deciding whether a child is struggling with learning-, attention-, hyperactivity- and/or autism spectrum disorder, and/or is gifted. The point of the assessments is to find out what environmental factors help the child develop in the direction of giftedness.

The incidence of atypical development is increasing fast owing to environmental effects, and what is atypical today will soon be typical. Schools and gifted education need effective methods to mitigate the problem that arose in the first place because of a lack of understanding of the changes that in turn brought about changes in children's neurological development.

Exceptional Cognitive Structures and Giftedness: ADHD, Autism, and Learning Difficulties

There are long lists to be found on the internet that enumerate famous people with ADHD. Thomas Edison would watch a spider weave its net instead of paying attention to his teacher. He was deemed unteachable. His restless life is evidence itself for the condition.

A number of polymaths have been described as digressive in their biographies. Leonardo da Vinci and Benjamin Franklin, for example, are also often found in lists of famous people with ADHD. Winston Churchill is one of the most frequently mentioned hyperactive individuals. Today's famous people with ADHD can even confirm their exceptionalities themselves, as did Frank Coppola or Barbara Streisand, for instance.

The signs of giftedness capable of outstanding achievements and the symptoms of attention disorder/hyperactivity coincide on a number of points. These include

fast reactions, Dabrowski's overexcitability (Dabrowski, Piechowski, 1977), different-from-usual perception, more active than usual behaviour, a creative desire, curiosity, a tendency for questioning authority, tirelessness, disruptive behaviour in absence of a suitable challenge, as well as a low tolerance for monotony (Laznibatova & Juraskova, 2005; Rosengren, 2005). Numerous data indicate that giftedness and attention disorder/hyperactivity are often difficult to separate (Reis & McCoach, 2002). Some common features between ADHD and giftedness in children have even been found that are not expressly behavioural in nature, but physiological. These include low blood sugar levels (hypoglycemia) and allergies. Both of these have a greater than usual prevalence among both hyperactive and gifted children (Webb et al., 2004). There are lengthy debates in the literature on whether the gifted get diagnosed as hyperactive, or whether hyperactivity can be the basis for a type of giftedness (Mika, 2006).

Professionals are establishing for an increasing number of outstanding talents that they meet the criteria for the autistic spectrum syndrome based on their behaviour. Not long ago, Elon Musk, entrepreneur and business magnate came out regarding his autism. Also, Isaac Newton was among those who showed such symptoms. He would talk little; he could get so absorbed in his work that he would even forget to eat; he had few friends, and he would often behave in an indifferent or quarrelsome manner even with them. In his book, James Ioan (2006) identified autism in Béla Bartók, Eric Satie, Alan Turing and Jonathan Swift, among others, based on biographical data. He reports, for example, how excessively Canadian pianist Glenn Gould would stick to what he was accustomed to. Among other things, he would use the exact same chair until it broke completely. In the late stages of his life, he reduced social relations to the telephone and letters. He did not like being physically touched. Michael Fitzgerald (2005) identified autism in the case of 21 famous writers, philosophers, musicians and painters in his book. He was looking for exceptionalities in social behaviour, language and humour, as well as for obsessive interest and habits. He revealed a connection between creativity and the autistic spectrum.

Individuals with autism see the world from a highly unusual perspective. To them, people's behaviour is baffling and frightening. They find it hard to adapt to unusual situations and have difficulties with emotional attachment. Autism is a pervasive, lifelong disorder of the cerebral functioning that results from genetic factors and adverse effects on the brain, similarly to other neurologically-based performance disorders. Exceptionalities that affect social behaviour, communication, and flexible thinking manifest from early childhood on.

Individuals with autism are characterised by an extreme sensitivity. Persistent interest and a good memory can be a firm basis for outstanding performance, but the very same characteristics are also a disadvantage in integration. Professor Temple Grandin, an animal professional, reported that her autism helps her see things the way animals do. Based on her own experience, Grandin emphasised that people with autism can reach outstanding achievements if they receive early educational development and have supportive teachers who are able to channel the compulsiveness of autistic children into constructive directions (Grandin & Scariano, 2004).

Grandin, like most autistic individuals, is hypersensitive to noises and other sensory stimuli. She is a visual thinker, and every thought appears to her in pictures. Her visual memory helps her. She is able to visualize and even recall over and over again what she saw, sort of like a video recording, and observe details that she would miss before.

In the case of people with autism, we are again faced with the same problem we did with hyperactive individuals, namely that characteristics of the syndrome coincide with features of giftedness: intense interest, perfectionism, sensitivity, the ability to see things differently, non-conformity, the ability of visualization. This is why there are lengthy debates on whether a particular outstanding creator was autistic or whether it was their creativity that made them eccentric. A creative personality is very special, and manifests already in childhood (Piske et al., 2016). Several studies point to the result that creative individuals were often solitary children who were not good at integrating, and who often lived in isolation from their peers (McCurdy, 1960; Melrose, 1989). The peculiarities of creative children can be identified as a disorder, but atypical development can also form a basis for creativity.

Briggs (1990) presented several great creators with learning disorders. Flaubert the writer and Yeats the poet both were dyslexic, while Benoit Mandelbrot, a researcher at IBM and the creator of fractal geometry, did not know his alphabet, and learning even the basic counting operations was a serious problem for him. Recently, Barbara Pavey, Neil Alexander-Passe, and Margaret Meehan edited a book on the relationship between outstanding entrepreneurs and dyslexia.

Some gifted individuals with specific ability disorders may be able to perform well at school, but many of them show severe deficits in certain areas. The identification of gifted individuals with specific learning disorders is hindered by the highly contradictory nature of the picture they present. They are often unable to deal with simple tasks but can solve complex ones. They perform poorly at school but can be exceptionally good at free-time activities. While they often have difficulties with learning at primary school, they can perform well in higher education studies. Tannenbaum and Baldwin (1983) very aptly used the term “paradox learners” for gifted children with learning disorders.

It is a long-established fact that the ratio of dyslexics is higher at the outstanding levels of intelligence (Reis et al., 1995). An important research finding was that of twenty of the world’s leading mathematicians, not one learned to read before going to school, and six of them actually had difficulty learning to read (Bloom 1985). And all the while, according to lists of giftedness characteristics, one of the traits of giftedness is supposed to be an early development of reading skills.

It has also been shown that many inventors had difficulties with reading and writing, even though they possessed excellent technical and spatial abilities (Colangelo et al., 1993). And Sowell (1998) found high-level spatial-visual abilities among children with belated speech development. Many of their family worked in areas requiring such abilities, such as engineering. But we no longer need to build just on assumptions. Carol W. Greider, one of the joint winners of the Nobel Prize for physiology or medicine in 2009, is still struggling with words and spelling today as a diagnosed dyslexic, even though she had plenty of developmental education in

childhood. Her excellent visual memory helped her with learning, and continues to do so. Another laureate with diagnosed dyslexia is Jacques Dubochet, who jointly won the Nobel Prize in chemistry in 2017 with two of his colleagues. Sir John Gurdon was awarded the Nobel Prize for physiology or medicine in 2012. He didn't pay attention at school, and was unable to learn simple facts, he would just do things in his own way. His teacher used the word "disastrous" to describe his work in one of his school reports, and pointed out that he scored only 2 points out of 50 in one of his biology tests. He can be considered the prototype of a gifted person with atypical neurodevelopment.

Talented people often take advantage of their difficulties because they see them as obstacles to be overcome. Demosthenes, one of the great orators of ancient Athens, suffered from a speech impediment. To conquer this, legend has it, he talked with pebbles in his mouth, recited verses while running, and practised speaking on the seashore over the roar of the waves. American jazz musician and poet John Paul Larkin, or Scatman John, who revived "scat" singing and dancing, the most well-known example of which is his hit single "Scatman", suffered from a serious stutter. A deficiency in itself is of course not sufficient for giftedness, since it must be coupled with an internal drive to cope with it. Challenges can strengthen and invigorate them. A weakness of a gifted individual can turn into a strength on the road to coping, but this requires at least some amount of support from the environment.

The Danger in Deficit Lens: Implications for Researchers and Practitioners

As eluded in Williamson's (1996) *A Return to Love: Reflections on the Principles of "A Course in Miracles",* the source of weakness is not some deficiency, but our avoidance of activities where we face them. From a mere talent development perspective, a lack of practice within a specific will indeed make us "weaker" in that area. The environment has enormous impact in how we regard the perceived deficits of children. And these perceptions and/or labels can become self-fulfilling because children as constantly adopting their and sense of being, individual identity, and attitudes (Varelas et al., 2013; Collins et al., 2022).

As Piske and Collins highlighted in Chap. 2, gifted individuals will not give up so easily. Even when it is not properly nurtured and guided, talents and giftedness of an individual continues to exists, but perhaps not in the direction we would like. A gifted individual for whom the environment creates obstacles can be diverted from social values and develop in an antisocial direction, because their development is different from usual, or because cultural barriers impair their development.

Efficient provision of the gifted is not just important because of the demand for talent, but because it serves society's self-defence. Gifted individuals thwarted in their talent development can become destructive, and twice-exceptional individuals are especially at risk in this respect. When faced with excessively big obstacles, the

tension from the talent force can turn into self-destruction, and in many cases, the individual will turn on not just themselves, but on their environment, as well, and continue down an antisocial path. Persistent obsession can find itself a way, and society may not always be happy about it.

Persistent and Obsessive Practice

In a seminal article on STEM achievement, Roe (1953), apprised that outstanding student achievement in the area of the sciences is attributable more to persistence, concentration ability and commitment, rather than intelligence. Ability is a necessary, but not a sufficient condition. Gifted individuals are characterised by an intense motivation to acquire abilities and knowledge relating to their area of interest at a high level. Almost 40 years later, Gerber and Ginsberg (1990) revealed in a study of successful adults struggling with some form of neurologically-based performance disorder described the kinds of coping strategies they used during their school education in a study: self-control and empowerment, building persistence and grit, an emphasis on accomplishing goals, reframing weaknesses as a personal attribute More recently, Cain et al. (2019) reported that twice-exceptional learners not only show higher level academic performance compared to their non-gifted peers who struggle with disadvantages, but they also show stronger progress with time compared to the general population. In addition, they are able to make much better use of mental hygiene opportunities. As an implication for gifted stakeholders and supporters of gifted individuals, if we succeed in making the environment just a little bit optimal for them, we can expect rapid development. This kind of rapid development and the efficient use of environmental opportunities, can even be a sign of twice-exceptional giftedness.

An Imbalanced Ability-Profile

A generally accepted indicator of giftedness is above-average abilities, which is not necessarily easily observed in earlier developmental years. Gifted individuals gain practice, experience and knowledge through persistent, obsessive activities. However, one of the most widespread tools of gifted identification is still the intelligence test even though there has been a significant amount and wide spread of data for decades showing that an unbalanced intelligence structure is far from rare in special groups of the gifted (e.g., Silverman, 1989; Shaw & Brown, 1991; Gyarmathy, 2000). The imbalance also means that gifted individuals, just like those that underachieve in school, may not perform outstandingly in ability tests either. As a result, identified or perceived deficiencies might stay in place, and hinder later.

success as well.

Atypical Development, Giftedness, and the Executive Functions

Brydges et al. (2012) found a positive correlation between intelligence test results and the executive functions, noting that executive functions play a prominent role as giftedness traits in more recent lists for identifying giftedness. Which cognitive functions exactly belong to executive functions is still under debate, but for sake of shared understanding for this chapter, executive functions are essentially the processes that make it possible for someone to get from A to B without deviating from their goal, and to be able to change, if necessary.

Below,I highlight three main groups of executive functioning:

1. Control functions: inhibition, resisting temptation, keeping up attention, shutting out distracting stimuli.
2. Working memory: keeping information in mind (making it possible to connect one thing to another, or to use information to solve a problem, and, thereby, to sustain the mental process).
3. Cognitive flexibility: switching the perspective of or approach to a problem, a flexible adaptation to novel needs and rules – in other words, mentally picking a direction.

However, the relationship between IQ test results and the executive functions manifests on the performance side, so as the terminology itself shows, these functions do not belong to the direct components of intellectual functioning *per se*. In general, an ability cannot manifest itself in its fullness without execution – that is, without control, working memory or cognitive flexibility. A problem for gifted individuals with atypical development is that some disorder of the executive functions can be identified in all types of atypical development, albeit in different forms. While a deficiency of the working memory seems to be a general characteristic of this group (Beringer & Abbott, 2013; Fugate et al., 2013), a deficiency is primarily found in inhibition functions in the case of the learning-, attention- and hyperactivity disorder spectrums, while the autism spectrum tends to be characterised by cognitive inflexibility.

When it comes to giftedness, however, weaker executive functions can have advantages, too. In their study, Fugate et al. (2013) found not just a weaker working memory, but also significantly greater creativity in gifted learners with traits of ADHD than in those without ADHD characteristics. The greater than average creativity identified in the case of dyslexics (Cockcroft, & Hartgill, 2004) could also be attributable to the upside of the relevant deficiencies.

The more rigid mental control in autistic individuals which makes them more disinclined to deviate from the original goal can also be an advantage, as it will not allow thinking to skirt obstacles, but will make it go on tenaciously, and may find solutions. It is possible that if something unusual happens in brain development - for example, certain functions operate at a higher, than average level - then control and guidance systems such as executive functions may be diverted to ensure a relatively balanced developmental pace. When the two forms of exceptionality occur together,

their combination offers greater opportunities for exceptional creative performance. In other words, the propulsion of a rocket differs from that of a very fast car not just in one area, but in a significant part of the whole system.

The Complex Development of Atypically Developing Gifted Individuals

The objective of complex development is to strengthen the executive functions in a way that doesn't affect the exceptional neurological functioning of a gifted individual. The task doesn't seem simple, but I attest that we can follow two courses in parallel. One course leads through solving projects and problems offered in the gifted individual's areas of interest, in which case systematic and persistent activity is supported by their interest. Another possibility is offered by natural cultural tools like exercise, arts and strategic games. These are the cultural activities that have served to strengthen executive functions since the beginning of humanity's history.

A major cognitive leap happened in the evolution of Homo sapiens sometime around 100,000 and 40,000 years ago with a neurological mutation which led to a restructuring of the brain, and which laid the foundation for the emergence of executive functions (Coolidge & Wynn, 2009). The transition to farming required an ability for systematic work and thinking, which was sharply different from what used to be needed for the earlier hunter-gatherer lifestyle (Gyarmathy, 2020). Sports, exercise, arts and strategic games used to play an important role in all ancient cultures, but they have mostly turned into areas of special achievements that have faded from everyday life by today. However, they offer an excellent opportunity for the atypically developing gifted to combine creativity with the development of executive functions. A gifted individual is simultaneously both an adventuring hunter-gatherer and a systematically working farmer. In the case of the typically identified gifted, the latter aspect is stronger than the former, while the situation is exactly the opposite in the case of atypical development. Both kinds of gifted individuals, and indeed everyone, need both kinds of neurological functioning, though. For this purpose, complex development could be made widespread.

Conclusion

Atypical brain development is in itself no guarantee for outstanding achievements but can have the potential to lead to not simply outstanding, but ingenious creations. Giftedness does not arise exclusively from an irregular, atypical brain development, of course, but genius (profoundly gifted) does seem much more to be some special neurological type, rather than simply a higher level of giftedness. The difference is therefore probably qualitative, and not just quantitative. However, individuals

manifesting an atypical brain development are often identified as struggling with a disorder, a problem, or an illness, rather than as gifted, and, as a result, often fail to get the appropriate provision.

The atypically developing gifted differ from both the gifted and the atypically developing populations. Their development is far more dependent on environmental effects than that of the other gifted, but given the appropriate environment, they will develop at a far greater rate than any others. That provision of gifted is the most efficient method in the identification of gifted is particularly true in their case. Complex development, which builds on the gifted side while strengthening neurological maturation and harmony through executive functions, mitigates the disadvantages of a special brain organization while maintaining its advantages.

One of the great challenges of the third millennium is the increasing number of children with outstanding abilities who are incapable of meeting common expectations. Their provision and the channeling of the powers within them necessitates not only a rethinking of education, but a revision of our concept of giftedness and a transformation of gifted education, as well.

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Supporting Gifted Students with Anxiety, Dyslexia, or Attention Deficit/Hyperactivity Disorder (ADHD) in School Settings

Wendy A. Behrens, Cecelia Boswell, and C. Matthew Fugate

Abstract Every child is entitled to a challenging and appropriate education. For students with either significant skill deficits or extraordinary talents, the answer is often clear. However, twice-exceptional students, with remarkable strengths as well as significant challenges, require a different approach. Educators must provide both an intellectually stimulating curriculum and the necessary accommodations to meet special education needs. It is critical for educational services to identify and serve high potential as well as the academic, social-emotional and behavior challenges of 2e learners. In the United States, Individual Education Plans (IEP) detail special education services required to increase academic achievement for students performing two or more years below grade level expectations. A 504 accommodation-plan supports and removes barriers for students with disabilities that affect daily activities. Twice-exceptional students require either an IEP or a 504 with goals and strategies that enable them to achieve at a level and rate commensurate with their abilities. This chapter provides a foundation for understanding the needs of twice-exceptional learners with Attention Deficit/Hyperactivity Disorder (ADHD), Dyslexia or Anxiety. Evidence-based strategies and recommendations provided are strength-based and intended to support talent development.

Keywords Attention Deficit/Hyperactivity Disorder (ADHD) · Dyslexia · Anxiety · Evidence-based strategies · Talent development

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EVERY child is entitled to a challenging and appropriate education. Although educators' obligation to provide an appropriate education is unquestionable, unique student needs require modification to content and instruction. For students with either significant skill deficits or extraordinary talents, the answer is often clear. However, twice-exceptional (2e) students, with remarkable strengths as well as significant challenges, require a different approach. Educators must provide both an intellectually stimulating curriculum and the necessary accommodations to meet special education needs (Fugate et al., 2020).

Reis et al. (2014) provided an expansive definition linked to criteria established at federal and state levels.

> Twice-exceptional students who demonstrate the potential for high achievement or creative productivity in one or more domains such as math, science, technology, the social arts, 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. (p. 222)

In the United States, the most common delivery system for gifted and talented services occurs within the regular classroom (NAGC & CSDPG, 2020). Through differentiated instruction, educators modify content, process and product to customize learning experiences based on student need and preferred modality for learning. When based on pre-assessment, differentiated instruction is an effective strategy for addressing the diverse learning needs of students within a mixed ability classroom. Therefore, the ability to differentiate instruction is a critical skill all educators must acquire during pre-service training, and hone through ongoing professional learning. David A. Sousa and Carol Ann Tomlinson wrote that, "Differentiation is neither revolutionary nor something extra. It is simply teaching mindfully and with the intent to support the success of each human being for whom we accept professional responsibility" (Sousa & Tomlinson, 2018, p. 10).

Generally, recognizing and responding to the needs of gifted learners in a school setting provides both opportunities and challenges. When the disabilities and high abilities combine, students may fail to demonstrate either high academic performance or specific disabilities. Their gifts may mask their disabilities and their disabilities may mask their gifts (Fugate et al., 2020). Identification of twice-exceptional students can be complex, with giftedness and disability potentially masking the presence of each other (Reis et al., 2014). Therefore, it is critical for educational services to identify and serve high potential as well as the academic, social-emotional and behavior challenges of 2e learners.

Unfortunately, even today some professionals continue to argue that gifted students cannot also have disabilities or special needs. Others claim that the 2e population is too amorphous. Increasing evidence suggests that these students not only exist, but also have remarkable minds (Foley Nicpon et al., 2011). For many students, school services provide the only avenue in which both their giftedness and disability may be formally considered.

In the United States, Individual Education Plans (IEP) detail special education services required to increase academic achievement for students performing two or more years below grade level expectations. A 504 Accommodation plan supports

and removes barriers for students with disabilities that affect daily activities. Twice-exceptional students require either an IEP or a 504 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 (Reis et al., 2014, pp. 222–223).

While there are many exceptionalities to consider, space limitations for discussion of exceptionalities require the authors of this chapter to focus their efforts on three commonly found within classrooms in the United States and around the world. It is our intention to provide a foundation for understanding the needs of twice-exceptional learners with Anxiety, Dyslexia, or Attention Deficit/Hyperactivity Disorder (ADHD). Evidence-based strategies and recommendations provided are strength-based and intended to support talent development among 2e students in school settings.

Anxiety Disorders

Anxiety is a normal human emotion that has origins as a useful survival response to dangers in the world. Anxiety and fear act as signals of danger, threat, or motivational conflict, and trigger appropriate adaptive responses. Anxiety is a response to an unknown threat or internal conflict, and fear focused on known external danger. Anxiety and fear are adaptive and defensive reactions to escape the source of danger or motivational conflict. These reactions include active responses to escape the threat, labeled as fight or flight, and passive responses, labeled freeze, when the threat appears inescapable (Harvard Health Publishing, 2018).

According to Boatman and Boatman (2020) in *Understanding Twice-Exceptional Gifted Learners*, generalized anxiety disorder (GAD) is characterized by:

> having worry that occurs on more days than not for a period of 6 months or more. This worry is hard to control and leads to a wide variety of physiological symptoms, including fatigue, fidgetiness, sleep disturbance, and muscle tension. In order for GAD to be diagnosed, there must be subjective distress about the feelings of worry (APA, 2013). GAD in a school setting includes children being tense or worried and having physical symptoms, such as stomachaches, nail biting, and nervous tics. Youth may be anxious about doing poorly on tests, health, family or peers, or the world. These worries may interfere with developmental processes, classroom performance, and relationships with others. (pp. 247–248)

In addition to GAD, the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (DSM-5) (American Psychiatric Association, 2013) published by the American Psychiatric Press identifies Panic Disorder, Social Anxiety Disorder, Separation Anxiety Disorder Specific Phobia, Obsessive-Compulsive Disorder, Post-Traumatic Stress Disorder and Acute Stress Response as anxiety disorders that may affect children and adolescents.

Gifted children have many life experiences and characteristics that may contribute to anxiety responses to their environment. Unlike their age-mates, gifted

children may suffer from increased or unrealistic expectations from others for success and high performance. Perfectionism, a personality trait characterized by high expectations, is common among gifted children and adults. Perfectionism may be motivated by an internal desire to be the best or external forces. Gifted children may have increased environmental pressure to perform because of past optimal outcomes in academic and creative achievements and family focus on success and outcomes. High-achieving schools, which have an emphasis on high standardized test scores and graduates who head to top colleges, have been placed in an at-risk category of having higher rates of behavioral and mental health problems compared with national norms (National Academy of Sciences, Engineering, and Medicine, 2019). Table 1 provides a list of recommendations for educators as they work with gifted students with anxiety disorders.

Referral

Not all student needs may be effectively addressed within a school setting. On occasion, a student may need a more extensive level of support than can be provided within a school setting. If student needs interrupt full participation in school, or there is concern the student is at risk physically or mentally the family should be notified immediately. Any student experiencing high levels of anxiety needs professional help. Fortunately, there are psychologists able to support students and their families.

Gifted and Dyslexia

Twice-exceptional learners with dyslexia show both learning strengths and learning differences. As described in the Introduction to this chapter, their strengths may hide their learning difference and their learning difference may hide their giftedness (Fugate et al., 2020). To better understand 2e students with dyslexia the *International Dyslexia Association* (2020) noted that twice-exceptional learners with dyslexia masked by giftedness exhibit some of the following traits:

- Vocabulary beyond their chronological age
- Creative thinking in problem solving
- Enhanced curiosity and imagination
- Variety of interests outside of school
- Passionate about one interest or about a talent

While these traits appear to be positive for the learner, they are not behaviors generally addressed on standardized tests of intellectual ability or on achievement tests. Formal identification measures for gifted services may indicate a wide range of abilities that do not meet set criteria. Conversely, the student's gifted oral abilities

Table 1 Recommendations for students with anxiety

Strategy	Rationale
Practice steps to overcome perfectionism	When students hold themselves to unrealistic standards, they are likely to experience higher levels of anxiety than their age-mates. Students are more likely to gain control when they: set realistic goals and expectations practice self-care including a healthy diet, exercise, downtime and adequate sleep practice relaxation techniques celebrate mistakes as a learning opportunity
Mindfulness	Mindfulness programs generally increase awareness of thoughts and emotions in speech and behaviors. When students are mindful they are more likely to make appropriate choices. Students who are mindful may experience increased: self-management attention increased confidence
Facilitate social connections	Students with friends tend to have a more enjoyable school experience and reduced anxiety. Having friends and learning to be a friend may not be easy for a student with high anxiety. Help students to practice being a friend by: establishing a "friends group" where selected students engage in a collaborative activity facilitated by the school social worker or psychologist use flexible grouping within the classroom to provide opportunities for students to work together in small groups with supportive peers find ways to incorporate student interests into lessons
Cognitive Behavioral Therapy (CBT)	CBT helps students understand irrational behavior and the level of their own anxiety. Anxiety is likely to lessen when students are able to express themselves and understand their: irrational beliefs physical reaction to emotional stimulus level of their emotion
Other suggestions	Additional recommendations from educators and other practitioners include: taking time to listen and respect student concerns providing breaks as needed designating a word that can be used by a student with high anxiety to "escape" from the classroom is needed designating a place where students who need time away can sit providing extra time for students to complete work allowing a student to make an appointment to speak privately with you

Note. Data from Baum et al. (2017), Foley Nicpon et al. (2011), Fugate et al. (2020) and personal experience

allow the observers to consider that there is a possibility of dyslexia but their thoughts are dismissed when they see formal testing discrepancies among content areas, specifically reading. When this occurs, it is important to ensure that students are tested in their areas of strength. Tests that are limited in scope or that focus on

high achievement scores across disciplines are unfair to the 2e student (Dunson, 2020; Fugate et al., 2020; *International Dyslexia Association*, 2020).

Students who are not recognized for their gifted areas of strength and afforded opportunities to develop areas of learning differences do not have access to appropriate services that provide for academic, intellectual and emotional growth. Appropriate services are those that address giftedness first. According to Dunson (2020), in his chapter "Reading Skills, Developmental Dyslexia, and Twice Exceptionality" in *Understanding Twice Exceptional Learners*,

> Twice-exceptional students must be seen as gifted first. Therefore, enhanced remediation, or additional context, is required to meet their need for advanced content. Enhanced remediation augments the level of depth and complexity that goes beyond simply addressing the challenges of struggling readers (p. 147).

Dunson expands upon this idea that for twice-exceptional students to maintain full potential they should also, "work with a highly qualified reading specialist who is trained in a methodology that has been scientifically proven to be effective for struggling readers to help with the remediation process" (p. 148).

van Gerven identified the need for teachers to recognize the unique nature and needs of the gifted learner while accommodating differing academic needs in the dyslexia student. When the two areas are combined, an even more specialized learning plan is required. One size will not fit these twice-exceptional students. To meet their needs, van Gerven believes they must be "doing something slightly different or doing the same thing at a slightly different time" (p. 176). How, then, can educators meet this challenge?

Recommendations

Gifted students learn best through a conceptual lens. When studying a topic, their learning is developed around a concept. For example, when studying about cell division, gifted students could learn through the conceptual lens of Structures. The teacher offers the generalization, "Structures are built on other structures" to focus their learning. Students apply this generalization statement in the study of cell division. By pairing the conceptual lens with learning that is in-depth and complex, gifted students' learning needs are met. Examples of questions that could be asked to meet the criteria of conceptual lens, depth and complexity are (Texas Education Agency, 2006):

- In what ways are cell structures built on other structures?
- Define and support with evidence the structural effects of scientific and social trends related to cell division.
- How did the understanding of the structure of cells change over the twentieth century?
- How is the structure of cell division similar and dissimilar to laws governing our society?

Along with the *what* for gifted learners is the *how*. Learning options that address both *what* and *how* may be included on a Choice Board or in a Menu. Or the questions may be infused into a project that looks at cell structure and its effects on society and our culture.

But how will this meet the needs of the gifted student with dyslexia? Twice-exceptional students, too, must be given options of not only how they learn, but of how to express their learning. Each of the activities can be completed through a TED Talk, a video presentation, a model, a debate, a timeline, a skit, or any of a variety of other methods that do not require reading; and that tap into characteristics stated above from the *International Dyslexia Association* (2020). This approach, along with guidance from their dyslexia teacher to access the information and understand content, creates an environment that supports their gifted learning needs, acknowledges their learning difference, and meets the curriculum needs related to their twice-exceptionality.

Attention Deficit Hyperactive Disorder

According to the DSM-5 (American Psychiatric Association, 2013), ADHD can be diagnosed based upon the level of inattentiveness and/or hyperactivity-impulsivity exhibited within an individual in more than one setting, resulting in one of three subtypes—ADHD, predominantly inattentive presentation; ADHD, predominantly hyperactive-impulsive presentation; or ADHD, combined presentation. Reports have estimated worldwide-pooled prevalence rates to be 5.2–7.2% (e.g., Polancyk et al., 2007; Thomas et al., 2015).

Gifted students with ADHD face unique challenges as they navigate their academic and social worlds placing them at risk for poor self-image and underachievement (Baum et al., 2017). These challenges require recognition and support to help students with social skills and academic attention in order to avoid negative consequences that can adversely affect their lives. However, these students may also display certain strengths. For example, Fugate et al. (2013) compared divergent thinking skills (i.e., creative thinking) in gifted students with and without ADHD symptomatology and found that gifted students with ADHD characteristics displayed higher levels of creative thinking skills.

Further, because many gifted characteristics share similarities with those associated with ADHD (e.g., becoming easily bored with routine tasks; disorganization; carelessness), Pfeiffer (2013) warned of the possibility of a missed diagnosis in children who are gifted with ADHD. As such, teachers' and parents' perceptions play a critical role in identifying and providing appropriate educational services for students with ADHD.

By incorporating opportunities for gifted students to explore personal interests through authentic learning experiences such as project- and problem-based learning, teachers may mitigate the effects of ADHD symptomologies. Positive effects of

these authentic experiences in the classroom have been self-reported by twice-exceptional students as young as Grade 2 and their teachers.

Similarly, Fugate et al. (2013) noted the importance of providing gifted students with ADHD with more opportunities for differentiated instruction through hands-on and problem-based learning that meets their academic and social-emotional needs. Further, cultural diversity among faculty may be a factor in how teachers view ADHD. Researchers have noted the importance of the inclusion of multicultural perspectives, concepts, and materials in gifted classrooms (Ford & Trotman Scott, 2001), particularly for students who are twice exceptional (Nielsen, 2002).

Finally, Nielsen (2002) asserted that quality professional learning in the areas of giftedness and twice-exceptionality were vital for teachers to serve and advocate for the needs of their students. Professional learning targeted toward understanding the unique needs of gifted students with ADHD should be provided with a focus on building more collaborative partnerships between teachers and parents (Fugate & Bower, 2019).

Conclusion

Twice-exceptional students require services that address both their gifts and their challenges. Unfortunately, these "learning different" students are often overlooked in classrooms due to the masking of their strengths, their challenges, or both. In order to appropriately meet the needs of these students, educators must work to 1.) increase their own awareness that these students exist; 2.) differentiate instruction in ways that acknowledge and honor their giftedness; and 3.) participate in sustained professional learning with the goal of increasing advocacy. In doing so, we shift to a strength-based focus that recognizes their unique needs, their resiliency, and their motivation to achieve.

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Supporting the Emotional Well-Being of Twice-Exceptional Students Using Literature

Thomas P. Hébert

Abstract Twice-exceptional (2e) students face a number of challenges in their psychosocial development including stress and frustration that influences self-esteem, challenges with identity development, self-perceptions being influenced by extracurricular activities, difficulties with peer relationships, and a need to understand the experience of being both gifted and having a learning disability. As a result, these students need counseling support. This article describes how educators can facilitate therapeutic discussions using high quality literature and guide twice-exceptional students to self-understanding. The article then delineates suggestions for conducting counseling discussions and offers a sample lesson plan based on a classic children's picture book that speaks to issues related to twice-exceptionality.

Keywords Psychosocial · Counseling support · High quality literature · Self-understanding

Social and Emotional Challenges Facing Twice-Exceptional Students

In schools today there are students who have characteristics of giftedness while at the same time have academic and/or social-emotional challenges indicative of a disability. Since they often do not fit the stereotypical characteristics of students with giftedness or a disability, this population is known as twice-exceptional (Pereles et al., 2018). Scholars and theorists have maintained that twice-exceptional students face a number of difficult psychosocial challenges in their lives (Baum et al., 2017; Foley-Nicpon, 2016; Omdal et al., 2020; Trail, 2011). Silverman's (2003) call for help for these children serves as a cogent reminder of the need to support their emotional well-being:

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> … there is a group of disabled children who remain virtually defenseless. These children are physically healthy and highly intelligent, but poorly coordinated, dyslexic, dysgraphic, anxious or hyperactive. They are often teased by their classmates, misunderstood by their teachers, disqualified for gifted programs due to their deficiencies, and unserved by special education because of their strengths. Twice-exceptional learners can become casualties of a system that refuses to acknowledge their existence, fails to identify them, and does not support their strengths or assist them with their weaknesses. They are often left on their own to cope with their differences. (p. 534)

With appreciation for this poignant message, concerned educators and counselors benefit from an understanding of the challenges faced by 2e students. In understanding the experience of being both intelligent and learning disabled, practitioners have noted that twice-exceptional students face great frustration and stress every day as they struggle with life skills and competencies that most young people their age have acquired. They may also feel that they must present an image to those around them that they are in control of their situation. So often these young people must function and survive in an unfriendly world where they are judged and judge themselves according to what they are unable to do. As a result, they routinely experience frustration and stress. The tendency toward intense frustration may eventually produce a lack of motivation, disruptive or withdrawn behavior, feelings of low self-esteem, and a sense of learned helplessness (Olenchak & Reis, 2002).

Twice-exceptional students also experience a struggle with identity development. Given their experiences with feeling smart in some areas of their lives and feeling incapable in others, they may constantly question their abilities and struggle to understand just who they are (Hébert, 2020). As Dole (2001) indicated, twice-exceptional students perceived being gifted and learning disabled as an oxymoron and 2e students have difficulty in "comprehending the dichotomy that exists in individuals with giftedness and learning disabilities" (p. 129).

Another challenge facing 2e students is their perception of self may be influenced by extracurricular talents and strengths. How they see themselves in school versus how they view themselves out of school can be critical in shaping the identity of twice-exceptional students. Some will find salvation in extracurricular activities. Rather than see themselves as intelligent young people who may be struggling learners in mathematics or language arts, they prefer to see themselves as superstars on the athletic field or the theatrical stage. Their engagement in a sport or extracurricular activity provides them the feeling of what it must be like to be a smart student. Their identity is shaped by their experiences with such successes. The challenge becomes not allowing them to think of themselves in a one-dimensional way. Success in extracurricular activities may not last forever, and adults do students a disservice when promoting the view that their abilities in other domains will totally counteract the struggles with learning (Hébert, 2020).

Twice-exceptional students also are challenged with peer relationships as they progress through school. Many of them feel isolated as they struggle to establish satisfying relationships with friends. The stress and frustration experienced in school by many 2e students may have social ramifications. As the difficulty with academics continues and they begin to have negative views of themselves, their peer

relationships may change. The friends they had during the earlier period in their lives when they saw themselves as competent and smart are no longer in their reading groups and classes and sitting with them in the school cafeteria. Those friends may become participants in the school's gifted program, and the gifted child with learning disabilities is left feeling deserted, especially if they excluded from the program. These students may take a defensive approach in coping with this upsetting situation. Others may purposefully withdraw from their peer group (Hébert, 2020).

Understanding and learning to live with a disability is important. When students are officially diagnosed as having a learning disability and understand that they are not to blame for the problem, they are likely to feel a sense of relief. Once they understand their brain works differently, they can acknowledge the challenge and work with it. However, they must come to understand that their disability will have an impact on many aspects of their lives. They must begin to work with supportive adults to understand how the disability will affect them. Particular skills may be challenging for them, skills that will be required in summer jobs, college courses, or daily activities. Maintaining a schedule, acquiring a driver's license, and balancing a checking account are just a few that some face. As they move into adulthood, the challenges may change; however, the disability does not. It is with them for life (Hébert, 2020).

A Teaching Strategy to Support Twice-Exceptional Students

With educators and counselors aware of the challenges facing twice-exceptional students, it becomes critical that they be trained in teaching and counseling strategies to support their emotional well-being. As a scholar and practitioner, I have long been a proponent of using literature to facilitate discussions with students about their challenges or concerns. I believe that authentic interactions with literature contribute to overall social and emotional development. Such an approach is referred to as bibliotherapy, defined as the use of reading to produce affective change and to promote personality growth and development (Lenkowsky, 1987). Another seminal definition is Lundsteen's (1972): "getting the right book to the right child at the right time about the right problem" (p. 505). With graduate students and teachers enrolled in my gifted education courses I describe the approach as "guiding young people to self-understanding through literature" (Hébert, 2020, p. 82).

I am reluctant to use the term bibliotherapy simply because I do not want to raise concerns among parents and administrators that I am doing something I am not qualified to do as a teacher. I am not a therapist; however, as a practitioner, I can facilitate good discussions with twice-exceptional students about good books. In doing so, I can help them draw parallels between their experiences and those of the main characters in the books. I also can help them listen to their classroom peers as they share their feelings about personal experiences related to the focus of the lesson. Such an approach is simply an attempt to help 2e students understand

themselves and cope with problems by providing literature relevant to their personal situations and developmental needs at appropriate times.

I want to emphasize the term developmental. My objective is to help guide twice-exceptional students to reach self-understanding. In conducting such discussions in classrooms, I focus on issues that many bright students experience—perhaps more intensely and in different ways. Literature can help young people appreciate their emotional sensitivity and intensity. Good books can help them develop more realistic self-expectations. For others, a book's message regarding the role of resilience in overcoming adversity may be helpful. In addition to supporting these characteristics, other developmental issues such as establishing and maintaining friendships, dealing with parental and teacher expectations, determining healthy self-expectations, and coping with peer pressure are concerns I would feel comfortable dealing within public school classrooms. More serious concerns would be reserved for counselors. Teachers of 2e students using this approach believe that reading can influence thinking and behavior, and that guided discussions about selected books can focus on specific needs of students. Such an approach attempts to address concerns of young people before concerns become problems, providing needed information and understanding for facing the challenges of adolescence.

Halsted (2009) proposed that literature can easily engage gifted students emotionally. The therapeutic experience begins when young people pick up a book and discover characters very much like themselves. This interaction is known as identification, and the more twice-exceptional students have in common with the people they meet in their books, the closer the identification process. With that identification comes a tension relief, or catharsis, an emotional feeling that lets children know they are not alone in facing their problems. As they enjoy a story, they learn vicariously through the book's characters. They gain new ways of looking at troublesome issues, and insight evolves. With this new insight, changed behavior may occur as they confront real-life situations similar to those experienced by the characters in the books.

DeVries and her colleagues (2017) proposed that most people have within them the resources to heal themselves. Emotional upheavals experienced by sensitive young people may paralyze their ability to access this valuable resource. Therefore, the use of appropriate literature may be helpful in getting twice-exceptional students through their hurt feelings, enabling them to reach down into their personal reservoirs and find answers to troubling questions. In essence, the book, in and of itself, is not therapeutic. The therapeutic effect depends on the response of the readers to that literature as it is facilitated through group discussion, and the change takes place within the student (Hynes & Hynes-Berry, 2011).

In any discussion of a high-quality book with 2e students, the goal of the discussion is to have participants share their feelings and listen closely to themselves as well as each other. In a group discussion, it is important that the students leave the classroom with an awareness that others have experienced the same feelings. Under the guidance of a knowledgeable and empathic teacher or counselor, a group discussion can bring about the universality of experience—a feeling of "we are in this together."

Teachers and counselors who facilitate such discussions are responding to their need to incorporate meaningful follow-up activities. Such activities might include creative writing, poetry, creative problem solving, journaling, writing song lyrics, writing raps, writing a letter or news article, designing television commercials, role-playing interviews with the book's main characters, holding a mock trial, creating a collage, cartooning and other art activities, or self-selected options for students to pursue individually (De Vries et al., 2017; Hébert & Kent, 2000; Stambaugh, 2019).

In conducting the follow-up activities, I have discovered that the more enjoyable they are, the more effective they are. I emphasize enjoyable because I have found that as young people are engaged in something enjoyable, they are more apt to continue discussion among themselves about the issues talked about earlier with the group. During this time, the students continue to provide each other with supportive feedback. For example, as boys are engaged in an artistic activity, a teacher may overhear comments such as, "John, I didn't know that Butch Mulligan used to pick on you, too, back in second grade. It made me feel better to hear that I wasn't the only kid he bullied."

I have also learned, in conducting these lessons, that effective follow-up activities can be either collaborative or private. Providing students a choice of working in groups or alone addresses their individual learning styles. Moreover, I have discovered that when discussions involve students engaging in serious self-disclosure, private journaling as a follow-up activity provides time to "process" their feelings. I have come to believe that the follow-up activities are as important as the group discussion, and I have found that the more hands-on the follow-up activity, the more boys will talk. Engaging in hands-on activity is critical for young men to feel more comfortable in discussing their feelings. Girls appear to have fewer problems with talking. With these points in mind, guided discussions centered on affective concerns can be enjoyable while providing a time for solid introspection.

In selecting high-quality books to use with this approach, it is important to for teachers to remain mindful of the influence of books they select to explore with students. Teachers have the responsibility of selecting books of great worth, those that provide rich metaphors and help readers understand themselves and others, books that connect to the emotional lives of young people. Today educators and counselors may enjoy exploring the internet in search of the many high-quality picture books and young adult novels featuring twice-exceptional students. To support teachers and counselors a sample lesson plan is provided below featuring a classic picture book, *Eggbert: The Slightly Cracked Egg* (1997) authored by Tom Ross and illustrated by Rex Barron.

This landmark picture book presents the poignant story of Eggbert, an egg who wears a red beret and carries a palette and brush as he enjoys painting for his friends in the refrigerator. When they discover a crack in Eggbert's shell, he is banished from the fridge. He must search for a new place to live. In his challenge to find a new home he discovers that his artistic talents enable him to camouflage himself as he paints himself into the landscape. Eventually Eggbert notices the sun shining through a crack in the sky and realizes that the world is filled with wonderful cracks. As he accepts his imperfection, he travels around the world to visit famous cracked

sights—a canyon, an island volcano, and even the Liberty Bell. Throughout his travels Eggbert paints postcards of his adventures to send to the eggs back in the refrigerator. From his journey Eggbert realizes that it's rather wonderful being slightly cracked.

Lesson Plan[1]

Eggbert: The Slightly Cracked Egg

Themes/Key Concepts
- Sensitivity and empathy in twice exceptional students
- Camouflaging one's weaknesses
- Overcoming adversity
- Perseverance
- Being true to self
- Imperfections make people more interesting
- Having a strong belief in self

Possible Introductory Activities
- Discuss what it means to be slightly cracked.
- Discuss what it means to camouflage oneself to fit in.

Selected Passages to Be Used in Discussion
- Eggbert began to notice something he had never noticed in his whole life: The world was full of cracks—all sorts of wonderful cracks!
- "He realized that no matter how he painted himself, he could not hide who he was."

Menu of Possible Discussion Questions
- What did you like about Eggbert?
- Why do you think Eggbert's paintings cheered up the other eggs in the refrigerator? Do you have special talents that your friends enjoy? Describe them.
- Why do you think Eggbert painted himself to blend right in with his surroundings? Was he wise in doing that? Why or why not?
- Do some students try to "paint themselves to blend in" here in our school? Why do you think they might do this? Do you think this is wise? What advice would you give them?
- What enabled Eggbert to overcome the challenges he faced in his search for a place to live?
- How did the sun shining through a crack in the clouds change Eggbert's life? Have you ever had a special moment that inspired you to think differently about yourself? What happened?

[1] This lesson plan is an updated version published in Hébert (2022).

- Why do you think Eggbert enjoyed traveling the world in search of famous cracked sights?
- Why do you think Eggbert sent the eggs back home in the refrigerator such beautiful postcards? What does that say about him? Would you have done that? Why or why not?
- How does Eggbert become proud of being slightly cracked?
- How are we "slightly cracked"? How do our cracks make us more interesting people? How do they help us?
- How can we celebrate our being "slightly cracked"?
- Eggbert travels to our school in search of interesting cracks. You have an opportunity to interview him. What questions would you ask? How might he respond?

Menu of Possible Follow-Up Activities

- Write and illustrate a poem about Eggbert's journey to find a place to live.
- Create a classroom mobile that captures the lessons learned through Eggbert.
- Create a photographic collage that celebrates the Eggbert's special qualities.
- Write a rap about being slightly cracked.
- Design artistic postcards from new places that Eggbert might explore.
- Use your private journal to write a letter to Eggbert to let him know how you feel about what he did for himself and his friends back home in the refrigerator.
- Paint a picture of an egg that represents how you are slightly cracked. Highlight how your crack makes you unique.
- Write a text message to the eggs back home in the refrigerator. What would you want them to know about what you learned from Eggbert?

Conclusion

In my work teaching in summer institutes in gifted education, I have had the opportunity to survey teachers to determine particular concerns they believed were appropriate to address with twice-exceptional students implementing this approach in school settings (Hébert, 2020). Following my thematic analysis of the responses, the following issues were those that elementary and secondary school teachers felt comfortable handling with 2e students in open class discussions:

- self-expectations, parental expectations, and teacher expectations;
- finding and building authentic friendships;
- celebrating individual differences;
- appreciating diversity;
- developing empathy;
- being comfortable with one's personal creativity;
- juggling academics and athletics;
- dealing with disappointments;
- developing courage and resilience;
- coping with stress and anxiety;

- celebrating one's uniqueness; and
- believing in self.

From those surveys and in my conversations with educators and counselors, I was assured that many professionals believe that having meaningful discussions centered on good books has tremendous potential for addressing developmental concerns of young people. Literature has tremendous potential to assist educators and counselors in supporting the emotional well-being of twice-exceptional students.

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Part III
Introduction: Person (Exosystem & Socialized Structures)

Continuing a discussion from the lens of *Person* that was introduced in Part II, Part III (Chapters, "Gifted Trauma and Twice-Exceptionality: Preventing Psychological Injury in the Classroom", "Twice or Thrice? Identification Issues and Possibilities Related to Twice Exceptionality in Australian Schools", "Strength-Based Approaches to Recognize and Develop Talent in Twice-Exceptional Learners" and "Comprehensive Social Emotional Learning: Embedding Skill Development Program-wide") dives deeper into exosystems and socialized structures, as indirect impact, that can further exacerbate our ability to effectively identify and serve twice-exceptional students. The exosystem encompasses the people and institutions (i.e., policies, institutional power, multimedia influence, dimensions of social differences and privilege, etc.) that preserve or challenge the social structures. These also include the local and national economy, political system, educational system, local and national government, and religious affiliations – contexts where the developing individual does not have direct contact but is nevertheless indirectly affected, such as a parent's place of work.

As already noted for shared understanding, cognitive diversity recognizes that prior knowledge and past experiences influence thinking. It also impacts a student's learner profile, which includes academic readiness along with keen personal interest and cultural values. If this profile is constantly evaluated by educators through a deficit lens or limited dominant cultural perspective, additional environmental issues and limitations for identification of gifted and other learning exceptionalities may arise – as a result of mismatch as noted in prior sections of the text.

It is important that educators acknowledge and consider exosystems and socialized structures. Chapters, "Gifted Trauma and Twice-Exceptionality: Preventing Psychological Injury in the Classroom", "Twice or Thrice? Identification Issues and Possibilities Related to Twice Exceptionality in Australian Schools", "Strength-Based Approaches to Recognize and Develop Talent in Twice-Exceptional Learners"

and "Comprehensive Social Emotional Learning: Embedding Skill Development Program-wide" provide the reader with such considerations to include negative effects of trauma experienced by the individual, identification issues, and strategies and approaches for talent development and social emotional learning (SEL) as promising solutions for servicing twice-exceptional students.

Trauma Induced Twice-Exceptionality: Preventing Psychological Injury of Gifted Children in the Classroom

Kate Bachtel and Rachel Fell

Abstract What happens when invisible psychological injuries occur in the classroom? How does trauma disproportionately affect neurodiverse gifted and twice-exceptional young people? Gifted and twice-exceptional youth experience relational aggression and oppression at alarming rates, sometimes resulting in trauma-related diagnoses including anxiety and depression. These injuries can cause long-lasting negative effects well into adulthood. High intelligence and strong mental health practices may strengthen resilience, but they do not immunize from trauma. Anyone can experience psychological injuries from oppression, abuse, or neglect. Some hypothesize the threshold for injury may be lower for gifted and twice-exceptional individuals with sensitive and highly refined nervous systems. The insidious effects of unresolved trauma impact not only the individual, but also the communities in which each live. Repetitive cycles of injurious behaviors and fractured relationship dynamics are common. In this chapter, the authors share a case study of a gifted child who experienced psychological injuries leading to trauma-induced twice-exceptionality. They also discuss classroom strategies to support healing and inclusion. Readers will learn how signs of gifted and twice-exceptional trauma may present and be provided suggestions for policy changes to help prevent suffering.

Keywords Gifted · Twice-exceptional · Neurodiversity · Educational oppression · Trauma · Policy · Classroom strategies

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Gifted as a Marginalized Class Vulnerable to Trauma Induced Disabilities

Gifted children are outliers—their brains and bodies process information and the world around them differently (Karpinski et al., 2018; Gifted Research & Outreach, 2022). These differences are often apparent from an early age in their unique and exceptional processing abilities. Unfortunately, the educational policy and legislative landscape in many countries focus on standards that oppress outliers. Expecting gifted youth to assimilate to the majority can result in self-distancing and children abandoning their true selves (Bachtel, 2017). There is a body of research illustrating gifted youth have been historically underserved in schools in the United States (Delisle, 2014) and that systemic oppression can result in a range of coping behaviors including underachievement, alienation, and in extreme cases, suicide (Cross, 2011). Furthermore, gifted children experience bullying in school at a rate of approximately double their neurotypical peers (Peterson & Ray, 2006; Peters, 2012; StopBullying.org, 2019) and bullying can cause physical and/or psychological injuries, including trauma-related diagnoses (Haines, 2019).

Expert educators and clinicians have raised concerns about the frequency with which gifted children are misdiagnosed with disabilities as well (Webb et al., 2016). Current diagnostic practices further exacerbate this concerning reality—when origins and context go unexamined, misunderstanding compounds. Inadequate trauma diagnoses add to confusion as a student presenting with anxiety, depression, ADHD, oppositional defiant or a range of other conduct or emotional disorders, may in fact have a psychological injury as a result of oppression, neglect, and/or relational aggression. Diagnostic shortcomings contribute to a failure to understand root causes of challenging student behaviors. Subsequently, students do not receive the services and supports needed, nor the protections requisite to preventing injury and further suffering. As trauma can not only mask giftedness (Bachtel, 2016), but also negatively impact development (Devereux, 2016; Haines, 2019), understanding why and how gifted youth can be vulnerable to psychological injury in school settings is a moral imperative.

Social justice approaches to education recognize development occurs in the context of families, neighborhoods, and school communities and that health challenges cannot be resolved without addressing the sociopolitical and historical contexts of the larger systems to which individuals belong (Haines, 2019). Kumashiro defines social justice approaches to education as those that recognize school practices can contribute to oppression and prepare teachers to challenge the unjust status quo (2015). To create lasting change, educators have a responsibility to dismantle systems of power and privilege in schools that can stunt child development and negatively impact health. Neurodiverse youth, including gifted and twice-exceptional students, are often marginalized given unseen differences in how they think, feel, and process. Federal legislation in the United States provides a degree of protection for students with disabilities (U.S. Department of Education, 2020); however, gifted

students who can be as cognitively divergent as students with learning dis/different abilities, are not afforded commensurate legal rights.

Furthermore, gifted and twice-exceptional (2E) youth are frequently oppressed in traditional school models (Chu & Myers, 2015). Western approaches to health care and education often pathologize and marginalize physical and psychological differences. Expectations of conformity and compliance can result in institutional violence including racism, ableism, unnecessary medical treatments, punishments, imprisonments and more. Systemic trauma occurs when there is "repeated, ongoing violation, exploitation, dismissal of, and/or deprivation of groups of people" (Haines, 2019, p. 80). Denying access to a meaningful education, positive self-reflections, dignity, and belonging can have a traumatic impact on both communities and individuals (Haines, 2019).

Defining Gifted, Twice-Exceptional (2E) and Neurodiversity

Before beginning, it is important to define terms given varying definitions in the field. Here giftedness is defined as an educational, psychological, and physiological construct. Educational giftedness is frequently framed relative to aptitude and achievement testing results in the top 5 percent of national, state, or local norms. However, limited definitions of giftedness neglect critical physiological and sociocultural variables requisite to understanding how youth experience the world. The widely recognized Columbus Group definition references intensity and asynchronies in development that increase with higher intellectual capacity to facilitate deeper understanding (1991, as cited by Neville et al., 2013). As related, twice-exceptionality is a term used to describe students who are both gifted and have a disability (NAGC, 2020). This leads to an important question: where does asynchrony end and twice-exceptionality begin? In the United States, this question is answered in terms of existing legislation, namely the Individuals with Disabilities Education Act (IDEA), that clearly defines disabilities and which students are afforded protections and special education services.

The lines between gifted asynchrony and twice-exceptionality are often blurred and influenced by sociocultural context (Bachtel, 2017). Systemic oppression and neglect can result in trauma related diagnoses and disabilities. Moreover, gifted, special education, and twice-exceptional labels themselves influence student ideas of self. Labels can, and often do, grow self-awareness, yet can also exacerbate conceptions of difference and outlier status when used without care.

Neurodiverse is a term being used with increased frequency to describe gifted and twice-exceptional populations. Sociologist Judy Singer introduced the term *neurodiversity* in the 1990s to reject the idea that autistic individuals were disabled. Since then, many have embraced *neurodiversity* to describe brain differences that result in unique ways of experiencing, interacting with, and interpreting the world (Morin, 2022). We use *neurodiversity* to describe neurological and physiological differences associated with giftedness, learning differences, autism, attention

differences and combinations thereof. Strengths-informed, individualized and meaningful instruction benefit each of these historically excluded neurotypes and having an umbrella term unifies cognitive outliers in activist efforts.

A Call to Prevent Gifted Trauma

The outlier, marginalized status of gifted youth renders them vulnerable to trauma-related injuries which can, in turn, become disabilities. We posit the term *Gifted*, a label that implicitly communicates superiority, may have origins as a trauma response to systemic oppression—*Gifted* can be viewed as a rejection of accusations of being broken, of being "too sensitive," "too intense," "too quick," etc. Regrettably, language that conveys "better than" contributes to biases and misconceptions that are barriers to sustainable change. While clinical twice-exceptionality encompasses a range of gifted student strengths and disabilities, inclusive of, but not limited to dyslexia, attention deficit hyperactivity disorder, blindness, autism, hearing impairments, dyscalculia and more, here we focus on disabilities that occur as a result of toxic sociopolitical school contexts. The reason for this focus within twice-exceptionality is to inspire changes to policies and practices that positively impact student well-being and development.

In this chapter, we discuss the relationship between giftedness and trauma-induced twice-exceptionality, inclusive of the role the nervous system plays in development and classroom experience. This is followed by an in-depth, longitudinal case study of a gifted student who became twice-exceptional after experiencing oppression and relational aggression in school. The purpose of the case study is to grow understanding of how shortcomings in teacher preparation programs and school policies can negatively impact the development and well-being of neurodivergent students. Signs of trauma are shared, as well as strategies and approaches to support trauma-informed classrooms. Finally, with a vision for more equitable and compassionate school systems, and understanding of the limitations of current realities, we provide suggestions for ways to move forward together.

Neuro-Individuality: The Intersection of Nature and Nurture

All humans experience and interact with the world via their nervous systems. The nervous system is "a complex system that acts as the command center of the body. It guides almost everything we do, think, say, and feel, and controls complicated processes such as movement, thought, and memory" (Cleveland Clinic, 2022, n.p.). While human nervous systems are, for the most part, composed of all the same parts and pieces, including the brain, the way they operate from person to person varies. We use the term neuro-individuality to describe the distinct neurological configuration and function of each individual, which can and does change over time. Since each person meets the world through their own unique nervous system, it follows

that every person's experience of external reality is somewhat unique (University of Zurich, 2018). When nervous system processing expresses in a different fashion than most, the fields of education and psychology sometimes consider that processing as neurodivergent.

In neurodiverse populations, neurological and sensory processing is markedly different. Gifted children often identify themselves to the outside world through mental and emotional processing differences that can appear as high sensitivity (to sensory and/or content-related inputs); fast and/or interconnected thinking; a high capacity for navigating complexity and nuance; exceptional verbal, literacy, numeracy and/or visual-spatial skills; and a profound curiosity and concern for the greater good (Gatto-Walden, 2016; Gifted Research & Outreach, 2022). While this list of potential identifiers is by no means exhaustive, it can act as a starting point to help caregivers recognize and better support gifted youth early. Validating the lived experience of a neurodivergent child is the core of psychological safety.

Neurological Development: The Interplay of Nature and Nurture

The way the nervous system forms and operates in the world begins with in-utero development and early life context. As a baby's nervous system forms during gestation and continues to develop and mature outside the womb, all manner of neuronal and sensory processing begins to come online. Connections and associations are wired into the brain-body.

While nervous system development is unique to each child, birth through adolescence builds the foundation of future processing—similar to laying the foundation for a home (Tierney & Nelson, 2009).

As related to neurodiversity, giftedness, and 2E in infants and children, this presents an interesting and distinct paradox. What labels, pathologies, or diagnoses result from what, and perhaps just as importantly, when? There is much to learn about nervous system development and its influence on a child's health and development as they grow, their ability to form relationships and learn. Yet, we can extrapolate that nature and nurture, genetics and environment, are not distinctly separate. Rather, they exist in constant reciprocity and interplay across the lifetime. Emerging research and discourse on human development is examining this interconnected reality in new and exciting ways.

The Relationship Among Labels, Access, and Identity

When neurological and processing differences present upon introduction to the social-educational sphere, those differences may be recognized and ridiculed by peers and even teachers (Peters, 2012). Kindergarten presents a particularly

important window of time to understand the state of a child's neurological development and well-being. Children are human beings in-progress, which means the work of accurately identifying unseen neurological differences can be particularly challenging. Identification may be further challenged by environmental and sociocultural factors, including access to resources and opportunities for student talents to be revealed and cultivated. When gifted and 2E expressions of neurodivergence are recognized early, educators and parents can partner to provide responsive and meaningful learning experiences. Early understanding, acceptance, and support are critical. Creating space, without expectations or judgements, for the child's unique self to emerge, should be a core responsibility of schools.

Part of the motivation to identify gifted youth early is to counteract pervasive deficit perspectives that focus on fixing children rather than engaging their strengths. A positive identifier such as *Gifted* can shift how educators perceive children and interpret their behaviors—in this sense, the label can act as a protective shield. Similarly, a disability identification shields as it comes with legal protections. Yet, it is important to note identification itself can stunt growth if a label is used as an excuse or results in isolation. If outcomes are praised over effort and attitudes, or characteristics are viewed as static personality traits, it could negatively impact student outcomes. When labels and designations are used with children explicitly and frequently, they can inadvertently create deeply-held conceptions of self that are mapped through to adulthood. Furthermore, these identifiers often carry the weight of cultural and personal biases—Empathic gifted and 2E children are keenly aware of this reality.

Introducing information about nervous system development into educator preparation and continuing education courses could result in better care of gifted and twice-exceptional children and improved teaching practices (Bachtel & Fell, 2021). Understanding of the nervous system—and how neuro-individuality contributes to processing differences—reorients educators towards the goal of increasing sensitivity (as contrasted with promoting conformity and numbing). Increased sensitivity may result in being able to receive and process more data from one's environment. It is our experience that with coaching, perception can be sharpened, improving a person's ability to navigate complexity, as well as understand themselves and others.

How Gifted and 2E Children May Experience Trauma in the Classroom

When a child enters the educational system presenting as gifted or 2E, classroom experiences can become that much more formative, and potentially traumatic. For these children, heightened awareness, depth, and complexity of cognition are hallmarks of how they meet the world and digest experiences. What may seem a simple, straightforward question or statement may be interpreted by a gifted or 2E first grader as highly existential or distressing. A classroom exercise in which students are asked to read aloud in-unison could become a nightmare when the pace is too slow or content too simple. Exercises in which intelligence and performance are put

on display are also problematic. For the child who rapidly solves a complex math problem and is singled out for their performance, the experience makes their difference visible to the entire class. If the teacher emphasizes and praises achievement over effort, children may learn success is more valued than hard work. In contrast, if the teacher shames the child, it can generate a conclusion that the student should hide their knowledge and slow down so as to not be singled out. Difference on display can also result in peer ridicule and envy.

> Neuro-individuality is a reality for all children and all humans. Yet, trauma can, and often does, have a disproportionate influence on neurodiverse gifted and twice-exceptional students given their processing differences.

Trauma can occur without physical indicators such as bruises, cuts or broken bones and may be a result of a single or multiple events compounded over time. A variety of factors influence the impact of trauma and individuals may have different, valid responses to the same event(s) or circumstances. Reactions may be immediate or delayed. High cortisol production associated with trauma or chronic stress can destroy neurons in critical regions of the brain; it can also lead to dissociation or hyper-arousal (Rege & Graham, 2020). It is common for youth who have experienced trauma to have significantly elevated heart rates, even when appearing relatively calm (Devereux, 2016). Symptoms and effects of childhood trauma can vary significantly in intensity and duration and contribute to a variety of health and social problems including disabilities, teen pregnancies, smoking, substance abuse, risk of re-victimization, poor workplace performance, relationship instability, suicide; as well as greater incidences of heart, lung and liver diseases (The Centers for Disease Control and Prevention and Kaiser Health Adverse Childhood Experiences or "ACE" study as cited by Devereux, 2016; Harris, 2014).

Youth who have challenges resulting from trauma currently receive a variety of less-than-ideal diagnoses that typically inadequately describe their mental health needs. These imperfect diagnoses include: pervasive developmental disorders, oppositional defiant or conduct disorder, reactive attachment disorder, affective disorders, anxiety disorders and post-traumatic stress disorder (DeAngelis, 2007). Sadly, shame and guilt can interfere with traumatized individuals seeking and receiving much needed support (Firestone, 2012). Signs of trauma may include but are not limited to: hyper-arousal and/or hyper-vigilance, irritable, aggressive and/or disruptive behavior, shaking or trembling, regressive behavior, drop in grades or performance, loss of interest in previously enjoyed activities, confusion and lack of attention to details, suicidal thoughts, a variety of physical ailments and illnesses, feelings of fear and anxiety, sleep disturbance, difficulty concentrating, self-destructive or reckless behavior, nightmares and/or flashbacks, headaches, depression, guilt and/or self-blame, feeling emotionally numb, organizational challenges, elevated blood pressure, distorted self-concept, challenges in mood regulation, increased resting heart rate, emotional

breakdowns, eating disorders, truancy/high absenteeism and social isolation (Devereux, 2016).

Case Study: Gifted Student + School = Psychological Injury and Twice Exceptionality

Theo[1] just turned 18. This longitudinal case study follows him from kindergarten through his senior year of high school and illustrates how district and school policies, combined with inadequate teacher preparation in neurodiversity and trauma, can result in psychological injury. In the absence of safeguards, gifted students can become twice-exceptional students due to the negative health effects, including trauma-related disabilities. The following case study, representative of countless others, is a clear call to action to better protect gifted and twice-exceptional youth.

Elementary School Part One: Public School

Theo was raised in an affluent school district in the American West. His parents valued education and humanitarianism. Theo's Dad worked in sales while his mom attended graduate school, volunteered regularly and cared for Theo and his sister. Neither worried much about their children as they recognized their privilege relative to others—There was no worry about food, shelter, or physical safety. When it came time for Theo to enter kindergarten, they were struck with a bit of anxiety. They learned other parents in their neighborhood had been engaging in academic preparatory activities with their children: explicit phonics instruction, rigorous preschool programming, summer enrichment camps, working with tutors, and more. They sent Theo off to kindergarten with breath held and a silent prayer that Theo not be the least prepared in his class.

After the first week of school, the kindergarten teacher greeted Theo's mom at pick up. She excitedly (and loudly) announced in front of the sea of parents that Theo was the most advanced reader of all the students in the school's five kindergarten classes. Theo's mom's jaw dropped. She was surprised, relieved, stunned, and embarrassed. She could feel the politics of the moment—the teacher and parents wanting to connect and build relationships with her, curious about Theo's outstanding achievement. She could also feel envy in some of the parents' glances and left feeling unsettled.

Uncomfortable relationship dynamics continued throughout kindergarten. Theo was a popular student both because of his stellar performance in the classroom and the perception among adults that it was due to exemplary parenting. There were

[1] Pseudonym used to protect student privacy.

many requests for play dates. Theo's parents prioritized time with families with less access to opportunity and resources; they tried to use this new-found privilege for good. Theo breezed through the year. As a result, his parents expected the rest of Theo's school experiences to be mostly positive.

Then first grade came. At the end of his first week, Theo's parents asked him how it went, and he replied, "I don't think I like first grade very much"—their hearts sank as they asked why. Theo explained that his teacher "made" him draw. The teacher had asked the students to draw a picture of their family and Theo asked to write a paragraph instead. She said no. Theo then asked what would happen if he wrote a paragraph rather than draw and the teacher responded he would lose recess. Theo—who had already written the paragraph prior to asking—hid it in his desk and quickly drew a simple picture so he could go outside to play with friends.

Theo's parents knew lying to the teacher was not a good sign. After a few more weeks of reports from Theo that the teacher seemed frustrated with his quick learning pace, they requested a meeting. They naively thought if they brought examples of Theo's writing and other work samples, that the teacher would have a better understanding of how he learns and be able to demonstrate compassion. Rather, they were met with rage and accusations of overparenting. They were not an achievement driven family—Theo was writing at a level far beyond his grade level by his own motivation. The teacher seemed eager to prove Theo had behavioral and discipline problems so she did not have to change her approach or practices.

As the relationship between Theo and his teacher deteriorated, so did his health. He became school-avoidant, and at just 7 years old, he would stay up many nights until 2–3 am reading in effort to recover from the stress of the school day. When he was at school, he would come up with excuses to leave. He had frequent visits to the school nurse, a kind man who provided a space where Theo felt safe. Eventually the school psychologist intervened and requested his parents take him to the pediatrician to insure there was nothing medically wrong with him. Upon examination, the doctor quickly realized Theo's stomach aches were psychosomatic.

Not even letters from the pediatrician stopped the oppressive educational practices and teacher behaviors that were causing Theo harm. As time went on, the teacher's relational aggression towards Theo's parents increased—she stereotyped and dismissed them as pushy parents and even made defamatory statements about them to other teachers. When Theo really started to withdraw, he was referred to a psychologist with experience serving gifted youth. Here Theo was referred for testing and his parents learned that he was highly gifted with IQ and achievement test scores ranging from 95% to 99.9%. Theo's parents presented the results to the school, and after a period of inaction, met with district leaders who told them the school district was not equipped to serve students like Theo. Take a moment to let that sink in—the public school district, legally bound to provide a free and appropriate education to all students, told Theo's family they could not do that for him. Rather, Theo's parents were encouraged to investigate private and homeschool options. The message was clear—Theo and his family did not belong.

They returned to the psychologist and pediatrician, both of whom agreed the school was causing harm and that he should be removed. In hindsight, this milestone marked a solemn moment in Theo's journey. He was now a twice-exceptional student (gifted with disability) *as a result of the traumas experienced in school*. Theo's official diagnosis was anxiety. Though his parents were not prepared to homeschool, they did the best they could. Theo did a lot of reading and occasional online math work. From time to time his parents took him to community events and art classes. They muddled through while researching options. There was no obvious legal recourse to inspire the district to provide equitable educational opportunities for Theo. Exile From Public School Island was a lonely place to be.

Elementary School Part Two: A Private School for Gifted Children

Feeling ill-prepared to navigate homeschooling and craving connection to community, Theo's parents researched private gifted schools and found a kindergarten through eighth grade program with a whole child approach that seemed promising. While it was beyond their budget, there did not seem to be any other viable options. They called family members, asked for help, and took out a second mortgage on their home to help pay the tuition. The first year they saw glimpses into Theo's former, pre-first grade self. One of the highlights was the school spelling bee. When Theo was in third grade, he competed against an eighth-grade and a sixth-grade student for the title. The winner went on to be high school valedictorian and received a scholarship to John Hopkins University.[2]

It wasn't long though until Theo's parents learned unfortunate lessons in private school politics. While the school's mission statement was inspiring, tuition fees only covered operating expenses. This reality left the school reliant on donors to improve facilities and grow the program, resulting in the children from wealthy families having a different set of rules than other students. In addition, it became clear many gifted adults carry unresolved gifted trauma as a result of their own school experiences.

The hidden history of the school read like a soap opera due to the insidious effects of unconsciously carried psychological wounds. At this school, there were both extremely kind and cruel adult behaviors. There were multiple cases of documented sexual harassment at the highest levels of school leadership, alcohol and substance misuse, relational aggression mirroring childhood teacher-student and/or parent-child relationship patterns, misleading marketing tactics and questionable financial reporting practices. Many in the community had a sense of these truths but felt paralyzed and ill-equipped to address them.

[2] Institution name changed to protect student privacy, the actual institution is of similar ranking and esteem.

Since Theo's parents had become trauma-informed as a result of their prior experiences, they were able to recognize signs of trauma in many of the school's staff, parents and students. To support restorative practices and well-being, Theo's parents submitted a formal complaint to the school board. This resulted in near immediate retaliation. The day before school was scheduled to resume, they received an email stating Theo could not return until he submitted new IQ test scores. The chair of the board of directors stated this was because Theo's prior IQ scores were 3 years old. Meanwhile, other students at the school, including children of donors, did not have any cognitive evaluation requirements.

Theo's prior scores well-exceeded admission requirements for any gifted school or program. The admissions director reported this had never happened before—no other student had ever been told they could not return to campus pending a new evaluation. Fortunately, the family found a clinician who was able to complete testing and draft a report within 2 weeks. The results were similar to the first evaluation, so the school eventually let Theo return after weeks of sitting at home. Yet, the retaliation and harassing behaviors continued. Theo was targeted and disproportionately disciplined. For example, after blurting an answer to a question in class, he was forced to sit in the front hall, shamed in front of the entire school. Theo and his parents again felt metaphorically homeless, outside belonging. The crushing debt from private school enrollment, coupled with Theo's Mom not earning an income while supporting him through the trauma, resulted in the family having to sell their home and move. Theo's best hope for connection to any sort of community seemed to be to return to public middle school.

Middle School

Theo's time in middle school is best characterized as 3 years of recovery. For the most part, he was not challenged academically. This was tolerable as he was also relatively free from educator abuse. Theo was able to establish close friendships with a few other students who enjoyed tinkering, making, and spending time outdoors. After school, the friends often worked in Theo's garage building or repairing bicycles and skateboards. Theo started running and racing. He did well. His parents could see his self-esteem increase. He volunteered to support youth and even sought out and completed wilderness first-aid training. It seemed Theo was on solid ground and prepared to start high school.

High School: Unwanted Part Three

After his middle school recovery, Theo elected to attend his neighborhood high school which happened to be one of the top performing schools in the state. Each year the school sent students to Ivy League universities and their academic, athletic,

and civic achievements were heralded in the news. Theo entered as a shaggy-haired, free-spirited student athlete eager to learn and race on the school's cross-country team. In fact, his freshman year he scored in the 95% on the PSAT and placed in the top 30 freshmen at the state cross country meet. He was an inquisitive, active, and compassionate teen.

But yet another series of overly harsh "disciplinary" reprimands and punishments sent an otherwise highly-motivated student into a tailspin. An unsubstantiated accusation of vaping led to a suspension. When Theo vehemently denied and pleaded for the school to call his parents for support, the administrator unleashed a scathing verbal rebuke. Shortly after, though he had earned steady A's and B's, Theo received a "D" as a final grade in band because he missed the final concert because he was home virulently ill with the stomach flu. The school did not accept the note from the pediatrician excusing the absence. The final blow that left Theo feeling there was no route to success at school was a detention issued due to an attendance taking error made by a teacher with a large class.

Theo's attendance steadily declined (prior to the punishments and educator relational aggression, his high school attendance rate was north of 95%). As a result, his parents re-initiated mental health supports. Theo was given clinical, complex trauma-related diagnoses of anxiety and depression. His symptoms appeared to be the result of psychological injuries caused by a hostile and toxic school environment yet again. Despite letters from esteemed doctors asking for support for Theo, it took over a year for him to receive Section 504 accommodations for these newly presenting disabilities. When he did receive a 504 plan, the support was too little too late. By then, Theo was hardly attending school at all. He was withdrawn and rarely left his bedroom. The few times he did visit the high school campus, his entire body would tighten and shut down, seemingly in a fear-informed trauma response.

Again, Theo's parents advocated for support, but the school and district responses avoided responsibility and continued to shame and blame. The pattern felt similar to what they had experienced when Theo was in first grade. Astoundingly, for the second time, Theo's public, neighborhood school told his family they could not serve him. Theo was invited to explore other education options including online programs and homeschooling. Disproportionate "discipline" and unwelcoming school staff behaviors clearly communicated to Theo he was unwanted for the third time in his life.

Through this process, Theo's parents learned that legally-speaking, emotional maltreatment of youth is defined in terms of interfamilial relations only. If a coach or educator is emotionally or verbally abusive to a student, there is no legal safeguard for children. Likewise, educators who report colleagues for engaging in non-physical behaviors that harm students are vulnerable to retaliation. Supporting student well-being conflicts with policy more often than many realize, and not following policy can result in disciplinary action that places a teacher's job at risk.

As illustrated throughout this case study, nowhere is this truer than with discipline policies that oftentimes provide implicit, indirect support for the emotional maltreatment of youth. Today Theo is still disenfranchised. With the steadfast support of his family and the privilege of access to mental health professionals, Theo is

surviving. He is continuing high school studies through an online program but is not excited about it. While he recently took the SAT and had scores in the top 5%, it is unclear whether Theo will be able to earn the number of credit hours needed to graduate high school on time. The playful, curious gifted child who entered kindergarten is now a twice-exceptional young adult who learned school is not designed for how he experiences the world.

Too many gifted and twice-exceptional students grow up being told explicitly, or implicitly, that they do not belong and that their true selves are not deserving of acceptance. Denying gifted and twice-exceptional students access to the services and supports they need to learn in school can have long-lasting, tragic health consequences (Cross, 2011; Haines, 2019; Harris, 2014). Society can and must do better.

Prevention and Healing

Adults create the emotional weather conditions where students learn and grow. When being in relationship with others requires assimilation and hiding one's authentic self, emotional development can be thwarted or worse, like with Theo, students can sustain unseen injuries resulting in disabilities. In consideration of educator behaviors (the unspoken or hidden curriculum), Theo's "exemplary" high school receives a failing grade. While some students are advancing to prestigious institutions, Theo and other twice-exceptional students were injured and at risk of, or have already, dropped out. Tragically, others from the same school have completed suicide, including one this year. These are 100% avoidable injuries and losses.

So how can we safeguard the psychological safety of gifted students in schools? Following are some suggestions for where to begin.

Prioritizing Connection: Acceptance Is Key

Feelings of connection to community are critical to all human beings, but especially cognitive outliers with unseen differences that can result in marginalization and disenfranchisement. Social baseline theory illustrates that all human beings are wired for interdependence and that healing accelerates in the presence of others. When life presents stressors and challenges, connection decreases stress hormones and calms the nervous system. Students have better outcomes in healthy school communities; in fact, almost every measure of health improves with close social relationships. Neurological benefits occur because social proximity reduces the energetic expenditure required to interact with one's environment (Beckes & Coan, 2011). In short, compassionate education practices are key to students feeling connected to themselves and their community. Educators who validate and celebrate each student for their uniqueness teach interdependence and harmony.

Environments Mindful of Sensory Sensitivities and Nervous System Differences

A school habitat can range from warm and welcoming to frigid and threatening. Environmental factors influence how all youth experience a space, gifted and twice-exceptional youth often even more so. For youth with highly refined nervous systems, the sensory experience in the physical environment can have a significant impact on achievement and behaviors. Sensory stimuli can be overwhelming and taxing on the sensitive system. Common sources of sensory aggravation for gifted, 2E youth and/or youth healing from trauma include: fluorescent lights, chemical cleaning supplies, certain cafeteria/food smells and upsetting and/or distracting auditory and visual stimulation. Depending on the events or behaviors that contributed to the trauma, sometimes the classroom or school itself can become a trauma trigger. A trigger is a stimulus that evokes similar feelings of pain as the original events or situations (Devereux, 2016). In fact, this is what happened to Theo. In his case, entering a school building now creates a trauma response where his muscles tighten, he becomes hypervigilant, his heart rate accelerates, and he has trouble concentrating.

The emotional environment, inclusive of organizational structures, power distribution and educator behaviors, also contribute to student feelings of psychological safety and nervous system calibration. Many schools still have patriarchal, "top-down" hierarchical leadership structures with inequitable distribution of power. When one person, more often than not a white male principal, has significantly more decision-making authority than educators, schools fail to model for children how to share power and collaborate. Distributed leadership emphasizes collaboration, inspires collective responsibility, and equitably shares power (Ritchie & Woods, 2007). Educator-led schools show youth how to create a more harmonious and just society and showing is much more powerful than telling. Involving students in the co-design of spaces, and in classroom and school decision making, grows self-awareness, advocacy skills and feelings of belonging.

Creative Practices

Creative practices accelerate both physical and psychological healing (Barron & Barron, 2013). Creative practices also engage the portion of the brain critical for retaining new learning and being able to apply it in new contexts (Immordino-Yang, 2016). Yet, in a standards-oriented education climate with testing practices that promote a narrow definition of success and achievement, teachers often feel pressure to focus exclusively on academics. Ironically, a disproportionate emphasis on process-oriented tasks is contrary to the goal of optimizing student development and achievement (Immordino-Yang, 2016). For gifted youth with great depth, range and

complexity of emotions, creative practices support in integrating the important data feelings provide.

Creating can also be messy. Not every school has space to store supplies and tools needed for students to make and innovate. Moreover, if a teacher is being evaluated on the cleanliness of their classroom, it can be a deterrent to innovation. When schools and districts prioritize creative practices, there is a positive impact on student achievement and well-being, especially for gifted and twice-exceptional students and youth recovering from trauma (Bachtel & Fell, 2021). Setting expectations for students to have time to create each day, and allocating resources to support, is an important first step. If messiness, space limitations or budget limitations are concerns, schools can create maker carts or boxes with art and design supplies that can be moved among classrooms. Many local organizations and families will also often donate supplies if asked. This may include components of broken appliances, cardboard boxes, art supplies, food containers and treasures from nature including rocks and sticks. Another solution to mess and space concerns is working on projects outdoors.

Legislation and Policy Recommendations

Most would agree that the well-being of children is fundamental to societal progress. Yet, student mental health is reaching crisis levels. Educator behaviors have a significant impact on student development as youth spend most of their waking, optimal learning hours in the classroom. What school staff model teaches just as much, if not more, than the explicit curriculum (Inlay, 2003). Sometimes society's most vulnerable youth, inclusive of gifted and twice-exceptional youth, are pushed out of schools through exclusionary discipline practices that exacerbate trauma symptoms and deteriorate mental health. Unfortunately, an intolerable number of youth experience psychological injuries as a result of oppression, emotional neglect, verbal abuse, harassment, and/or discriminatory practices in schools. Whether intentional or not, the resulting harm to children is the same.

Ambiguous policies can result in the justification of nearly any instructional or discipline decision no matter how ill informed. In fact, there are times that practices continue even when esteemed medical professionals, or educators with earned doctorates, state they are causing harm. A first step to remedying and protecting students is identifying some "disciplinary" practices as harmful—true discipline is structured practice that supports joy and growth. Shaming and marginalizing punishments are not discipline. If a practice is causing harm to a student, there must be a safeguard to stop and protect children from injury. Together parents and educators can advocate for laws and policies that:

- **Set an expectation of inclusion and prioritize student feelings of psychological safety.**

- **Prevent "push out" practices.** Push out practices occur when a student with compromised mental health and/or disabilities (that may or may not be related to school instructional practices) is made to feel unwelcome by school staff. Sometimes this is through disproportionate discipline, delays or denials of 504 or Individualized Education (IEP) Plans and/or other harassing behaviors.
- **Promote "do no harm" policies** that require administrators to stop instructional and discipline practices that professionals document as causing harm to students.
- **Facilitate non-financial restorative practices** among students, educators, and parents as needed.

In Summary

Schools teach children invaluable lessons about their space and purpose in the world. All youth deserve to feel safe at school and to be protected from psychological injury. When in a safe environment, a person can access higher cortical functions that facilitate learning (Porges, 2017). In contrast, in a perceived hostile environment, youth are vulnerable to toxic stress. Toxic stress has been shown to impede healthy development and is associated with poor health outcomes (Harvard Center on the Developing Child, 2019). Inclusive practices and relational pedagogy can remedy the impact of trauma and social exclusion experienced by students (Morgan et al., 2015). For thousands of years, indigenous education practices have taught the importance of beginning with belonging. Until each student feels connected, instruction does not take place (Brendtro et al., 2009). Now we know why. Health and performance improve when we are in supportive relationships that decrease stress hormones and calm the nervous system (Beckes & Coan, 2011).

The financial, time, and relationship expenses of treating invisible psychological injuries are immeasurable. At a time when feelings of stress and anxiety are reaching all-time highs (American Psychological Association Stress in America Report, 2019), society is invited to implement exemplary preventative practices. Responsiveness is at the forefront of many conversations related to innovation in education, yet without training in neurodiversity and trauma, there is little hope educators will be prepared to support development, well-being, and achievement. Scientific breakthroughs regarding how to enhance cognition (Dispenza, 2013; Kaku, 2014) can be referenced to inspire educators to create the conditions where student genes can express to their fullest potential. Great progress can be realized when we work in the direction of the ideal while also implementing safeguards to protect student psychological well-being.

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Twice or Thrice? Identification Issues and Possibilities Related to Students with Exceptionalities in Australian Schools

Mary-Anne Haines, Genevieve Thraves, and Linley Cornish

> *There is nothing like looking, if you want to find something […]. You certainly usually find something, if you look, but it is not always quite the something you were after.*
>
> (Tolkien, 2006, p. 69)

Abstract In Australia, early identification of the diverse abilities/needs of twice-exceptional youth in both mainstream and indigenous education requires urgent teacher access to comprehensive, investigative, assessment strategies. This goal, however, remains problematic owing to the existing complex interplay of environmental and intrapersonal factors that place limitations on adequately recognising and supporting the unique learning profiles of the twice-exceptional. In addition, in Australian indigenous communities a more multi-dimensional perception of exceptionality, in terms of cultural influences, provides a challenge to our current understanding of the term 'twice-exceptional'. Two studies utilised strategies that were designed to assist teachers in identifying students' abilities/needs. One study developed and trialled a teacher checklist questionnaire or screener (TCQ), with Section A incorporating six categories/scales based on Gagné's domains of Natural Abilities from his Differentiated Model of Giftedness and Talent (DMGT 2.0; 2008, 2013), and Section B, three categories/scales of learning difficulties. Findings from the first trial of the TCQ, subject to further trialling, suggest that the questionnaire shows promise as an investigative tool in its scale reliability, validity, and practical usefulness. The second study considered the influence of Aboriginal culture on the gifted experience. The findings of the second study illustrate that it is possible for schools to identify and support culturally mediated intellectual giftedness whilst at the same

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time working with the broader community to catalyse cultural gifts, thus tackling a different form of twice-exceptionality than is the usual focus. Considered together, the two studies demonstrate the importance of unveiling the learning strengths and difficulties of twice-exceptional students. They also reveal the importance of acknowledging the complexity of the interplay of differing exceptionalities on a student's learning profile, and raise the possibility of the indigenous student who is intellectually and/or culturally gifted and who also has a learning difficulty.

Keywords Twice-exceptional · Identification · Indigenous · Cultural influences · Gagné · Teacher checklist questionnaire (TCQ)

Two primary/elementary school students presented with a combination of high ability and learning difficulties that might suggest twice-exceptionality. One student, Isabella (all names are pseudonyms), was 7 years old and her recent IQ test indicated that she was profoundly gifted (180+), which prompted her primary/elementary school in Sydney, Australia to accelerate her from Year 1 into Year 3 with mainly 8- to 9-year-olds. She was emotionally highly vulnerable and very anxious about feeling different from her new class peers. In spite of her remarkable intellect and advanced articulation skills she was hindered by the writing process. On the surface, this difference between ability and her written output might appear to be an instance of the asynchrony that is often observed in gifted students (Silverman, 2009). However, processing her thoughts into written form was particularly difficult and time-consuming, and she rarely completed any written tasks. This contradiction was a marked contrast/asynchrony to her intellectual prowess, implying a possible significant learning difficulty and perhaps dysgraphia. The other student, 11-year-old Claude in Year 6, had no available IQ test results, was largely withdrawn with acute socio-emotional issues and had been ranked academically by his teachers in the low-to-average range. Nevertheless, at those rare times when he was captivated by a topic of interest, he verbally contributed to class interactions with a depth of insight that was not reflected in his standardised achievement results.

These two primary-school students might be part of a gifted sub-population who have advanced ability/high potential as well as one or more disabilities that can affect learning, often referred to as twice exceptional (2e; Bannister-Tyrrell et al., 2018; Dare & Nowicki, 2015; Foley Nicpon et al., 2011). This term is also known as Gifted with Learning Disabilities/Difficulties (GLD; Wormald, 2011) or even Dual and Multiple Exceptionalities (DME; Montgomery, 2015).

Then we can also turn our attention to Jackie, who in 2019 was a 15-year-old Aboriginal (Australian indigenous) student attending a secondary boarding school (usually 12-to-18-year-olds) in Darwin, Northern Territory, Australia. Jackie is a member of the Yolngu, an Australian Aboriginal group who reside in a number of remote communities in East Arnhem Land, approximately 500 km from Darwin. Jackie was identified early in life as being culturally gifted. Her teachers identified her as a 'capable student' but lacking the 'flair' they would expect from an intellectually gifted learner. Yet, when asked to consider Jackie's aptitude in comparison to students from a similar cultural and educational background, the teachers were

quick to acknowledge that she is, in fact, exceptional. Given the current push for "building level local norms" (Peters et al., 2019) to be used in identifying giftedness in culturally diverse students, could Jackie be considered to have dual exceptionalities in that she is gifted both culturally and intellectually?

Another Aboriginal student who was boarding in Darwin at the same time as Jackie is Sam. Sam was 17 years old and, from an early age, had been identified as culturally gifted by the Elders from her remote home community. Her teachers, though, expressed concern that she exhibited "challenges" in her learning, "grasping concepts slowly". In response, according to family, Sam was undergoing investigation as to what may have been causing her learning difficulties. Perhaps then she could also be considered twice-exceptional; that is to say, she demonstrates both cultural gifts and a potential learning difficulty. We also need to consider the fact that there is a real possibility that Aboriginal students like Jackie and Sam may present with all three exceptionalities outlined here: intellectual giftedness, cultural giftedness and a learning difficulty, rendering them thrice-exceptional (3e).

The central issue affecting these indigenous and non-indigenous students is that their possible giftedness and/or difficulties are, in many cases, not being adequately identified and supported, and there is the very real likelihood that they may never achieve their true potential. Consequently, they may become increasingly vulnerable to a range of issues, which can include underachievement, feelings of lack of both self-efficacy and self-worth (Kauder, 2009; Neihart, 2008; Townend & Pendergast, 2015), and other related ills. Of equal concern is that the students' potential to contribute to their societies in the future is being thwarted by an education system that mostly does not cater for their unique profiles.

The Australian Context

In Australian schools there is an ongoing dilemma confronting a significant number of 2e (and potentially 3e) students whose high potential, cultural giftedness and/or learning difficulties can remain hidden or masked owing to multiple limitations affecting the identification process. Such limitations involve the complex nature of each twice-exceptional student's learning profile, and in Australia also include definitional inconsistencies, variations in teacher access to tertiary education in giftedness and disabilities, and in teacher knowledge and experience. There is also the question of the relevance of standardised achievement and intelligence tests, which is particularly important for Australian indigenous learners who tend to underperform with this type of measure (Chaffey et al., 2003). In addition, most teachers are not trained or qualified to formally identify giftedness or disabilities, making it particularly difficult when the manifestation of intellectual giftedness is culturally mediated or masked by disability. For this reason and owing to the other aforementioned limitations, a comprehensive assessment protocol mainly focusing on students' learning strengths and/or learning difficulties is crucial, particularly in the preliminary stage of the identification or investigative process. However, currently in Australia, there is lack of access to non-diagnostic assessment tools for classroom teachers to investigate the range of learning strengths and/or learning difficulties of

all students. Further, recognition of cultural giftedness creates a tension as to how schools, particularly those with large numbers of remote/geographically isolated Australian indigenous learners, cater for this form of high potential in a way that supports students' involvement in and contribution to their home community.

These issues led to two research studies that were designed to develop strategies for supporting unidentified 2e students, and their teachers. One of the studies was conducted in a primary/elementary school in NSW (5-to-12-year-olds), mainly focusing on developing and trialling a preliminary teacher checklist questionnaire (TCQ) for teachers to investigate students' learning strengths and/or difficulties. The other was in a secondary boarding school in Darwin, Australia. This latter study investigated the duality of intellectual giftedness and cultural giftedness in remote Australian indigenous students. Both studies addressed the urgent need highlighted in the available literature for comprehensive identification strategies for both indigenous and non-indigenous learners.

Factors Influencing the Urgent Need for a Comprehensive Assessment Protocol

Much of the literature associated with 2e highlights the range and diversity of traits experienced by students who have a unique combination of giftedness or high potential, simultaneously with one or more disabilities/difficulties (Assouline & Whiteman, 2011; Ruban & Reis, 2005). This complexity is compounded by a tendency for high ability and/or disability/difficulty to be masked (Krochak & Ryan, 2007; Silverman, 2009), which can be evidenced by an area of strength compensating for a learning difficulty (van Viersen et al., 2016). Furthermore, some 2e students experience co-morbidity where giftedness/high potential coexists with multiple disabilities (Pfeiffer, 2015; Reis et al., 2014), which can include, for instance, both Attention Deficit Hyperactivity Disorder (ADHD) and dyslexia (Filmer, 2011). There is concern expressed by a number of authors, however, about possible misinterpretation of some behaviours that might suggest a learning disorder such as ADHD but could also be associated with an individual's particular expression of giftedness (Foley Nicpon et al., 2011; Pfeiffer, 2015). A major implication arising from the diversity of 2e is that determining a student's learning profile is not a straightforward process for classroom teachers (Reis et al., 2014; Ruban & Reis, 2005).

In Australia, this situation is compounded by variations in teacher education, experience, and attitudes (Wormald, 2011), particularly in relation to giftedness. Teacher attitudes to giftedness can be markedly different (Geake & Gross, 2008; Matheis et al., 2017; Mullen & Jung, 2019), which has implications for the identification of 2e. Further accentuating this problem is that not all pre-service teachers have access to tertiary gifted education courses (Bannister-Tyrrell et al., 2018), which can influence knowledge about gifted/high potential students, including 2e.

Even where there is familiarity with the existence of 2e, a study conducted by Wormald (2009) in 11 schools in New South Wales found that teachers can feel somewhat restricted by insufficient training, resources, and paucity of time. Whilst acknowledging these issues affecting the identification of 2e students, there are positive examples in Australia of schools that offer specialised programs and there is also an online learning/support community (GLD Australia) that is affiliated with the Australian Association for the Education of the Gifted and Talented (AAEGT).

Impacting these aforementioned issues is the inconsistency of terminology related to twice-exceptionality (Carman, 2013; Reis et al., 2014). In terms of giftedness, Australia shares the same lack of a consensual definition (Ronksley-Pavia, 2015) as found internationally, although this situation is unsurprising owing to the immense diversity of giftedness (Siegle et al., 2016). In education policies throughout Australia there is broad acceptance of Gagné's DMGT 2.0 (Bannister-Tyrrell, 2017; Gagné, 2008, 2013), which includes reference to the top 10% of all students in one or more of the six domains as being gifted and talented (Australian Curriculum, Assessment and Reporting Authority [ACARA], n.d.; NSW Department of Education, 2019a). A number of Australian Departments of Education, however, do acknowledge that Australian "Aboriginal and Torres Strait Islander peoples can have different and more complex cultural conceptions of giftedness" (NSW Department of Education, 2019b, p. 9; NT Department of Education, 2016).

The terms disability, learning disability and learning difficulty that also have relevance to 2e are equally difficult to define with clarity. For instance, in the Disability Discrimination Act 1992 (Australia), which has been described as a social model, there are definitions of disability, but they are broad and do not encompass the types or manifestations of disabilities (Ronksley-Pavia, 2015; Australian Productivity Commission, 2004). Whilst there is widespread reference in schools to learning disabilities and learning difficulties, there are differences in how they are interpreted (Australian Federation of SPELD Associations [AFSA], 2014; Elkins, 2007). This observation was verified by an Australian Taskforce investigating learning disabilities who found, not surprisingly, that this concept was either used interchangeably with learning difficulties or they were perceived differently (Australian Capital Territory Education and Training Directorate, 2013). In addition, the term learning difficulties also has variations in interpretation (Twomey, 2006; Westwood, 2008). Consequently, for teachers seeking to communicate observations about students, lack of clarification about these terms can be a hindrance (Ronksley-Pavia, 2015).

To address the need for clarification, definitions in this chapter are, for the most part, in alignment with Australian policies. In terms of giftedness or high potential, Gagné's DMGT 2.0 is used. Besides the definition and the domains of natural aptitude, the model has added relevance to 2e, owing to its reference to intrapersonal (I) and environmental (E) catalysts, which affect the development and identification of giftedness/high potential. It must be recognised, though, that Gagné's model does not appear to encompass Yolngu views of giftedness. The Yolngu locate giftedness or potential in relation to specific activities or talent areas (Thraves et al., 2021). This view contrasts with the DMGT 2.0's view of giftedness as a set of generalised

aptitudes that can be developed into varying fields of talent. Whilst it is theoretically possible to map Yolngu cultural gifts onto Gagné's DMGT 2.0, this is not necessarily culturally appropriate. As with the many other attempts to universalise definitions of giftedness, such a process results in the loss of nuance and detail contained in the non-Western (Yolngu) understandings of the gifted construct. It is for this reason that this chapter presents cultural gifts as a distinct category of exceptionality.

Reference to disability in the context of 2e is broadly encompassed by one of the definitions in the Disability Discrimination Act 1992—a disability is "a disorder …that results in the person learning differently from a person without the disorder…". Multiple disabilities/disorders can co-exist with giftedness (Foley Nicpon et al., 2011) and include, for example, physical, neurological, socio-emotional, sensory, and learning disorders (Australian Department of Education and Training, 2014). In schools there is a greater prevalence of neurodevelopmental disorders that are often categorised as learning disabilities (AFSA, 2014), such as Specific Learning Disabilities/Disorders, Autism Spectrum Disorder and Attention Deficit Hyperactivity Disorder. Although there can be observable indications/suggestions of these disorders/disabilities, emphasis for teachers is on investigating and supporting learning strengths and difficulties. Learning strengths, as the name implies, are areas where students are attaining a very sound or strong level of achievement. Learning difficulties generally refer to "academic and school-related problems" (Graham & Bailey, 2007, p. 386), particularly in the development of skills in numeracy and literacy (Westwood, 2008). These difficulties may reflect external factors such as absenteeism or inappropriate curricula (AFSA, 2014), or internal factors (Twomey, 2006) that may be linked to disabilities. In the light of the above definitions, therefore, twice-exceptionality is a combination of high potential/giftedness with one or more disabilities (Assouline & Whiteman, 2011). In schools, these disabilities are often associated with learning disabilities (AFSA, 2014).

Besides the aforementioned restrictions confronting 2e students, there is also controversy about whether standardised achievement and intelligence tests are a suitable identification strategy. The diverse profile of 2e students means that results from achievement tests may not always reflect their true ability/needs (Montgomery, 2009; Neihart, 2008). Some authors highlight the usefulness of intelligence tests such as Wechsler Intelligence Scale for Children (e.g., Australian and New Zealand Standardised Fifth Edition; Wechsler, 2016), for examining the distribution of index and subtest scores, thus providing an intrapersonal interpretation of any discrepancies (Assouline et al., 2010; Silverman, 2009). This claim is supported by Rogers (2011) who found in Project2Excel that students who were eventually identified as 2e showed discrepancies "among their index scores of 23 points or more" (2011, p. 60). However, there is also caution about over-interpretation of discrepant scores (Lovett & Lewandowski, 2006), owing to the influence of multiple factors including the nature of each student's individual profile, particularly in relation to the effect of the disability (Montgomery, 2009; Nielsen, 2002; Silverman, 2009) and possible measurement error (Lovett & Lewandowski, 2006). It would seem, therefore, that where such testing is considered relevant and accessible, standardised results could

be a worthy inclusion in a comprehensive assessment identification protocol (Assouline et al., 2010).

Whilst standardised assessments have potential value in a comprehensive protocol, they are often inadequate for identifying intellectually gifted learners from culturally diverse backgrounds (Chaffey et al., 2003). Standardised tests have been developed largely by white middle-class academics and thus are over-laden with the values and cultural knowledge of this demographic (Borland, 2003). Additionally, Borland (2003) has suggested that identification of intellectual giftedness using checklists and teacher referral processes are similarly problematic. He argues that the early work of Terman (1925) has been used to shape these tools, and Terman's sample was largely culturally homogeneous. Borland's position reflects the notion that intellectual giftedness is likely to manifest differently for different cultures, and therefore the lists of characteristics that are often used to support identification of the intellectually gifted may lack applicability for learners from culturally diverse backgrounds.

This issue of identification for culturally diverse learners is further compounded when we consider the contested nature of the gifted construct more generally. Scholars from the early 1980s onwards have recognised that what is valued in one culture as giftedness may not be reflective of what is considered as giftedness by another cultural group. So, if we accept this premise (that giftedness is a cultural construct), it follows that giftedness will be understood differently by many of the culturally diverse groups that constitute our student body here in Australia (Garvis et al., 2019; Thraves et al., 2021; Thraves & Bannister-Tyrrell, 2017).

Only two empirical studies could be located that have investigated Aboriginal conceptions of giftedness beyond a framework derived from the Western tradition, and both of these studies were focused on the views of the Yolngu people in northeast Arnhem Land, Australia. Christie's (2011) work examined what "giftedness means in traditional Yolngu society" (p. 36). He found that for the Yolngu, giftedness is associated with leadership, is a communal asset, and is connected to the metaphysical concept known as *gakal,* which is considered a manifestation or enactment of the foundation law (*Djalkirri Rom*). Thraves et al. (2021) noted that for the Yolngu who participated in their study, traditional gifts and talents were also entwined with the *Djalkirri Rom*. The participants in this research also detailed the way that gifts and talents could be harnessed to serve the cultural needs and priorities of the community.

The fact that there are differences in conceptualisations of giftedness creates tension for students who may exhibit cultural gifts that are not valued in the school context. This issue was recently highlighted in the film *In my blood it runs* (Hyde et al., 2019), which tells the story of Dujuan Hoosan, a Garrwa and Arrernte boy (two other Aboriginal groups) growing up in Alice Springs. Dujuan speaks three languages and is considered to have the cultural gift of a healer, but schooling made him feel as if there was "something wrong with him" (Crysanthos, 2019). Perhaps, therefore, it is important for schools to consider how they can recognise and support cultural giftedness, and this is particularly the case where it comes coupled with the

other forms of exceptionality that have an impact on schooling, notably intellectual giftedness and/or a learning difficulty.

Whilst twice-exceptionality is understood in the literature to be the co-existence of giftedness/high potential with one or more disabilities, the focus for school teachers in the early stage of the identification process needs to centre on the diverse range of learning strengths and/or learning difficulties and broader profiles of all students. Without this initial investigation, the recognition/identification and support of indigenous and non-indigenous students with 2e will continue to be elusive. Consequently, there is an urgent need for comprehensive assessment strategies.

Study 1

To address the need for a comprehensive, non-diagnostic assessment tool for teachers to use, particularly in the preliminary stage of the investigation process, a questionnaire or screener referred to as the Teacher Checklist Questionnaire (TCQ; Haines, 2017; Haines et al., 2020), was developed and trialled in a primary/elementary school in New South Wales, Australia. Reference to a non-diagnostic tool indicates that it is for general classroom usage and not for formal identification or diagnostic purposes, though results of its use may suggest the need for more formal identification. The TCQ has two sections. Section A, 'Indicators of possible significant learning potential', is based on Gagné's DMGT 2.0., including the Mental categories of Intellectual, Creative, Social and Perceptual, and Physical categories of Muscular and Motor control (DMGT 2.0; Gagné, 2008, 2013). Section B, 'Indicators of possible learning difficulties', has three categories/scales: Academic difficulties, Socio-emotional and Other behaviours (Haines et al., 2020). The nine categories each consist of multiple variables/items for teachers to rank students using a six-point Likert scale from Not Observed through to Always. The layout of the TCQ allows teacher observation of any patterns of learning strengths and/or difficulties as shown in a sample taken from the Intellectual and Academic difficulties categories from the TCQ (Haines, 2017; Tables 1 and 2). Whilst Borland queries the value of checklists in terms of investigating intellectual giftedness, the TCQ incorporates the six domains of natural aptitude as a basis for a more comprehensive early step in an identification process.

The first trial of the TCQ involved 10 classroom teachers ($N = 10$), and 24 students ($N = 24$) who were between the ages of 7 and 12 years (Years/Grades 2–6). The students, none of whom was formally assessed as twice-exceptional, had been placed in three nominal groups for comparison purposes. Selection was based on students' standardised test results mainly in reading, and consultation with teacher participants. Group 1 consisted of students who had learning strengths but no observable difficulties, Group 2 had similar strengths but with possible difficulties, and Group 3 consisted of students where there was teacher uncertainty about their abilities/needs. Teacher participants ranked an average of two-to-three students who had been selected from their own classes.

Table 1 TCQ Section A: Indicators of possible significant learning potential–Intellectual category

Section A	Not applicable	Not observed	Uncertain	Sometimes	Often	Always
Intellectual						
Excels at tasks requiring abstract thinking and problem solving					√	
Learns new concepts quickly and easily						√
Shows very high ability/skill in one or more areas (not necessarily in school)					√	
Asks in-depth and challenging questions						√
Uses an extensive and advanced vocabulary						√

Note. This table shows a sample of results for five of the 14 assessable items in the Intellectual category

Table 2 TCQ Section B: Indicators of possible learning difficulties–Academic difficulties category

Section B	Not applicable	Not observed	Uncertain	Sometimes	Often	Always
Academic difficulties						
Shows a significant gap between verbal ability and written skills						√
Reveals a discrepancy between written work and potential						√
Takes considerable time to actually write					√	
Takes considerable time to respond verbally		√				
Has handwriting coordination difficulties or problems completing paper and pencil tasks						√

Note. This table shows a sample of results for five of the 26 assessable items in the category Academic difficulties. See Haines (2017) for the complete tables

From the first trial, results from both quantitative and qualitative analyses were used to review whether the TCQ might be useful as an investigative tool or screener. A measure of scale reliability or internal consistency, Cronbach's Alpha coefficient (Field, 2013), indicated strong results ≥ 0.8, particularly in categories with a wider representation of items—including three of the Section A categories, Intellectual, Creative, Social and all Section B categories, Academic, Socio-emotional and Other Behaviours. In comparing the median scores for the three groups of student participants, Groups 1 and 2 had a higher ranking of strengths in the Intellectual, Creative and Social categories than Group 3. However, of particular interest in terms of any

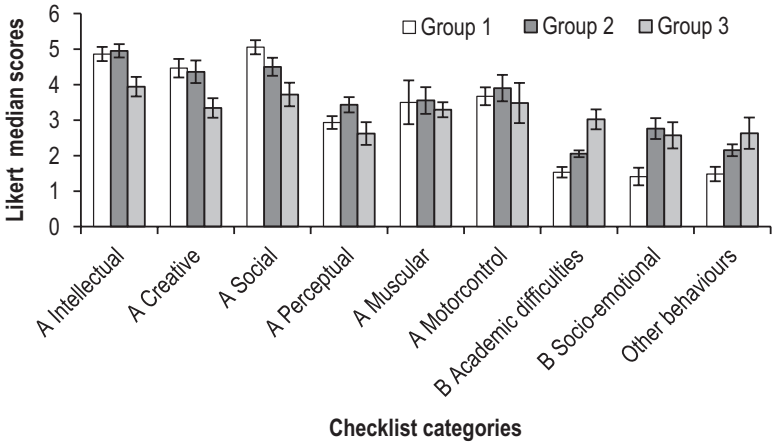

Fig. 1 Group median scores in all Teacher Checklist Questionnaire A and B categories. (Source: Haines, 2017; Haines et al., 2020, p. 30)

indications of co-existing learning strengths and difficulties, Group 2 showed more significant results than Group 1 in the Section B category of Socio-emotional difficulties and also featured with Group 3 in a higher ranking of possible difficulties in Other Behaviours (see Fig. 1) (Haines et al., 2020). These findings were supported by non-parametric inferential measures, including the Kruskal-Wallis *H* test and a follow-up pairwise comparison.

Allowing for the limitation of the small sample size, the findings indicate that the TCQ shows promise as a non-diagnostic assessment tool for teachers to investigate both the range and extent of each student's learning strengths and difficulties in multiple categories of natural abilities (Intellectual, Creative, Social, Perceptual, Muscular and Motor control) and learning difficulties (Academic, Socio-emotional and Other behaviours)—as far as they may be observable. These findings are supported by the visual layout of the TCQ where teachers can clearly observe any patterns of learning strengths and/or difficulties. (The potential value of these observations would warrant the TCQ being considered for investigation of students of mixed abilities as well as the twice-exceptional.) Further supporting the usefulness of the TCQ, there was also constructive feedback from teacher participants, which included recommendations for having future access to the questionnaire for a longer period and for it to be completed after a term or semester so that there was more familiarity with the learning profile of the students.

Study 1 Implications and Recommendations

The TCQ warrants further trialling with larger and more representative samples in both city and regional schools throughout Australia, ideally including varying socio-economic and cultural backgrounds. For trialling in schools in more remote regions

that have a higher population of Australian indigenous students, consultation with teachers/elders familiar with local cultural perceptions of giftedness would be required to determine the TCQ's suitability. The tool has flexibility to include extra items for assessment and to exclude any that may not be considered relevant to the population of students. With data obtained from a wider study, it would be desirable to conduct factor analyses particularly of categories with a larger number of items to determine whether they could be streamlined for greater efficiency. Furthermore, in future usage of the TCQ there would be a clear advantage of combining this process with teacher professional development focusing on the diverse traits of 2e. Discussion with teachers would need to include possible implementation strategies where students' results suggest that further review and educational intervention would be advisable. Results might suggest possible 2e, but just as importantly also suggest learning difficulties without areas of marked strengths, or vice versa.

Study 2

The second research project of relevance to this chapter aimed to develop a process to better identify and address giftedness for remote Aboriginal students attending an Australian boarding school. This project was initiated in response to the fact that over the 10-year life of the gifted and talented program at this school, there had been no remote Aboriginal participants, despite these students comprising 30% of the school population. In considering the issue of underrepresentation, two things became clear. Firstly, the identification protocols used by the school were failing to capture intellectual giftedness as it presents in remote Aboriginal students. Secondly, there was a clash between the conceptions of gifts and talents promoted in the school setting and those valued by remote Aboriginal communities (cultural giftedness). This, as indicated in the literature above, meant many Aboriginal students were left feeling sidelined and marginalised when at school.

To address these issues, this research used a facilitated dialogue to support teachers and local Yolngu elders to come together to create an identification protocol that would better capture the culturally mediated traits and behaviours of intellectual giftedness particular to this cultural group. This identification protocol also aimed to identify those students who may possess cultural gifts, ensuring the school would be aware of those in their care who are both intellectually gifted and culturally gifted, and thus present with this unique form of dual exceptionality. The identification tool developed by the Elders and teachers in this research took the form of a novel checklist (Thraves, 2020), one that built upon existing tools that have had some success in identifying gifted Australian indigenous students elsewhere.

The dialogue described above was preceded by a qualitative interview designed to ascertain Yolngu conceptions of gifts and talents. The findings from these interviews are reported by Thraves et al. (2021). In essence, as detailed above, gifts and talents are viewed by the Yolngu as collective resources that are necessary to support the continuation of the Yolngu culture. This idea is best illustrated using the painting in Fig. 2.

Fig. 2 Baru. (Source: Painting by Wendy Galanini. Printed with permission)

Wendy, the artist, is a painter of considerable talent. Here she has produced a painting that represents the Garmatj (her clan) and Baru (her totem, the saltwater crocodile). Wendy and other Garmatj clan members with the Baru totem consider themselves to belong to this painting, or more accurately, to its image and some of its technical features. As the painter, Wendy becomes a steward of shared cultural knowledge, and it is her responsibility, as the talented painter, to ensure her community has continued access to this knowledge (Thraves, 2020; Thraves el al., 2021).

Study 2 Implications and Recommendations

A number of recommendations emerge from this study. Firstly, when seeking to identify giftedness in learners from Australian indigenous backgrounds, it is imperative that schools consider how the traits and behaviours of intellectual giftedness are mediated by culture. Secondly, schools are encouraged to work with their local cultural communities to identify and support cultural gifts alongside intellectual gifts, as this recognition will allow for the holistic development of the complex profile of these learners. It is heartening to see from this study that it is possible for these two forms of exceptionality to be made visible in the school setting.

Conclusion

Comprehensive assessment strategies are invaluable for teachers to investigate the unique learning profiles of their students, including the twice-exceptional and the thrice-exceptional. It is through this process of investigation that learning strengths

and difficulties of all students can be revealed. Both studies presented in this chapter report strategies for the exploratory stage of the identification process particularly in relation to 2e, with the ultimate goal of students accessing more meaningful educational opportunities. One study centred on the Teacher Checklist Questionnaire and the other on a novel checklist specifically developed for teachers of students from an Australian Aboriginal community. Whilst the findings suggest that these assessment protocols show promise and would warrant further trialling, they both require expansion to adequately address the possibility of the 3e learner, that is, the indigenous student presenting as gifted as per Gagné's (2008) model, as culturally gifted, and also with a learning difficulty/disability. These theoretical 3e learners will exhibit a complex profile that will need careful consideration if they are to realise their multifaceted potentialities. Additionally, research would be useful to determine the prevalence of 3e and the impact on these learners of the co-mingling of these potentialities.

For educators to enhance twice and thrice-exceptional students' opportunities for more meaningful learning, Thorin's message at the beginning of this chapter has significance—"There is nothing like looking, if you want to find something. You certainly usually find something, if you look but it is not always quite the something you were after" (Tolkien, 2006).

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Strength-Based Approaches to Recognize and Develop Talent in Twice-Exceptional Learners

Todd Kettler and Tracey N. Sulak

Abstract Twice-exceptional students demonstrate potential for high achievement or creative productivity in one or more domains while also manifesting one or more disabilities. These coexisting exceptionalities often mask each other in student performances, and the students are neither identified for gifted education nor for special education. Additionally, when twice-exceptional students are identified for gifted education, they may present ability profiles that are not matched with the curriculum and instruction of the program. In this chapter, the authors present a strengths-based, talent-focused approach to twice-exceptional gifted education. Recommendations for schools serving twice-exceptional students are offered in four areas: (a) defining and developing identification systems specific to twice-exceptional students in order to identify diverse presentations of student potential; (b) designing and using Talent Identification and Development Plans to bring parents and schools together in problem-solving teams to develop students' strengths and addressed areas of weakness; (c) specifying and defining character strengths that support long-term social and emotional flourishing and intentionally making developing those virtues a part of the curriculum; and (d) normalizing diverse exceptionalities to help students embrace their complex identities and productive mindsets toward developing talent. Well-developed policies and plans will help schools support twice-exceptional students while promoting healthy social and emotional development.

Keywords Identification · Talent identification and development plans · Social and emotional flourishing · Normalize diverse exceptionalities · Complex identities · Productive mindsets

Gifted education may be thought of as the art and science of recognizing potential and developing that potential toward exceptional levels of achievement or performance. In the most archetypal form of gifted education, schools identify students

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with outstanding potential in the primary grades. Those students are placed in classrooms with specially trained teachers who systematically apply elements of differentiated learning design. The curriculum is accelerated to include advanced content, and it is also enriched to extend ideas and concepts into deeper analysis, problem-solving simulations, and creative productions. These gifted students move seamlessly through articulated learning experiences that are modified to go beyond the traditional curriculum, and they are graduated from the gifted education system after more than a decade of differentiated learning. Their talents are well-developed, and they are exceptionally prepared for post-secondary learning and advanced career pathways.

While this typical narrative of gifted education does exist for some students, other students with outstanding potential may be overlooked or mismatched with the archetypal forms and structures of gifted education. Educators have raised questions with practical and ethical implications. What about students with potential that is not easily recognized? What about students who have exceptional cognitive potential but struggle in advanced learning environments due to diagnosed or undiagnosed learning differences? These students are often overlooked and excluded from the gifted education talent development process. They may see themselves in a conflicting duality. They share cognitive similarities with their gifted peers but are also aware of distinct ways they are not like their gifted peers. One research participant who was in the process of completing a doctoral degree as an adult commented that when she was in school, "she often felt as if she were two different people in the same body: one who was competent and bright who was inside, and another who blocked the smart person inside from communicating" (Reis et al., 1997, p. 472).

Students with conflicting exceptionalities—high cognitive ability consistent with conceptions of giftedness as well as a second inhibiting exceptionality—have the potential for exceptional achievement that could be developed through gifted education programs and services. However, they are often overlooked as the inhibiting exceptionality casts a persistent shadow over their high cognitive ability. A growing corpus of research and increased recognition of the latent potential of twice exceptional students is pushing educators to confront the barriers that may leave twice exceptional students outside of the gifted talent development process. Our goal is to describe some strength-based approaches that educational systems can use to expand archetypal models of gifted education to effectively identify and develop the talents of students who are twice exceptional.

Talent Development and Twice Exceptional Education

The megamodel of talent development (Subotnik et al., 2011) is a theoretical framework for gifted education that has been increasingly adopted by schools and educational researchers in recent years. Arguably, a hallmark feature of the model is its emphasis on the developmental nature of giftedness. Learners with exceptional potential are provided and take opportunities to develop domain-specific knowledge and skills moving toward recognized expertise by the end of secondary school. Our

interpretation of the megamodel seeks diverse manifestations of potential and reduces emphases on exclusive selection criteria to enter gifted education while increasing emphases on the outcomes of gifted education—exceptional performance and domain expertise.

Gifted and talented program inclusion based on potential for exceptional performance seeks more diverse talent profiles than typical measures of giftedness such as reliance cognitive ability cut scores. A model that begins with exceptional diversity, the recognition that latent talent is sometimes masked by biological or environmental factors, is an appealing approach for expanding gifted education and talent development opportunities (see Fig. 1).

This theoretical framework is congruent with the recognition and development of twice-exceptional students. Twice-exceptional students are those "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" (Reis et al., 2014, p. 222). Twice-exceptional students may be underrepresented in traditional gifted education identification protocols at the risk of under-developed talent and potential (Maddocks, 2020). For example, under protocols utilizing general intelligence (*g*) as the basis of gifted identification, twice-exceptional students will be underrepresented in gifted programs and conversely, will also be underrepresented in special education. Three specific mechanisms create challenges in identification of twice exceptional students: students identified as gifted may have a disability that emerges later, students identified as having a disability may demonstrate specific gifts and talents later in development, or a student with average performance may have an uneven cognitive profile that predicts undiscovered talents (Foley Nicpon et al., 2011). Without programs that nurture their latent talents, twice exceptional student may never reach their potential level of performance.

Fig. 1 Model for twice exceptional gifted education
Note. Students with exceptional ability as well as exceptional diversity such as co-existing disabilities enter gifted education programs and services enhanced with strength-based approaches and positive psychology foundations. The goal of twice exceptional gifted education is well-developed talent and social and emotional flourishing

Identifying Twice Exceptional Students for Gifted Education

The initial priority in the process of identifying twice exceptional students is to recognize the primacy of giftedness or high cognitive ability. Twice exceptional students are considered gifted students with comorbid additional exceptionality. Documenting high cognitive ability in twice exceptional abilities requires broadening assessment parameters because typical assessments may indicate performance in the average range rather than the exceptional range. For instance, twice exceptional students typically score more like average ability students than gifted students on measures of general intellectual ability (Maddocks, 2020). Similarly on measures of processing speed and working memory, they also score similar to average students and lower than typical gifted students, and twice exceptional students generally score lower than typical gifted students on standardized achievement tests.

Common inhibiting exceptionalities include (a) specific learning disabilities, (b) attention deficit – hyperactivity disorder, (c) autism spectrum disorder, and (d) generalized anxiety disorder. These exceptionalities may impact students' executive functioning, fluency, memory and retrieval, and metacognition (Dawson & Guare, 2009). However, students may have high cognitive ability even though they have difficulty with some cognitive processes (Friedman et al., 2006). Teachers are often the best observers of the strengths of twice-exceptional students because they are in a position to see the complex thinking and understanding in the process even when exceptional achievement is not evidenced in the standardized outcomes.

The identification of twice exceptional students requires looking for strengths that indicate high cognitive potential even when that potential is not manifested in tests of intelligence or achievement. For instance, twice exceptional students tend to perform better on tasks that involve reasoning, application, and problem-solving as opposed to tasks that focus on memorization or processing speed (Gilman et al., 2013; Maddocks, 2018). Twice exceptional students may demonstrate strengths in reasoning skills, spoken language, and spatial abilities (LaFrance, 1997). Typically, students with learning disabilities perform in the *below* average range on school measures of achievement; however twice exceptional students may go largely unnoticed when they have a learning disability yet score in the average range on achievement measures (McCallum et al., 2013). Once a student is recognized as having high ability, then *average* performance should be viewed as evidence of a discrepancy between potential achievement and actual achievement. Thus, identification of twice exceptional students requires systematic efforts to document cognitive ability strengths that are at odds with average achievement (Baum & Schader, 2020).

Gifted Education Programs and Services for Twice Exceptional Students

While identification of twice exceptional students is quite complex, designing appropriate programs and services for these students may present just as many challenges. Twice exceptional students enter the talent development process with high cognitive ability and potential, but they also enter the process with unique challenges based on the manifestation of the second exceptionality. Strength-based approaches recognize and build on student strengths while simultaneously addressing deficits presented by the limiting exceptionality. Previous research on twice exceptional students suggests a diverse array of strengths and deficits for these students (Assouline et al., 2010), and the best approach to services may be individualized and nuanced. Strength-based approaches systematically recognize and develop students' talent in narrow strength domains. The starting point may be a diverse array of strengths and challenges with interventions emphasizing developmental trajectories based on cognitive and psychological strengths.

Too often twice exceptional students are more defined by their limitations than their strengths and potential. The most recommended approach to school-based services with twice exceptional students includes focusing on high potential in talent areas and simultaneously addressing deficits (Assouline & Whiteman, 2011; Foley Nicpon et al., 2011; Reis et al., 2003). Baum et al. (2014) studied a model of twice exceptional education emphasizing strength-based, talent-focused approaches and found five factors supporting student growth: (a) psychological safety, (b) tolerance for asynchrony, (c) time, (d) positive relationships, and (e) consistent use of the strength-based, talent-focused philosophy. These five components of student growth were identified as *critical* to student development, but none of the components alone would be sufficient for improving student outcomes.

Psychological Safety

While psychological safety, or a psychologically safe environment, may be necessary for human development in any setting, it appears to be critical for twice-exceptional students to develop learning habits and attitudes that contribute to success. A psychologically safe environment reduces barriers to engagement and learning by creating an atmosphere that promotes appropriate risk taking and allows recovery from failure (Wanless, 2016). Conversely, environments perceived as unsafe may reduce agency (Soral et al., 2021), leading students to reject exploring new ideas or engaging with challenging material because difficult tasks increase the risk of failure. In psychosocially safe environments, students are free to follow their interests and develop agency over their learning without experiencing threats to identity or sense of self (Edmondson & Lei, 2014). For students with

twice-exceptionalities, a psychologically safe environment allows expression of gifts and talents within a setting that provides support for and respects individual learning challenges.

In a psychologically safe environment, students are viewed as individuals with unique strengths and needs and thus, asynchrony in development would not be considered unusual. The one consistent finding from research on students with twice-exceptionalities is that despite some common characteristics, there is no single learning or behavioral profile for these students (Assouline et al., 2010; Beckmann & Minnaert, 2018; Maddocks, 2020). For these students, a combination of high-abilities and learning challenges may naturally lead to asynchronous development; environments that view students holistically and support asynchronous development may create opportunities for development of positive self-concept and confidence in learning.

Asynchrony

Baum et al. (2014) found growth for twice-exceptional students to be erratic and sporadic, even in a specialized setting and fostering this growth required time and patience. With students who are twice-exceptional, viewing long-term gains as opposed to daily performance may give a truer measure of development. For example, unpredictable performance in the classroom appears to be common among student with learning disabilities, but when the gains of these students are viewed across a year, one can see a linear trajectory that is either increasing or decreasing. Viewing average performance over time reduces some of the day-to-day noise while still measuring of growth.

Time and Development

Framing twice-exceptional education within the talent development megamodel necessitates a developmental framework of giftedness. Students develop their giftedness over time with intentional interventions and opportunities. Talent development requires time and proactive participation from the student (Olszewski-Kubilius et al., 2015). For this reason, twice-exceptional education focuses on gifted outcomes rather than gifted beginnings. Giftedness is not where the student begins but rather where the student arrives through persistent growth and development.

Positive Relationships

Forming positive relationships with teachers, mentors, and other students also requires time but may result in increased connectedness to the school and higher levels of engagement (Baum et al., 2014; Roorda et al., 2017). According to Roorda et al. (2017), engagement mediates the relationship between teacher-student relationships and achievement, meaning that positive relationships in settings promoting deep engagement should lead to higher achievement. Unfortunately, poor quality teacher-student relationships may not only reduce achievement but may also lead to increases in negative behavior, particularly among students with disabilities (Wilkinson & Bartoli, 2021).

Strength-Based Approaches

The last factor found in the Baum et al. (2014) study refers to the consistent use of the strength-based, talent-focused philosophy. For students with twice-exceptionalities, uneven performance across academic subjects can be a source of frustration. A student's domain-specific abilities become central to a strength-based, talent-focused program; opportunities are structured within the domains of strength while simultaneously remediating any learning challenges a student may exhibit (Subotnik et al., 2011). Strength-based and talent-focused models have been consistently recommended for school-based programs for twice-exceptional students (Baldwin et al., 2015; Baum et al., 2017; Bianco, et al., 2009).

Differentiation for Twice Exceptional Students

Four principles characterize strength-based approaches to gifted education with twice-exceptional students: (a) recognition of strengths, (b) developing strengths into academic talents, (c) developing strengths of character to support social and emotional flourishing, and (d) develop and maintain growth-oriented self-beliefs. Past research has demonstrated programming for students with twice-exceptionalities tends to be deficit-based (Crim et al., 2008) with a focus on the student's disability, but a strength-based program allows students to be gifted first while maintaining support for additional learning needs (Baum et al., 2014).

Strength-based differentiation is best facilitated using a Talent Identification and Development Plan (TIDP). The TIDP serves as the agreed upon intentional pathway moving the student toward well-developed talent and social and emotional flourishing. Table 1 outlines six general elements of the TIDP that are offered with a brief description that should be considered and integrated into differentiated plans.; It is important to note, however, the TIDP structure may be modified to fit the needs of

Table 1 Elements of talent identification and development plans

Element	Description
Strengths and deficits profile	Document measured strengths and deficits of the student.
	Documentation should include multiple sources of data that are both qualitative and quantitative.
	Strengths and deficits should be routinely updated.
Goals and measurable outcomes	Short-term goals: Grading periods or semesters
	Mid-term goals: Goals for 1–5 years
	Long-term goals: Career and vocational goals
	Measurable outcomes should represent both strengths and deficit areas.
Differentiation plans	Document talent development planning in the four areas of differentiation: (a) course of study, (b) learning standards, (c) learning design, and (d) authentic engagement
Scaffolding for deficits	Identify specific strategies and tactics that will be used by teachers, parents, and the student to address deficits associated with the second exceptionality.
Counseling needs and support	Some students with multiple exceptionalities have psycho-social needs that are best addressed by licensed counselors. While maintaining counseling privacy protocols, document general schedule and plans for counseling support.
Key personnel	Identify key personnel involved in the TIDP and their role in the talent identification and development process.

the school for more focused personalization. The purpose of the TIDP is to bring all stakeholders together and agree upon a plan of action that is consistent with research and best-practices in twice-exceptional education. Stakeholders involved should include parents, teachers, counselors, and GT specialists. In some cases, campus leaders or special education experts may also be included in the TIDP team.

Because twice-exceptional education maintains the primacy of giftedness, the use of gifted education differentiation is a priority of the TIDP. Differentiation planning should align with short-term and mid-term goals, and the TIDP should specify measurable outcome targets that will reflect the successful use of the differentiated curriculum and instruction. Differentiation for talent development involves a multifaceted approach emphasizing four types of learning modification (Kettler, 2016). To best accomplish the goals of developing the talents of twice-exceptional learners, school should intentionally address each of the four areas (see Fig. 2): (a) differentiation of the course of study, (b) differentiation of standards, (c) differentiated learning designs, and (d) differentiation as authentic engagement.

Differentiation of the Course of Study

A student's course of study is generally the way time is used intentionally to accomplish the goals of the student's education. In primary education (elementary grades) time may be used to develop exceptional talent in an area of strength. For instance,

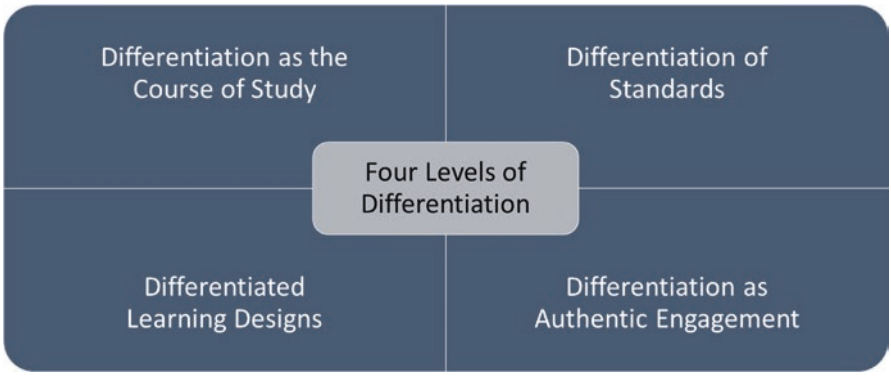

Fig. 2 Four levels of differentiation for twice exceptional students
Note. Comprehensive approaches to differentiation include systematic planning and implementation at each of the four levels with the goal of progressive development of talent, interest, and engagement within gifted education programs

if typical students spend 60 min per day on mathematics, gifted students developing advanced math talent may spend 90 min with the goal of mastering more mathematics standards than typically prescribed for the grade-level. Similarly, at secondary education levels, students may take additional courses in areas of strength where exceptional talents are to be developed. If the standard high school curriculum includes completing four mathematics courses, gifted mathematics students may complete six or more mathematics courses. Differentiation of the course of study is research-based strategy where students spend more time and engage more curriculum in a focused area to develop advanced achievement in that area. Strength-based gifted education includes the intentional modification of time and opportunity to develop exceptional levels of achievement.

Differentiation of Standards

Standards articulate the content and behavioral targets of each discipline in the school curriculum. Standards-based teaching and learning have become the dominant paradigm of most educational systems beginning in the late twentieth century. Each course in the curriculum is defined by standards specifying the depth and breadth of skills and content to be mastered. In theory, those standards reflect what a typical student should master. Because the standards are aimed at the typical or average student, they fall short of defining the content and skills needed to be mastered in the process of developing exceptional talent in an area of study (e.g., math, writing, chemistry, economics). Thus, a fundamental approach to differentiating in gifted education, including twice-exceptional education, is to modify the standards to increase depth, complexity, and pacing. Differentiation of standards should be intentionally and systematically approached applying the principles of acceleration

and enrichment. To modify the standards for acceleration, teachers may teach up to standards that are above grade-level. For instance, a grade 3 student gifted in language arts may require the challenge of standards in reading that are typically expected for grade 5 students. To modify the standards for enrichment, teachers modify the standards for depth and complexity. Standards modified for depth drill deeper into specific content including vocabulary, details, and relationships that are not part of the typical curriculum. Standards modified for complexity change the expectation for cognitive demand. For instance, modifications for complexity might emphasize creative thinking, critical thinking, problem solving, or consideration of multiple perspectives. Strength-based gifted education for twice-exceptional students should include intentional and systematic modification of the standards in the curriculum to develop the strength-based talents of the students.

Differentiated Learning Designs

Learning design is the application of a pedagogical model to attain specific learning objectives for a target group related to the context of a knowledge domain. Learning designs specify each aspect of the teaching and learning process as they align to learning outcomes (Conole & Fill, 2005). High quality gifted education involves the intentional and systematic use of learning designs appropriate for cognitively advanced students. Common pedagogical models applied to gifted education include the Integrated Curriculum Model, the Parallel Curriculum Model, the Enrichment Triad Model, and the Autonomous Learner Model. Each of those learning designs was specifically developed for use with gifted and talented students. Other models that are used with all students and effective with advanced students include (a) inquiry models such as problem-based learning, project-based learning, simulations, case-based learning and independent investigations; creative learning models such as the Torrance Incubation Model, design-based learning, and the creative problem-solving model; and (c) concept-based learning or concept attainment models. Gifted education should apply differentiation theory using learning designs which employ pedagogical models either specifically designed for advanced learners or with a history of effective use with advanced learners including twice-exceptional learners.

Differentiation as Authentic Engagement

Authentic engagement includes learning beyond the traditional boundaries of the classroom or the school curriculum. Common examples of authentic engagement in gifted education include (a) beyond school learning—summer programs, weekend programs, and specialized camps; (b) apprenticeship and mentoring learning; (c) competitions and contests; and (d) focused learning communities. Many gifted

students develop exceptional talent and vocational interests learning beyond school. These programs may include summer enrichment programs or intense weekend courses on topics of interests (e.g., computer science, robotics, engineering). Gifted students may also attend specialized camps such as advanced mathematics camps or coding camps during the summer. As gifted students mature into secondary grades, authentic engagement may include apprenticeship and mentorship opportunities. Examples may be apprenticing at a technology firm as part of a problem-solving team or working with a mentor researcher in a biology laboratory. Students also develop advanced talent through consistent involvement in competitions and contests. For instance, a student with strong verbal skills may develop her writing talents through participation in multiple writing contests. A student with science skills and interests may compete in annual science fairs and competitions from year to year. Contests and competitions push students to perform at high levels in specific areas of talent and interests. Lastly, differentiation for authentic engagement may include focused learning communities such as math circles, academic clubs (engineering, literary, debate), or online communities with others who have similar interests and talents.

Recommended Practices for Schools

- Schools should define or adopt a formal definition in policy/guidelines to clarify the meaning of twice-exceptional and identify students specifically in this category even if the identification does not meet the typical standards of gifted and talented identification or special education identification.
- Develop or adapt some type of Talent Identification and Development Plan (TIDP) to bring school and parents together to identify academic strength profiles and customized plans to develop strengths into domain-specific talents. The TIDP should also define scaffolding processes to develop weaknesses, but strength development is the priority.
- Developing academic virtues, character strengths, and psycho-social skills supports present and long-term social and emotional flourishing. Schools should adopt a set of defined skills and characteristics that can be consistently and intentionally woven into the fabric of learning. These skills and characteristics should be defined in the TIDP so that schools and parents can collectively and consistently reinforce development of strengths in and out of school.
- Normalize diverse exceptionalities and eliminate lament. Schools should help students embrace their complex identities and shift the focus to what they are become rather than the limitations of the second exceptionality. Help students develop productive mindsets realizing that strengths and talents grow and develop through discipline, commitment, and dedicated practice. Develop systems to recognize psychosocial strengths like grit, perseverance, and optimism to support talent development.

Summary

Twice-exceptional education is theoretically grounded in gifted education placing a primacy on the recognition of exceptional cognitive ability. However, implementing twice-exceptional education may require some deviation from some archetypal elements of typical gifted education. We recommend beginning with a clear definition of twice-exceptional students and dedicated identification protocols for identification that are similar yet distinct from typical gifted identification and special education identification. We recommend strength-based approaches founded on talent development theory and research as well as a comprehensive application of differentiation theory. The primary pedagogical vehicle to drive the twice-exceptional talent development process should be a formalized Talent Identification and Development Plan. The process of developing the plan and implementing the plan assures consistency and progress monitoring. Gifted education is comprehensively improved when schools take more diverse approaches to talent and potential, and in the process more students will benefit from these approaches.

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Comprehensive Social Emotional Learning: Embedding Skill Development Program-Wide

Carl Sabatino and Christopher Wiebe

Abstract The development of a healthy social-emotional ecosystem in an educational setting is of critical importance to child development and the wellbeing of faculty and staff. Research in the field demonstrates the benefits of direct, curriculum-informed instruction to develop social-emotional skills, as well as more dynamic, interactional models that deploy responsive, in-the-moment feedback. Studies also show the importance of embedded approaches that establish and maintain the sort of the values, behaviors, and attitudes desired within the school community. The majority of these studies explore social-emotional learning in neurotypical classrooms and schools, leaving many questions about effective social-emotional development strategies for educational environments designed specifically for twice-exceptional (2e) students. This chapter looks deeply into the model of a school for 2e students to show how a pervasive, embedded approach built upon deliberate and flexible structures, norms, rules, policies, expectations, and communications that engender positive student attitudes and behavior. This model seeks to develop students' integrity as citizens and community members, preparing them for positive and productive interpersonal relationships, as well as career and personal success. This involves improving their flexibility, resilience, and perseverance through the acquisition of understandings and skills related to self-awareness, self-management, social awareness, and decision-making. Our analysis of the model-in-practice includes the finding that that 2e students make progress socially when classes are small, instruction is differentiated, and the environment recognizes and respects their asynchronous development, and both their gifts and learning differences. We also find that 2e children often learn social skills and understanding best in an interactive-relational mode, rather than an educational mode that relies heavily on direct instruction.

Keywords Social-emotional ecosystem · Differentiated instruction · Asynchronous development · Interactive-relational mode · Social skills

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Decades of scholarship reveal the importance and benefits of programming to promote students' social and emotional understandings, and skill in an educational context, recognizing the critical role that schools play in a broad array of domains (Hamre & Pianta, 2010; Jones & Bouffard, 2012; Mahoney et al., 2018). According to Durlak et al.'s (2011) meta-analysis of research conducted between 1970 and 2007 into 213 K-12 programs showed that social and emotional learning (SEL) programs drive statistically significant improvements in students' attitudes, skills, and prosocial behaviors. These SEL programs lessen emotional distress among students, contributing positively to academic performance and community cohesiveness. Notably, these studies also showed the ability of classroom teachers and other school staff in carrying out the mechanisms of SEL programs, suggesting that "interventions can be incorporated into routine educational practices and do not require outside personnel for their effective delivery" (p. 417).

The general consensus among educators and scholars is a belief that "SEL programming is likely to have both immediate and longer-term benefits for young people, both in school and later life" (Mahoney et al., 2018, p. 20). But some scholars have noted that interventions at the preschool and primary school level tend to yield more successful results and that "programs that target adolescents have not been established to be as effective as programs that target earlier ages" (Heckman & Kautz, 2013, p. 35). This raises questions about how to conceptualize diverse approaches that target different populations and skill domains, which may vary in terms of their philosophies, strategies, and duration. In other words, "What type of program is most effective for promoting which particular SEL skills and attitudes in the short and long term for which students, and what are the specific components of each program that account for its impacts? [emphasis in the original]" (Mahoney et al., 2018, p. 21).

Functionally and structurally, SEL programs tend to fall into three general categories. Direct Curricular Classroom Instruction (DCCI) offers pre-planned curriculum packaged with explicit goals that have concrete units, materials, activities, and instructions. Dynamic Instruction (DI) models prioritize in-the-moment opportunities for feedback and processing to maximize authentic learning experiences over the course of students' daily lives. Relatedly, an Embedded Values and Behaviors (EVB) framework endows the totality of an institution's structures, norms, rules, policies, expectations, and communications with values and principles that develop students' intrapersonal and interpersonal integrity as members of an extended community. Each of these vantage points, both respectively and in concert, upholds a confidence in the benefits of "explicit attention to promoting caring classroom and school contexts as a way to promote students' social and emotional competence and academic success" with "repeated opportunities to practice new skills and behaviors within the program structure and to apply them in real-life situations" (Sauve & Schonert-Reichl, 2019, p. 279). Indeed the most successful social and emotional outcomes are achieved when school leaders recognize that "providing opportunities to practice within classroom lessons is important, but actual opportunities to practice in real-life situations are likely to have even more impact" (p. 279).

DI and EVB models harness the benefits of an integrative approach that infuses teaching and reinforcement of SEL skills into a students' regular and ongoing interactions at school (Jones & Bouffard, 2012). "Because social and emotional skills develop across contexts, SEL efforts should also be horizontally aligned—that is, intentionally connected and consistent across micro-contexts within schools (e.g., classrooms, playgrounds, lunchrooms)" (p. 8). DI and EVB mindsets are alike in their focus on the real-life experiences that students have at school and at home, providing immediate information, feedback, and redirection at the right time and in the right situation. EVB models aim to create a broad ecology in which a community's care and support for one another, a sense of belonging and group identity, and a shared sense of norms and values enable positive social and emotional development to occur (Libbey, 2007; Sauve & Schonert-Reichl, 2019). "Simply put, schools are a relational context in which interactions among all individuals play a critical role in shaping child development" (p. 281). Such a context, in part, is what creates the conditions for a DI model to flourish and succeed.

DCCI approaches are characterized by their adherence to content and learning activities developed by teams of research-practitioners with specific processes and outcomes in mind. Such models include the Caring School Community program for students in kindergarten through 6th grade, which administers lessons that aim to foster prosocial dialogue among students through a class meeting protocol, as well as all-school community building activities that merge students' school and home lives. The Responsive Classroom (RC) framework, which also incorporates some DI and EVB strategies, posits seven principles designed to steer teacher thinking and action, emphasizing a combining of academic and social curricula and focusing on the content and process of learning to highlight social and emotional development. The Student Success Skills program consists of eight lessons adapted for upper elementary to high school aged students that and has been shown to enhance community connectedness, social and emotional skills, and academic performance. Programs like these and others identify and cultivate specific social and emotional competencies that fall into the broader domains of self-awareness, self-management, social awareness, relationship skills, and responsible decision making (Collaborative for Academic, Social, and Emotional Learning, 2015).

The Unique SEL Needs of 2e Students

Twice-exceptional students, a population characterized by extreme learning strengths and learning challenges, often have neurological profiles that pose a unique set of obstacles to their social and emotional development (Reis et al., 2014; Webb, 1994). In the United States, "Gifted & Talented" is defined as students "who give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services or activities not ordinarily provided by the school in order to fully develop those capabilities." (20 U.S.C. Section 7801(22). Twice-exceptional students, though

gifted, might not be eligible for such services for a number of cognitive, and social and emotional reasons. Anxiety, immaturity, poor self-esteem, and other social and emotional deficits can manifest over the course of 2e students' experiences in school (Baum et al., 2009; Eide & Eide, 2006). This results, partly, from the comorbidity of their giftedness and conditions such as attention deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD), and specific learning disabilities (SLD). These conditions can cause students to have difficulties comprehending social contexts and impaired interpersonal interactions. Asynchronous neurological development can also manifest itself through emotional volatility, impulsivity, and inability to anticipate the consequences of their actions. "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" (Reis et al., 2014, p. 220).

Baldwin et al. (2015) found that the experience of being a gifted student—often characterized by feelings of both confidence and inadequacy—is often more pronounced for 2e students whose disabilities exacerbate that tension. This discrepancy between strength and areas of need results in increased levels of anxiety, low academic self-efficacy, and poor self-esteem (Reis et al., 2014). As such, standard strategies and interventions for gifted and special education populations, respectively, can be counterproductive, leading to regression in a 2e students' behaviors that take a toll on their educational experiences. "The disappointments that twice-exceptional students experience in the classroom can often be observed in their behavior" (King, 2005, p. 18) In spite of growing awareness among educators about 2e students, training tends to still prioritize a teacher's content area and they often lack the knowledge and skills needed to provide for 2e students' unique needs (Foley-Nicpon et al., 2013).

Foley-Nicpon and Candler (2018) proffered a foundation for educators and mental health professionals who work with twice-exceptional students, based on empirically validated psychological interventions. For instance, mindfulness strategies have been shown to students' metacognition and awareness of environmental factors, in order to develop their coping and emotional regulation skills. Mindfulness activities for 2e students with ADHD improve their ability to persevere and stay in the struggle in educational or workplace settings (Schaerf, 2016). Additionally, school models that advance a strengths-based, talent-focused approach can shift focus away from deficits or disabilities in a way that also enables a student's weakness or challenge areas to be accommodated and developed. While interventions designed to address a broad number of concerns can be effective for gifted students, many contend that such strategies need to be adjusted to better serve twice-exceptional students' unique needs. Students need both acknowledgement of their exceptional abilities and robust supports that will accommodate their needs, such as psychological interventions and differentiated instruction. Students need opportunities to develop social skills, counseling sessions, and multiple methods for

absorbing new material and showing understanding of new concepts (Baldwin et al., 2015; Winebrenner, 2003). Twice-exceptional students will also thrive in emotionally safe and nurturing classrooms where their potentials are supported, the environment is calm and predictable, and individual differences are recognized and valued (Reis et al., 2014; Baldwin et al., 2015; Reis & Ruban, 2005; Winebrenner, 2003). With regard to academic instruction, challenging learning activities should align assessment with students' strengths and interests, integrating multiple modalities and student groupings that are highly flexible (Josephson et al., 2018).

Baum et al. (2014) portrayal of the school that is the focus of this chapter yields several insights about successful social and emotional strategies for 2e learners. Among the factors they identified was a need for a physically and psychologically safe environment where students could "let down their guard and then begin developing into healthy learners" (p. 323). The findings also showed the importance of a tolerance for asynchrony that enabled faculty members to adjust their expectations according to students' manifest development readiness, not necessarily chronological age. Such a mentality provided a foundation for a supportive school culture and positive relationships between students and faculty. These factors, combined with a strength-based, talent focused approach pervades all aspects of the school experience. "From the perspective of the faculty, the students were gifted first and challenged second, with neither feature ignored at the expense of the other."

In addition to this perspective, faculty form a knowledge of students' neurological profiles that is applied in the context of DCCI, DI, and EVB approaches, aligning a student's specific areas for social and emotional development with the strategies and interventions of the program. This mixture of an awareness of affective neuroscience, and positive and motivational psychology comprises the foundation for the model. This chapter will describe those facets of this model, using examples and ties to the SEL literature to corroborate its effectiveness and provide practitioners with strategies that can be applied at their own sites.

Framework: Embedding Skill Development Program-Wide

The Bridges Academy SEL program fuses embedded, direct, and dynamic models to maintain an ecosphere where authentic, ongoing social and emotional growth can take place for 2e students. Critical to this process are skilled and knowledgeable faculty members who embody school values and principles, while capitalizing on teachable moments with micro-interventions tied to a students' neurological profiles and individualized developmental needs. In other words, the program takes into consideration aspects of a student psychological profile—such as personality, diagnoses, and areas of strength—to formulate strategies to cultivate social and emotional growth. A student on the autism spectrum, for instance, might require more direct, explicit instruction about social awareness than a student who does not have spectrum issues (Müller et al., 2008) The individualized needs of

twice-exceptional students require responses that are similarly individualized, according to circumstance and goal (King, 2005; Baldwin et al., 2015; Leggett et al., 2010).

A multifaceted EVB approach means social and emotional learning permeates all aspects of a students' experience at school, from academic classes to talent development to routine interactions on campus. This organic, purposely developed and maintained system aims to help students become better community members, developing flexibility and perseverance through improved self-awareness, self-management, social awareness, relationship skills, and decision making (Libbey, 2007). The Collaborative for Academic, Social, and Emotional Learning (2015), or CASEL, identifies and describes these areas as integral to individuals' development of healthy identities and the ability to reach personal and collective goals. As such, the Bridges program draws intentional connections between the facets of the program and the five CASEL skill areas, which are described below.

Building self-awareness means understanding the impact of emotions, thoughts, and values on behavior. This requires examining prejudices and biases, maintaining a growth mindset and developing a sense of confidence and purpose (n.p). Within Bridges' SEL model, teachers regularly work with students to identify and describe their emotions during times of conflict or discomfort, recognizing the part they may play in behavior or interpersonal disputes with other students. Over time, students develop a knowledge of their own emotional triggers, as well as boundaries they need to set and abide in order to preserve a sense of balance and autonomy. This process also helps students better understand the perspectives of others, empathizing with others when their emotions are triggered and being able to engage with them in thoughtful and supportive ways. (Brackett & Katulak, 2006; Patall & Zambrano, 2019). A recurring workshop conducted for seniors directly confronts prejudice and bias that can be related to any number of sociological factors.

Correspondingly, self-management involves a student exerting control over their thoughts, emotions, and behaviors to set and reach goals (Zins et al., 2007). The importance of planning and organizational skills is paramount as a student learns to take initiative, showing both self-discipline and self-motivation. Practicing and developing these skills at Bridges often occurs in the context of the Academic Support and Advisory program, where students learn to traverse interpersonal relationships and exchanges with their teachers that facilitate proficient academic performance. This can involve an ongoing conversation about differentiated timelines, process, and product to accommodate a student's specific learning needs, adding the opportunity to develop self-advocacy as an executive functioning tool. In addition to this communication component, students work with their advisor to develop habits and routines to exert control over their responsibilities and task load. Rather than inculcating a uniform approach or tools, advisors help students identify their executive functioning deficits, developing a better understanding of why their current habits aren't working in order to replace them with ones that do. This involves a recursive, nonlinear sequence of discoveries, successes, setbacks, and metacognitive activities, allowing a student to take ownership of a process that they helped develop and design (Meltzer, 2010; Caine et al., 2015). To accomplish this,

students confront and learn to recognize connections between their thoughts and emotions and behaviors that have a negative impact on productivity. Feelings of anxiety, for instance, can manifest as perfectionism, with behaviors such as avoidance and procrastination having a negative impact on their productivity. Recognizing the interplay between thoughts, emotions, and behaviors and ineffective habits sets the groundwork for coping mechanisms and improved habits and routines.

The Bridges SEL model also focuses on developing students' social awareness, which center around the capacity to respect and comprehend the perspectives of others. Empathy is also an important aspect of social awareness, as well as the ability to apply perspective-taking related to persons from diverse backgrounds, cultures, and contexts. Topics and materials addressed in students' academic classes often expose students to the diversity piece. Growing students' sense of social awareness also draws attention to the more structural components of human interactions, identifying and adapting behaviors consistent with social norms, as well as tracing the influence between systems and behavior. Many students experience their biggest gains in the skills of social awareness through inevitable conflicts with other students, which are mitigated by adroit faculty members who draw parallels between a specific situation and general social awareness goals. In this context, the DI model also relies on a faculty member's knowledge of the history and neurological profiles of the students in a conflict, as well as the students' specific progress toward the program's built-in social awareness goals. At a school like Bridges, where neurological profile information is ubiquitous in ongoing discussions about student progress, students will often clue into aspects of their neurology that can put them at odds with students, and likewise. Such deep and sophisticated understandings of themselves and their peers, a critical extension of self-awareness, can be particularly motivating for gifted students (Neihart et al., 2002). Successful 2e individuals can evaluate and navigate the various social environments and novel situations they will encounter.

Critical to social adeptness are the skills that help students establish healthy and supportive relationships with others in a variety of contexts. The Bridges SEL program emphasizes clear communication, which includes active listening skills and an ability to collaborate with others and manage conflict. Students also learn to maintain a sense of self and independence amidst negative social pressure and a willingness to ask for help. Particular attention is paid to the different types of relationships students have—acquaintanceships, friendships, romantic relationships, professional relationships—and how expectations, understandings, and behaviors may vary from one to the other. Students also explore the concept of different spaces, public and private, which also come with their own distinct expectations and understandings. Students have the opportunity to engage with others, faculty, and staff to practice and hone relationship skills in multiple settings venues, from classrooms and unstructured shared spaces to events like dances, field trips, and international travel.

Finally, Bridges SEL program aims to equip students with a sound decision-making process and the ability to make thoughtful, well-informed choices across many different situations. Good decision-making involves considering ethics and safety as well as benefits and consequences of action, both to the individual and the

group. Students learn to identify and frame a problem, analyzing and evaluating key factors to weigh several scenarios before a decision is made. In the past, a decision-making model was directly taught to students and applied through hypothetical examples and group discussions. While this approach instilled a framework and vocabulary for discussing decision making, student-growth is most often tied to analyzing ongoing and complex events in students' own lives, with a faculty member or counselor guiding the student through significant elements to arrive at meaningful and actionable conclusions. This process can take place across a variety of life domains, such as managing classwork, social choices, disciplinary discussions, evaluation of personal relationships, and future plans. Inherent crossovers between decision-making frameworks and critical thinking strategies mean that students often use decision-making tools and concepts in the context of their academic life. The cerebral, often theoretical nature of deconstructing problems and situations can be appealing to some 2e students, but others respond poorly to front-loaded frameworks that lack initial context.

The overall goal of the Bridges SEL program is to enable 2e students to navigate the various environments in which they will find themselves, knowing how to adapt and shape those environments, while remaining true to their own values and priorities. Career and personal success and fulfillment involve an intricate balance of cognitive, professional, adaptive, social, and emotional skills. For twice-exceptional students, whose asynchronous profiles can complicate psychological development, growing social and emotional skills also requires a deep understanding of their particular challenge areas. Over time students develop coping mechanisms in order to manage these challenges and become autonomous individuals who are able to manage their lives. Meta-cognition is a critical component of all students' social and emotional work, reflecting on choices, behaviors, and past situations to increase self-awareness and be a positive contributor to the community at large. The on-campus experience provides students with the opportunity to make gains and mistakes in a safe, semi-controlled setting with faculty members who understand their unique needs.

Institutional Structures: Conditions Conducive to Social and Emotional Development

As shown previously, the 2e context raises a number of special considerations, as asynchronous development among this population requires a customized and nuanced approach. While there is no single strategy that works for all 2e students, certain aspects of school climate are more conducive to their growth. Social, emotional, academic, and creative development do not occur in isolation, but within a dynamic and synergistic set of relationships and programming guided by knowledgeable, caring adults. These synergies are possible when policy and practice prioritize certain understandings (Baum et al., 2014). For instance, 2e students make

social and emotional skills progress when classes are small, instruction is differentiated, and their instructors and peers recognize and understand their asynchronous development—both their giftedness and their learning differences. This understanding supplies the foundation for a sense of group belonging among intellectual peers with whom they can make connections and establish friendships (Barber & Mueller, 2011). The community's valuing of interests and talents motivates students to self-advocate as they engage in their classes and strength-based pursuits. Toward this end, faculty members must be highly intelligent, perceptive, and perceive students as talented young people with great potential, upholding a narrative of talent development and personal growth. Parents, equally important as members of the community, help their students thrive when they understand and accept the uniqueness of their children, respecting their need to traverse their own developmental paths and form their own identities. Fulfilling this role calls upon parents to be partners, role models, and opportunity makers to support their child's learning, prioritizing the uniqueness of individual experience and importance of lifelong learning (Olszewski-Kubilius, 2008). Social and emotional learning for 2e students requires a coordinated approach among parents, faculty, administrators, and sometimes outside professionals who use similar language and frameworks when they provide direct instruction and in-the-moment feedback (Besnoy, 2006).

Social and emotional development for 2e students can only take place in safe, accepting, and compassionate environments where interactions with adults and peers encourage the development of trust and connection. There must be a welcoming campus atmosphere where faculty take a genuine interest in students' interests, as well as the specific things that motivate them. Establishing rapport with students is primary as faculty members model positive relationship skills and appropriate responses to events (Baum et al., 2014). The importance of regular routines such morning greetings and startup rituals as opportunities to model social and emotional skills cannot be understated. Establishing and maintaining expectations of connectedness and civility can better equip students to manage more complex interactions throughout the day. It is important to note that evaluating the social and emotional health of the ecosystem should involve an assessment of campus protocols, such as supervision, within several different "spaces" where opportunities for positive human interaction can occur where faculty can define and model norms of behavior and expectations. An appropriate SEL ecosystem contributes significantly to the development of improved self-esteem and efficacy, lowered anxiety, and the ability to learn through environmental modeling, as well as instilling community values and civility in communications (Baum et al., 2014).

DCCI: Cycling a Sequence of Critical Topics

The Bridges model administers direct instruction in two contexts. First, advisory periods serve two distinct but related roles, providing academic and social-emotional support. Students meet in groups of six with their advisors three times per week to

receive organizational support with their core classes and receive direct instruction on specific topics pertaining to social and emotional skills. With regards to these topics, advisors front load content or conduct interactive activities, usually accompanied by a discussion, then reinforce the material in subsequent weeks to practice and solidify new skills. The Bridges program utilizes practices similar to the "shared practices" of the Responsive Classroom. These topics are arranged according to six categories, which advisors revisit each year: identity, character, health and wellness, decision-making, perspective-taking, and relationships. Returning to these topics as students' progress through the grades maintains continuity and aligns curriculum and goals with appropriate developmental stages. Work in these areas—which take place during students' regular advisory periods, as well as during grade-level or all-school meetings—has shown to contribute to the development of improved self-awareness and advocacy, self-regulation, social awareness, self-concept and esteem, cognitive flexibility, communications, and citizenship. During students' senior year, they engage in activities that prepare them for college and career expectations, including independent living skills, self-care, and financial management. Capstone projects bolster 2e students' ability to reflect on personal values, profile, life advantages and disadvantages, commitments, abilities, identity and personal growth goals (Paris & Winograd, 1990).

Second, academic curricula routinely use project- and problem-based learning, or other collaborative formats for instruction, which provide authentic opportunities for give and take toward a common production goal. In this context, teachable moments emerge as students encounter unexpected challenges or diverge in process as they strive to cooperate with their peers. A strength-based, talent-focused school climate provides a venue for students to bring their specialized knowledge or area of strength into their academic work. Such strength-based environments are conducive to developing students' academic as well as social and emotional skills (Lopez & Louis, 2009). Instructors will often make deliberate choices about selection of topics to align earning activities with students' areas of strength, such as in literature, science, history, or creative and fine arts. Moreover, curriculum design with social and emotional learning in mind has been shown to have a positive impact on collaboration, communication, critical thinking skills, and perspective-taking. Finally, setting clear expectations for classroom behavior, norms, and protocols not only develop students' skills in an academic context, but reveal a deeper rationale behind rules and frameworks (Patall & Zambrano 2019).

Beyond the core academic courses, interest and talent-based electives provide opportunities to advance social emotional skills and understandings. All Bridges students are required to participate in various age-appropriate group activities designed to stimulate learning and improve social understanding and skills. Theater, for instance, is a required elective for middle school students where they can develop interpersonal and social pragmatic skills in a structured and controlled environment. Group and project-oriented courses provide rich social and emotional learning opportunities (Culclasure et al., 2019). Students often feel most comfortable engaging with others around and in areas of their interest and expertise, such as music performance, music composition, creative writing and visual art. Class interactions

in groups created around interests allow mentors to guide the practice of skills. The Bridges model employs a similar approach within affinity- or identity-based groups, such as all-female advisories, lunch bunches, LGBTQ clubs, and service clubs.

DI: Micro-interventions and Team Approach

Dynamic interventions are essential to 2e students' development of social and emotional skills. Most DI strategies are designed to be implemented in an environment pre-conditioned to promote prosocial understandings and behaviors. Others are more reactive and in-the-moment, requiring a faculty who know students well enough to draw quick connections between the potential lessons of the moment and the specific goals of the student. These "micro-interventions" capitalize on teachable moments within authentic contexts, from the classroom and the lunchroom to after-school and off-campus activities (Jones & Bouffard, 2012). All teachers, administrators, and staff are expected to participate in micro-interventions when appropriate.

The advisory setting previously discussed also provides an intentional space for creating and enhancing opportunities for dynamic instruction. In advisory, students are both grappling with the demands of their coursework and routinely sharing about their lives and emotions. This creates an environment where teachable moments specific to deep social and emotional topics are likely to take place, clearing space for profound discoveries and learnings. As authentic bonding occurs within any given advisory group, individual social and emotional learning experiences can provide a vicarious view for their peers. Each individual milestone has the potential to be a collective one and vice-versa. Expanding the reach of the advisory program, the advisor is also in close and regular contact with students' families and outside therapists, if present, facilitating a seamlessness and continuity among students' individual goals. In this context, parents and outside providers also become agents of dynamic instruction and fortify one another's support efforts (Besnoy, 2006). In addition to primarily social and emotional skills, the advisory period is also where students manage their coursework, meaning that opportunities to support and develop executive function skills will emerge (Wang & Neihart, 2015). For some students, specific self-management related skills, like advocacy and self-efficacy, are best developed within an academic context. The sort of in-the-moment feedback students receive related to their academics are directly related to the program's overall goals like self-management and decision-making.

Developing longer-term prosocial behavior involves a feedback loop on behaviors that are seen in one context or another as non-prosocial. Students who are 2e exhibit a variety of behaviors. Unusual, inappropriate, exaggerated, or overly intense behaviors may be rooted in a students' neurology, psychology, or psychopharmacological treatments. Others may be consistent with typical adolescence. Behaviors may also be a connected response to any number of triggers (Reis et al., 2014). If behavior escalates, interventions are designed to safeguard the emotional and

physical safety of all students, mitigating the manifest behavior, and entering a process of counseling, reflection, and consequences. These interventions seek to develop understandings, resolve the triggering issues, and restore relationships. As micro-interventions are varied, responses are equally varied, but fall into larger conceptual categories.

Processing Emotional Challenges

Faculty members help students learn to identify their thoughts and feelings, recognizing when they need to take a mental break or when a cooling off period is required. Teachers, interns, counselors, and/or division directors are primarily responsible for conducting and/or arranging for counseling these in-the-moment interventions. When work with a therapist is a part of the student's support team, school personnel will apprise them of the situations and events to further follow up and a possible team meeting if the situation is especially significant.

Conflict Resolution

When interpersonal conflicts between students arise, faculty team members create conditions where students can engage in meaningful dialogues with one another to improve their understanding of the situation and learn to take the other's perspective. These discussions enable students not only to recognize their own triggers and develop coping mechanisms, but to learn more about the experiences of others. Great discoveries, even great friendships, can occur when students draw connections between their behavior and the triggers of their peers, and the reverse.

Behavior Plans and Goal Setting

When a student requires specific changes in thinking or behaviors, the support team will collaborate with the student to draw up and implement social and emotional goals, or a responsive behavioral plan. These plans are designed to help students build strategies and provide opportunities to practice those strategies and receive feedback about their progress in a supportive environment.

Personality, temperament, life experience, and a host of other factors commingle in the uniqueness of individuals. Like all students, twice-exceptional students can differ considerably from one another. But the asynchrony of 2e students often causes substantial and pronounced differences that require complex and multi-tiered interventions. As such, SEL models that are effective for 2e students must be flexible and differentiated. For instance, highly intelligent and logical students often react poorly

to direct instruction, which can seem to them simplistic, patronizing, or irrelevant. For such students, context is a prerequisite to social and emotional growth in situations shaped by counselors who can interact with students on their level and from their vantage points. Students who are rigid or overly concrete may require more substantial "training" with firm boundaries and consequences. Such fixed and seemingly inflexible parameters may be counterproductive for students who are especially sensitive to criticism, are generally punitive, or have low self-esteem. Whatever the case, it is critical that dynamic interventions take place in a context where expectations are clear and student input is valued as a part of any discussions or interventions.

Micro-interventions and the continued work they inspire contributes significantly to improved communication, emotional regulation, and conflict-resolution skills. As faculty members model certain processes, students also learn the skills to self-reflect, take the perspective of others, and develop a positive view of relationships as repairable and evolving. Students amass a toolbox of steps and actions that they can take to self-regulate and apply coping skills. They develop an awareness of what social and emotional success looks and feels like, so that they can self-monitor and make independent adjustments to their thoughts and behaviors toward prosocial goals in many different contexts.

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Part IV
Introduction: Process (Mesosystem & Intersectionality)

Beyond the family and educational structures, the intersectionality of social issues (*Process*) provides a lens that fully considers the ever-evolving interrelationship and interactions among and between ecosystems. The mesosystem, represented by the interactions among environments as individual microsystems, illuminates the powerful impact/influence on a *Person*, and the settings in which the child lives and engage. An example of the mesosystem would be the systematic open dialogue that occurs between school personnel (e.g., teachers, staff, administration) and the family. Impacted by the microsystem, the interrelated and interconnected nature, or intersectionality, of the variables within these systems as they apply to the development of the child gives context and create overlapping and interdependent systems of advantage or disadvantage. Intersectionality is similar to *Press* in that it illuminates research paradigm that give credence to the historical and everyday causes and conditions that are conducive to or inhibits student development.

With a broader vision though the *Process* lens for the complexity of servicing 2e students, Chapters, "The Social Emotional Impact of Living 2e: It is Not Just a School Thing" and "See Me! Addressing the Invisibility of Gifted Black Girls with other Learning Exceptionalities"offer an examination of social and cultural interventions that work, including but not limited to, strength-based talent development strategies, facilitation of therapeutic discussions, counseling sessions, and a support systems model, which implements an embedded approach to talent development to counter the negative impact of mismatches of exosystems and socialized structures to the learner profiles. The dilemma of adequate identification and services specific to learner profiles offers additional pragmatic perspectives and robust discussion toward forward-thinking and future directions for identifying and servicing twice exceptional students.

The Social-Emotional Impact of Living 2e: It's Not Just a School Thing

Joanna Lee Haase and Lisa Hancock

Abstract Parents, educators, and unfortunately most mental health professionals, tend to think of giftedness and learning disabilities as only having an impact on the individual at school. The reality is that a person's giftedness is not merely limited to school: A 2e's personal experience is 24/7, 365 days a year, and has the potential to impact every aspect of his or her life. As this chapter accentuates, twice exceptionality does not limit itself to academics, but can also negatively impact a person's friendships, romantic relationships, self-esteem, parenting skills, career success, family relationships, and psychological well-being. Without proper understanding of how 2e can affect every aspect of a person's life and development, we cannot adequately provide support and treatment options. It is also essential that adults who were identified as 2e as children understand how their exceptionalities might be affecting their personal and professional lives. By giving them the tools and scaffolding to advocate for support and accommodations, they will build a better foundation for future success, fulfillment, and happiness.

Keywords Twice-exceptional · Relationships · Self-esteem · Parenting · Career success · Psychological health

Cayden races out of his year-end fifth grade class party, bursting into tears at the nurse's office. Unable to control the intensity of his frustration, he cries and yells at how the party was horrible, and no one was doing what they were supposed to do, and how he hates the school and his life. His relationship with his classmates is generally good, but his parents worry because the outbursts are becoming more intense and more age-inappropriate, and the other kids seem to be distancing themselves from Cayden. His teachers say he is doing fine with his accommodations in the classroom but are worried about his low tolerance for frustration in social

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situations. His parents have also expressed concern about his relationship with his younger sister. Because Cayden is so much bigger than she is, and his outbursts are physical, they are afraid that he is going to accidentally hurt her. Cayden is generally a sweet and loving child, who follows all the rules, but when he gets overwhelmed, he seems to lose all sense of control over his actions. Always remorseful after these incidents, he expresses so much self-loathing that everyone who cares about him worries about him hurting himself.

It is Friday night and 18-year-old Addie's mother dreads the phone ringing. Every weekend since starting her freshman year in college, Addie calls home in tears to report that all the other kids are going to a fraternity party, while she is exhausted and behind in her coursework. In high school, she was always on top of her schoolwork and used her accommodations effectively but, since entering college, the amount of reading required and the multiple formats of material that do not easily lend themselves to text-to-speech, Addie is barely able to maintain passing grades. Having double time for tests is great except for the fact that it almost always means she misses something in one of her other classes, so she always feels like she is playing catch up with her assignments. Addie is considering dropping out of college, because she no longer believes she is smart enough to graduate; and while she made friends initially, her low self-esteem and increasing anxiety are making it harder and harder to spend time with them. Additionally, her anxiety about the demands of being in college is creating a cycle in which the more she struggles to use her time effectively on schoolwork, the less time she has to invest in friendships and other non-academic elements of college life.

Kevin and Cate sought consultation from a child psychologist on how to parent their school-age children. Kevin (age 38), an investment banker, and Cate (age 39), a junior partner in a contract law firm, were constantly at odds over expectations for the children's behavior at home and school and disagreed vehemently about Kevin's tendency to view the children as little adults who should know better, versus Cate's more developmentally based parenting style. After several sessions, it became clear to the therapist that Kevin was unable to see things from the children's point of view or understand that multiple points of view can exist. This led to very hurt feelings and misunderstandings with the children, and ultimately to being more unable to think of, or develop, flexible parenting responses to the family's changing needs. Cate felt disrespected and devalued by his authoritarian demeanor and the effort it was taking her to explain the children's point of view. The children were starting to exhibit signs of distress at school, and Cate was questioning whether the marriage could actually last. Because Kevin had had similar issues at work in the past, the therapist suggested to Kevin that there might be a reason for his need to "control everything and everyone."

The above anecdotes are examples of how *twice-exceptionality* can have a negative impact on various types of relationships and, ultimately, on socioemotional health. Individuals who are twice-exceptional, or 2e, are both gifted and have one or more concurrent neurodevelopmental disorders. The ability of gifted individuals to compensate for their areas of weakness often results in these additional

exceptionalities going undiagnosed, or their impact being underestimated. Basically, it is assumed that "if you are so smart" then you should or shouldn't be doing X.

Some of the neurodevelopmental disorders that commonly impact twice-exceptional individuals are briefly described in this sidebar:

Attention-deficit/Hyperactivity Disorder (ADHD) is well-known for its symptoms of inattention and hyperactivity. For school-age children, the obvious impact is seen in the academic consequences of inability to listen, concentrate, maintain focus, stay on task, and complete work. Equally impactful are the social-emotional consequences of being labeled a "bad kid," of potential being downplayed, of being accused of "not caring" or "not trying." For twice-exceptional individuals with observable cognitive strengths, people are often surprised when they also show the actual symptoms of ADHD. Less discussed are social problems such as interrupting; bad decision making; missing appointments and meetings; being late to meet friends or for dates; managing health and hygiene; and forgetting milestone/anniversary dates.

Auditory Processing Disorder (APD) is different from hearing loss. Individuals with APD can *hear* sounds but their brain has trouble *processing* them. This can result in problems with reading, spelling, language comprehension, distinguishing between words or syllables that sound alike, and recalling auditory information. The problem occurs when the auditory system attempts to translate the sounds into usable information for the brain. For twice-exceptional individuals with an APD, this can mean that when they misunderstand something that they hear and respond to the incorrect interpretation, they are often accused of not listening, overreacting, or even of being narcissistic. Think about how difficult it can be for a teenager, whose peers all speak quickly, use inflection and new slang, to understand everything that is being conveyed socially.

Individuals with Autism Spectrum Disorder (ASD) have deficits in social communication and social interaction; plus restricted, repetitive behaviors. Prior to 2013, twice-exceptional individuals with these challenges were given the separate diagnosis of Asperger's Syndrome (which indicated average to above-average intellectual ability). Of all the concurrent disorders mentioned here, ASD is probably the easiest to define the *social impact* of, in terms of navigating friendships. However, despite the widely known difficulties with friendships, intimate-partner relationships, conversations, and perseverating on topics of interest; people are less aware of problems with flexibility, executive function skills, perspective taking, boundaries, and emotional regulation. Twice-exceptional individuals often have high expectations tied to fairness and social justice; which, when combined with the above challenges of ASD, can result in being misperceived as narcissistic, entitled, or childish. Their inability to understand multiple perspectives, to interpret and respond appropriately to other people's emotions, and to manage their own strong emotions often leads to conflicts and hurt feelings. Social (Pragmatic) Communication Disorder (SCD) has similar challenges to ASD in that the individual exhibits deficits in social communication and social interaction but without co-occurring restricted, repetitive behaviors.

Developmental Coordination Disorder (DCD) is sometimes referred to as dyspraxia and affects fine and gross motor skills, motor planning, and coordination. It can impact writing, tasks requiring balance, playing sports, or even learning to drive a car. Underdeveloped skills, as compared to age, can make these children seem immature and thus impede their social skills. For twice-exceptional children who are already asynchronous, this immaturity can seem even more disparate as compared to their advanced cognitive abilities.

Language Disorder (LD) involves persistent difficulties with acquiring and using language due to problems with comprehension or production. Individuals with receptive language deficits are often accused of not listening or not paying attention; whereas those with expressive language deficits struggle with output and are wrongly accused of laziness or not trying. Language processing abilities that are significantly below what is expected for an individual's age can result in low self-esteem and anger, neither of which fosters social skills and relationships. For a twice-exceptional individual, impairment in language can hide advanced cognitive abilities.

Specific Learning Disorders (SLD) involve difficulties with learning and academic skills in the areas of math (SLD-M; sometimes called Dyscalculia), reading (SLD-R; sometimes called Dyslexia), or written expression (SLD-W; sometimes called Dysgraphia). Again, twice-exceptional individuals are often able to use their advanced cognitive abilities to compensate for these weaknesses, which leads to them being undiagnosed or the impact underestimated. Less known are the accompanying executive function deficits which can impact planning, organization, beginning and completing tasks and projects, and working memory. These individuals often experience low self-esteem and "feel stupid," which negatively impacts their friendships and other relationships. Children may adopt an attitude of not caring rather than admit to struggling with what they are told should be easy for them (due to being gifted); including engaging in acting-out behaviors.

Stuttering is also known as Fluency Disorder and can occur in both children and adults. It affects both the rate and the flow of speech. People who stutter know what they *want* to say but have difficulty *saying* it. People who stutter are usually embarrassed, which impacts their social skills. Additionally, others grow impatient waiting for them to finish speaking and often interrupt them. Most insultingly, some wrongly confuse this condition with the speaker having nothing to say, and thus being less intelligent, rather than the reality that their actual cognitive abilities are truly advanced.

Tic Disorders can involve physical (motor) and/or verbal (vocal) tics which are abrupt, uncontrollable movements or sounds that are not part of a person's normal gestures. Individuals with Tic Disorders may have difficulty initiating engagement with peers and making friends.

Visual Processing Disorder (VPD) manifests as trouble interpreting visual information. Individuals may have a hard time reading, copying from the board, and even differentiating between two objects that look very similar. They often have trouble with eye-hand coordination. Resulting behaviors may include clumsiness, bumping into things, and inability to catch a ball—all of which have a negative social impact.

This can then result in pre-emptive anxiety, embarrassment, low self-esteem, and even depression. Weakness in basic visual processing may also affect facial emotion perception. Again, for a twice-exceptional individual who is viewed through the lens of his or her advanced cognitive abilities, challenges may be erroneously attributed to lack of trying or disinterest, or even purposeful behaviors.

Individuals with Sensory Processing Disorder (SPD) do not respond to everyday sensory information the same way as most people. They may be over- or under-responsive to auditory (sound), visual (sight), olfactory (smell), gustatory (taste), proprioceptive (position and movement of the body), vestibular (sense of balance), or tactile (touch) stimuli. This has a huge social impact when the individual's need to avoid particular sensory stimuli interferes with desired activities and interactions; as well as in instances where a particular sensory experience is sought in order to self-calm.

Slow Processing Speed and Executive Dysfunction are terms that are often used to describe a child's area of weakness, but it is important to remember that problems with processing speed or executive functioning are associated with other disorders and are not standalone diagnoses.

This chapter will focus on understanding the importance of addressing the concerns of twice-exceptional individuals across settings and over their lifespans. Many twice-exceptional individuals experience relationship problems, low self-esteem, depression, and anxiety due to the unaddressed social emotional aspects of being both gifted and having one or more concurrent learning or processing challenges (Vespi & Yewchuk, 1992; King, 2005). Additionally, individuals from underserved populations suffer disproportionately from being 2e. Students from economically disadvantaged environments are often not identified by schools with limited resources and funding, and even if identified may not have access to, or knowledge of, the necessary resources to seek treatment. For children, teens, and young adults who are socially and emotionally impacted by LGBTQ issues, the immediate priority is usually on mental health, with little energy left to giftedness and underlying exceptionalities. Cultural expectations can have an adverse effect on both the needs of the gifted, as well as the neurodevelopmental challenges. Research shows us that gifted minority students are more likely to have their giftedness disregarded, and behaviors that are associated with giftedness pathologized as behavior issues. (Beljan, 2021; Davis, 2010; Ford, 2011). The concern for these students is that by ignoring their high potential and emphasizing behaviors as "willful," these students have little chance at being accurately diagnosed, finding correct education placement, or be given remediation or accommodations.

Twice-exceptionality affects most every area of an individual's life. How a person processes information, responds socially and emotionally, and how they manage throughout their life is largely unaddressed. While much progress has been made in identifying 2e children in the school setting, little or no focus has been put on how these individuals fare in non-academic settings, once they are out of school, or in their adult relationships. Even less emphasis is put on how these dual exceptionalities affect the social and emotional well being of these individuals.

The social-emotional impact of being 2e often increases during adolescence and early adulthood when the expectations for independence and resiliency are raised, and the support for managing the exceptionality decreases. As these adolescents and young adults enter this phase of higher expectations and reduced support, they often struggle with social isolation, depression, and substance abuse. Many twice-exceptional children and teens view college in the distant future with the expectation that their social life will somehow improve, despite no increase in social processing abilities or social skills. As twice-exceptional individuals age, they are increasingly faced with relationship problems—socially, emotionally, and professionally. Early childhood factors, including if and when there was a diagnosis, impacts the person's trajectory well into adulthood and possibly for the entirety of their life.

Elementary School Children

Just as "gifted" is not limited to kids and school, neither is the experience of being 2e. However, many gifted and twice-exceptional individuals first encounter a psychologist or other mental health provider in school due to academic underachievement or behavioral problems, which initiate concern in teachers and parents. Typically, traditional interventions to manage the behaviors of concern have proved ineffective. It is essential for mental health providers to gain an understanding of how both diagnosed *and* undiagnosed neurodevelopmental disorders can impact a child socially and emotionally. Many children receive accommodations in school for learning or processing challenges; extra time for assignments, a quiet room to take tests, computer-assisted technologies for those who struggle with reading and writing. Yet little attention is paid to how those same challenges affect the child(ren) outside of school. At first glance, most would think that Cayden has anger management issues and overall low frustration tolerance, when he actually struggles with both giftedness and ADHD. His gifted traits of emotional intensity, sense of fairness, and high expectations of self and others, often collide with his ADHD challenges of emotional and behavior regulation. ADHD is often over-simplified as problems with attention, hyperactivity, and impulsivity. In actuality, individuals with ADHD can also have significant challenges with regulating their emotional and behavioral responses. This can include having a very big reaction to something that most people consider as insignificant, taking longer to recover from an upsetting situation such as disappointed expectations, and inappropriately releasing the concomitant stress (sometimes this includes physical aggression).

When a child is very young or preschool age, our expectations of them are much more forgiving. As a child ages, our expectations increase. For an asynchronous twice-exceptional child with uneven development, the societal response can become increasingly negative over time. In preschool, a child who has difficulty sharing is gently taught to share, but when that same child has difficulty sharing in middle school, they are overwhelmingly viewed negatively; irrespective of whether the

reason originates from a neurodevelopmental disorder. For example, 12-year-old Kayla and 10-year-old Sam share a bathroom between their bedrooms. Every day, Kayla removes her brother's belongings from the bathroom and dumps them in their parents' bathroom. She screams, cries, and complains if her brother uses their shared bathroom, or if she later finds evidence that he was in "her space." Kayla is not a spoiled sibling who doesn't like to share. Rather, she has a combination of Autism Spectrum Disorder (ASD), Obsessive Compulsive Disorder (OCD), and Sensory Processing Disorder (SPD) that makes it challenging for her to tolerate changes to her own routine, including where her bathroom products are placed, as well as smells that she perceives as "too strong." Kayla is a very advanced student and so when her grandparents visit, they blame her behaviors on immaturity and shame her for "acting like a baby," since they don't understand her challenges.

The "gifted" side of twice-exceptionality gives a child an advantage in the early years, in that while the academic and social demands are less, the child has an easier time using their ability to compensate for the disability. However, as the curricular, executive functioning, and social demands increase, the child may start to show signs of stress, and meltdown, because their advanced cognitive abilities can no longer compensate for the comparatively larger weakness (Baldwin et al., 2015). While the child may be receiving accommodations for classwork and homework, they often continue to struggle with the non-academic areas of their life. Navigating social situations and peer relationships, participating in after-school and extracurricular activities, and increasing expectations for managing all of these things can cause a child to feel overwhelmed EVEN if they are still getting good grades. This pressure can result in meltdowns, self-harming behaviors, depression, panic attacks, low self-esteem, and low self-concept (Baldwin et al., 2015; Baum & Reis, 2004; Schiff et al., 1981).

For example, a child with a visual processing or reading disorder may perform at, or even above, grade level during the early years of school where support is present, and the amount of required reading is still manageable both in class and at home. But, as the child enters the later primary grades, they may experience increasing difficulty getting the required reading done on time *and* responding to lengthy comprehension questions drawn from the reading. They may start to feel stressed and overwhelmed by school demands and might start lying about not having any homework because they are simply too worn out by the end of the day to contribute any more effort. Unfortunately, this ends up being an argument about staying organized and not lying rather than a discussion about how to best support a student with a disability who is feeling overwhelmed by increasing school demands.

Just as a gifted child's cognitive abilities may be hidden or "masked" by one or more concurrent disabilities or challenges, his or her disabilities may be hidden or in "stealth" mode since they are quite adept at using their advanced cognitive abilities to compensate. The impact on a child who has a stealth disability is even greater than those whose disability has been diagnosed. These children are often told they are smart but are also shamed for not behaving in the way that parents and teachers expect gifted children to act, including academic achievement. Often, they are called lazy or defiant when they are working as hard as they can. Many will try to

mask their problems by acting out, "forgetting" to complete or turn in work, and frequent "sick days." As a result, these children can suffer from loneliness, irritability, and a loss of trust in adults who tell them they should be different (better) than they are. Long term, the effects of these judgements can result in low self-esteem, anxiety, alien syndrome (feeling like they don't belong among the other kids), a sense of isolation, lost opportunities, disengagement due to their inability to access the curriculum, and feelings of shame and embarrassment.

Adolescents/Young Adults

Twice-exceptionality can be *especially* difficult during adolescence and the transition to college. Developmentally, teens are desiring to express their independence and competence without input from adults. This can be complicated to manage in individuals with both identified and unidentified challenges.

A teenager whose learning or processing weakness has not been identified, and who has been working several times harder to keep up with their peers, may start to crumble under the increased workload, absence of understanding, and lack of tools to deal with the concurrent disorder(s). They might exhibit bursts of anger "for no reason," begin to socially withdraw, spend hours in their room with the intent of studying, but instead watching countless YouTube videos, and begin to show signs of depression and anxiety. Older gifted students whose concurrent weaknesses have not been identified find themselves at a loss for understanding why they can't succeed, their self-confidence erodes, friendships are lost while new ones aren't being made, and they are at high risk of dropping out of school because their "best" is just not good enough.

Students who *have* been identified as twice-exceptional, even if they were identified in the later school years, may often reject accommodations as well as the diagnosis or diagnoses. Imposter syndrome may occur in which a gifted individual who is struggling with concurrent deficits that decrease or impede their ability to demonstrate their advanced cognitive skills experiences self-doubt and feels like a fraud—"I'm not smart. I'm stupid." Additionally, when it comes to accommodations, twice-exceptional teens (just like neurotypical teens) may just want to be like everyone else and "fit in" as opposed to having educational or behavioral supports in place. This can result in a power struggle between parents, teachers, and the student. Often, older students did not *need* the same level of accommodations in lower grades that they need in higher grades (due to increased academic and executive function demands), and they either do not get offered more/different accommodations or are not sure how to use the accommodations effectively (tools like smart pens and text-to-speech technology). Additionally, an accommodation routinely offered by many schools is "extra time" on assignments, quizzes, and exams which, for many students, makes things more difficult as assignments and tests pile up with vague or changing due dates at the end of the term.

Socially and emotionally, friendships are the primary concern in the teen years; but teens with auditory processing disorders may have difficulty navigating social situations, understanding the nuances of teasing, and interpreting sarcasm and the rapid speech that comes with adolescence. They may feel "out of it," or different from friends they had previously connected with. For example, Travis and Cord were best friends from kindergarten through 8th grade. They enjoyed soccer, scouts, riding their bikes, and playing video games together. However, everything changed when they entered ninth grade. Cord quickly acclimated to the larger campus, older teens, hectic schedule, and many social opportunities. A good student, he also enjoyed the competitiveness inherent in activities such as debate, Model UN, and robotics team. Travis, however, felt abandoned and left behind by his longtime friend. Travis still wanted to do the same activities they had previously enjoyed when younger, and experienced confusion as the level of idioms and sarcasm increased, and struggled to manage the multitude of teachers, classes, and assignments.

Children like Travis may also have difficulty making *new* friends since they are worn out from the increased academic demands. Those with reading disabilities or disabilities that create low/slow processing speed also have trouble keeping up with the volume and speed of texting, instant messaging, social media (for example Snapchat which requires one to absorb the story quickly), etc., and are prone to miss subtext. This can lead to misunderstandings and drama in their social circles that they then struggle to cope with and cannot resolve.

Often, the asynchronous development of gifted and 2e children becomes more of an obstacle as they enter their teen years. A child with ADHD who was allowed to pace in the classroom or sit on an exercise ball to help maintain focus and reduce disruptive behavior, may not be allowed to use those techniques in mainstream middle and upper schools; and his classmates may be distracted and/or annoyed by his constant movements. Another example is a child who has a fluency disorder (stuttering) or a verbal tic. In lower grades, students typically get used to and ignore the student's disability, and teachers are more vigilant about teasing and bullying. But upon entry into middle school, which requires navigating various activities, student-led clubs, more students, and more teachers, the adolescent is likely to experience significantly more frustration with their disability because of the increased frequency and level of demands for fast-paced discussion as well as the need to self-advocate. Under this stress the adolescent may shut down, burst into tears, or have angry outbursts. As they age, these behaviors will be treated more punitively and with less empathy because outsiders think that the adolescent "is old enough to know better." This is an example of how and when twice-exceptional individuals may start to be marginalized and/or held back due to their disability and are often expected to function at the level of their greatest deficit across subject areas. The lack of understanding by school personnel and other adults (as to the efforts the student is putting forth to manage their disability) places the student at a disadvantage and prevents them from being able to fully demonstrate their areas of strength.

Middle and high school is often when we begin to see increased misinterpretation of kids with missing or incorrect diagnoses. Gifted individuals are often able to

use their advanced cognitive abilities to succeed academically and socially in primary grades, but when their coping skills lag behind the level of social challenges inherent in the upper grades, it is generally attributed to character deficits. For example, they are erroneously assumed to be lazy, careless, or disinterested. In response, many teens think they are "not smart anymore" and just give up and stop trying. These students may start to withdraw socially and/or change friend groups to hang with kids who may be at risk for self-destructive behaviors. Parents may not understand why the teen is so anxious or withdrawn. Unfortunately, some of these children will be medicated for depression or anxiety without first conducting a comprehensive evaluation to better understand the source(s) of the concern. Although the medication may reduce the symptoms, the underlying problem or problems remain.

Adults

A twice-exceptional teen grows into a twice-exceptional adult. Although neurodevelopmental disabilities do not *disappear* with age, they may appear to have a lesser impact due to the individual's ability to make more choices about careers and lifestyle; as well as having developed more effective tools for working and living with one or more exceptionalities. However, strengths, challenges, as well as internalized beliefs and self-image carry over into adulthood.

Kevin and Cate are an example of how twice-exceptionality continues to impact the individual's adult family. Kevin's ability to think quickly and linearly analyze multiple factors, manipulate them in his head, and come to an accurate conclusion has helped him become a very successful investment banker. He has no trouble working long hours, tuning out extraneous information, and thrives on positive feedback and financial success at work. Conversely, he often stays at work very late because he is behind on his paperwork and can't seem to get it done while others are at the office. He has also received verbal and written warnings for not being a "team player" because he rebuked a junior team member for making a relatively minor error.

When he comes home from work, Kevin does not transition easily into a partnering or parenting mindset. He is often frustrated by things the kids do and say. He craves an ordered and structured environment, and the uncertainties associated with children and family both confuse and agitate him. For example, when considering activities for the weekend, Kevin wants to formalize a plan. He finds it a constant source of frustration that if one child's soccer game runs late, then he and Cate must split up to also take another child to martial arts, pick up the dog from the groomer, go to the grocery store, and not be late to have a family dinner with his parents. However, if the game is on time, Kevin will be able to finish the landscaping project he started last week. In his mind this uncertainty causes stress, as he can't see when it will get done—even if it doesn't get done this weekend—and ends up being angry at Cate for not being a good planner and not respecting his time. While it is easy to think he is just being controlling, it is more accurate to consider that Kevin has some

behaviors associated with a social processing disorder, and flexibility of thought and social thinking do not come naturally for him. He loves his family dearly, and it hurts him that they do not see things the way he does. When people are aware of and willing and able to work around Kevin's challenges, communication strengthens. This reduces hurt feelings, as Kevin is signaled that he needs to think socially rather than linearly.

Adults with diagnosed or undiagnosed learning disabilities may find themselves drinking too much to handle feeling overwhelmed by the demands of their twice-exceptionality. They may get depressed as they see others get promoted and have no idea how to compete when they are already putting in more time and effort than anyone else on the team. For some, the years of struggling at school have resulted in a mentality that seeks to preserve self-esteem by not contributing 100% effort, because if you don't try then you don't risk failure. This can create tension in relationships because the individual actively sabotages their potential which in turn causes anger, frustration, and lower life satisfaction. Family and friends may become frustrated with them and reduce or remove social support; once again wrongly assuming the person isn't trying their best.

Often, twice-exceptional adults can find work that fits well with their strengths and challenges. Yet, when that fails, these adults will often find that the traditional treatments for ADHD aren't really helpful. For example, medication for ADHD may not be effective, or solve the problem on its own, because other tools for managing their challenges with ADHD are needed. Frank is a brilliant programmer with a very high IQ and ADHD. He was diagnosed with ADHD in his mid 20's and was prescribed medication. The medication provided significant symptom alleviation for Frank for several years until some of his former coping skills reappeared and caused problems (compulsive eating, procrastinating, gaming addiction). Frank often used food as a way to calm himself and to handle his ADHD, and as a result, was quite obese by his late 30's. Because his ADHD was treated with only medication and no other tools, when obesity-induced heart issues made taking stimulants unsafe, he was unable to work at all. His depression became debilitating, and he failed to respond to both antidepressant and non-stimulant medication [for ADHD]. Frank ultimately lost his job.

For others, insight-oriented "talk therapy" can provide some semblance of relief; but therapist understanding of twice-exceptionally is necessary to provide effective support. Job coaching may point a person to a career that they are intellectually suited for but may be unable to successfully perform due to an undiagnosed learning disability. As a result, these adults may enter into careers they do not find rewarding and enter into and remain in bad relationships due to their low self-esteem and poor self-concept. Many will self-medicate to manage stress. Insight-oriented therapy was very helpful for Cate and Kevin because it allowed Kevin's responses to be understood as part of a social processing disorder rather than an attempt to minimize and control everyone. Once Kevin understood his social processing challenges as stemming from a neurodevelopmental disorder, he was better able to hear feedback and learn tools and techniques to support social thinking.

Intervention Strategies

Just as it is essential for educators, parents, and mental health professionals to address remediation and accommodations to support twice-exceptionality, it is equally important to address the social-emotional impact across the lifespan. When twice-exceptionality is acknowledged via a whole-person approach, individuals can better thrive and live up to their potential; as opposed to being held back by their challenges. The following strategies can be used in various combinations to create an individualized and effective approach.

Testing

A professional assessment is essential to fully explain, understand, and support twice-exceptional individuals. Assessment can include a neuropsychological evaluation, as well as any necessary evaluations from a developmental optometrist, audiologist, occupational therapist, and speech language pathologists. Testing by professionals with education and experience in working with gifted and twice-exceptional individuals is necessary for academic purposes, as well as for developing an accurate self-image. A thorough assessment helps the individual develop a stronger self-image; individuals that lack a thorough assessment may develop a negative self-image. Without an accurate understanding of their strengths and weaknesses, it is more difficult to adequately and efficiently compensate for them. This may result in the individual erroneously attributing challenges to something negative and wrong about themselves. Once this becomes embedded in self-concept, it can have a powerful negative impact on future success and psychological health.

Transparency

Twice-exceptionality must be openly discussed and understood; both the gifted part as well as the exceptionalities. Honest discussion enables the individual to acknowledge their strengths, gives voice to the frustrations and challenges of both giftedness and exceptionalities, and supports development of a more accurate self-concept.

Many parents are reluctant to speak about giftedness, fearing that it will make a child believe that they are *better* than other children. Yet, discussing giftedness is helpful and *essential* in helping a child understand and work with their differences. Gifted children feel different from their peers, know there is something different occurring within themselves, and may struggle to connect with others. Additionally, for twice-exceptional children and teens, talking about how their disability can empower them to better understand their challenges, and to develop strategies to deal with them. This ultimately provides them with the confidence to live up to their

potential. A child or teen who understands their neurodevelopmental challenges as normal is more likely to be able to adapt and work through difficulties.

Transparency is also important with all who work and interact with the twice-exceptional individual, and it's essential that accurate information is conveyed in a timely manner. This is not about making excuses for underachievement or poor behavior, but rather educating essential parties about how to best provide support. While the importance is more obvious for family, friends, and educators to understand learning and social-emotional aspects of twice-exceptionality, it is also important to share this information with other community members (Neumeister et al., 2013). Consider honest discussion, including strategies, with coaches, scout leaders, and even parents of your child's closest friends. For adults, it may be helpful to explain challenges associated with exceptionalities with colleagues and human resources, both to ensure that accommodations are in place and that coworkers have a more accurate perception of why responses or mannerisms may be atypical.

Treatment Planning

Parents and young adults often feel overwhelmed when they receive testing results with pages and pages of developmental, academic, home-based and social-emotional recommendations for interventions, treatments, and accommodations. Not knowing where to start, they generally start with a couple of suggestions in each area and never get around to the rest. While it is completely understandable to be overwhelmed, the impact of forgetting the recommendations over time can be devastating to the development of a child or teen and eliminate opportunities for young adults. For this reason, it is important to work with a psychologist or similar professional who can help parents prioritize and manage the treatment plan over the years. For children and teens, setting up regular meetings with the treating professionals can help monitor progress: new therapies, accommodations, and goals can be added as the child matures.

When considering treatment plans, the treatment team needs to understand the social-emotional impact of feeling deficient, and people wanting to "fix" you all the time. Aside from the message it sends of being broken, it also consumes a considerable amount of energy and time, which can have a negative impact on the availability of needed downtime, including developing friendships. When possible, try to look for activities that can support therapeutic needs without being "therapy". For example, there are many recreational activities that can be recommended by an occupational therapist to support growth that are both fun *and* social. For children and teens, balancing the need to remediate with providing enrichment is an ongoing discussion that requires alterations in parenting as the child grows.

Education Plans 504/IEP

School plans are often the primary focus for families of twice-exceptional children and teens. Unfortunately, these plans may inadvertently hold the child back due to their challenges and have little focus on enabling the child to operate to their strengths. This is especially true if a child has any impairments in reading, processing speed, or communication. When advocating for a child or teen in a school 504 or IEP meeting, it is important to make sure that they have multiple avenues for accessing the curriculum and showing mastery. It is important to teach the child to their intellectual capacity and not hold them back due to their disability.

If a child is pulled out of classes for special services throughout the day, multiple times (Neilson & Mortorff-Albert, 1989) a week, the child inevitably falls behind in classwork, feels singled out, and may start to crumble under the pressure of two concurrent academic programs. Additionally, teachers are often overwhelmed by managing the demands of multiple 504/IEP plans. It is essential for the team to work together to consider any unintended consequences that accommodations can bring. For example, extra time on tests generally gets implemented by the child working through lunch or recess. In upper grades, a child or teen who has ADHD is made to work out arrangements with individual teachers for alternative test times, which inevitably means they miss part of another class, or need to arrive early or stay late at school. For someone with executive functioning issues, they may opt to not take the extra time for tests because it is easier to take the lower grade than to arrange the test times. To support success, the team needs to discuss and support the emerging skill set for time management, organization, and planning. If challenges are explained and understood as works-in-progress rather than character deficits, the individual can learn the skills necessary without feeling blamed and shamed for not being able to do what they are not able to do.

Individual Therapy/Counseling

Twice-exceptional individuals may need therapeutic support intermittently throughout their lifetime. In children, therapy is often needed to help manage the big feelings of frustration and anger, and in some cases depression and anxiety, concurrent with twice-exceptionality. In adults, especially those who were diagnosed later in life, there is often a need for grief work over lost opportunities and poor treatment by others growing up; and work in managing the exceptionalities' impact on relationships, working out treatment plans and accommodations, career counseling, and parent coaching.

Existential depression is common in gifted individuals, even in children as young as 3 years old. Therapists treating twice-exceptional individuals need to be prepared to address this directly and teach skill building to help the child manage bouts of existential depression throughout their life. Sometimes therapists and parents will view the existential depression as "drama" to get out of doing non-preferred tasks,

or rush to medicate the child without providing tools for helping them work through their feelings. It is helpful to formulate this depression as a necessary part of growth (using Dabrowski's Theory of Positive Disintegration), to destigmatize this process and help both children and adults to do the work needed to get to the other side of the depression, as well as have confidence that they will feel better again.

Adults may have worked so hard trying to express their full potential that they may not have developed adequate self-care tools and may not have prioritized friendships. They may believe that, without putting 100% effort into their work, their life will fall apart. Mental health professionals need to help the individual utilize tools such as relaxation, visualization, and socialization in order to develop a more balanced life.

Individuals with social processing disorders such as Autism Spectrum Disorder (ASD), and Social Communication Disorder (SCD), will benefit from programs that teach social skills (Clavenna-Deane et al., 2020). Social thinking helps a person create a mindset where they think about what other people are thinking about them and develops tools to respond in a way that facilitates relationships. While used primarily with children diagnosed with ASD, it is also effective for many twice-exceptional individuals who may have lost friendship opportunities early on. Family members who have been exposed to social-thinking concepts will often find that the level of frustration, degree of hurt feelings, and anger decrease once they understand how the affected person has an actual disability and is not (usually!) intending to be inflexible, controlling, and dismissive of other points of view.

Social skills training is an important component of social processing disabilities. It takes approximately 50 h of pure social time to make a friend and, for all ages, supporting the reality that friendships take work, dedication, and skills is just as important as any other part of the plan (Hall, 2019). Relationships are complicated and when twice-exceptional adults become parents, the stress can often overwhelm the primary relationship, requiring couple or family therapy to develop effective communication and family systems.

Conclusion

The twice-exceptional child is not only twice-exceptional in school, but also outside of school and throughout his or her lifespan. Understanding this sets the stage for accurate conceptualizations of a person's development and allows us to better meet the needs of the whole person. Since twice-exceptionality does affect just about every facet of a person's life, not addressing the underlying conditions can set an individual up for lifelong frustrations, disappointments, and failures. When the internal mechanisms that drive how a person processes information and emotion are unaddressed, both children and adults are left rudderless, unable to fully take advantage of life's academic, interpersonal, and professional opportunities. More research is needed to better understand the connection between 2e and mental health and well-being.

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See Me! Recognizing and Addressing the Invisibility of Gifted Black Girls with Other Learning Exceptionalities

Carlita R. B. Cotton, Joy Lawson Davis, and Kristina Henry Collins

Abstract As one of the largest groups of underrepresented populations, gifted Black students are under-identified at a disproportionate rate. Gifted Black students who may have other learning exceptionalities or disabilities are at even greater risk of not receiving services for which they may be eligible. Among this population of underserved students, Black girls carry a dual-marginalization, and are more likely not served in gifted education or special education as a consequence of their social positionality in American society. This leaves them, in most cases, invisible—underserved, underdeveloped, and misunderstood. In this chapter, the authors, recap the literature on twice exceptionality, discusses the intersectionality of race, gender, and learning exceptionalities as social constructs, and introduces a more comprehensive and culturally responsive multi-exceptional (ME) framework that is more befitting when determining appropriate services for students in schools. Recommendations for improved research, policy, and practices that lead to improved educational outcomes for *all* students are provided.

Keywords Gifted · Black girls · Dual marginalization · Thrice exceptional (3e) · Multiple exceptionality · Special education · Invisibility · Adultification

Gifted Black students, as one of the largest groups of underrepresented populations, are under-identified at a disproportionate rate in gifted and talented education. Black students who are gifted (a learning exceptionality; advanced ability/skills when

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compared to same age and grade-level peers) and may have other learning exceptionalities (deficient skills/disabilities when compared to same age and grade-level peers; Montgomery, 2017) are at even greater risk of not receiving services for which they may be eligible (Davis & Robinson, 2018). Among this population of underserved students, gifted Black girls carry a dual-marginalization, and are more likely not served in gifted education or special education as a consequence of their social positionality in American society. This leaves them, in most cases, invisible—underserved, underdeveloped, and misunderstood. In this chapter, we briefly recap the literature on twice exceptionality through a critical race lens, and introduces a more comprehensive and culturally responsive multi-exceptional (ME) framework that is more befitting when determining appropriate services for students in schools. We posit that properly addressing this invisibility of gifted Black girls—recognizing, understanding and presenting solutions related to the intersectionality of race, gender, and learning exceptionalities as social constructs - in gifted and special education can serve as an exemplar for all other underserved students with learning exceptionalities.

Understanding Invisibility

Before we can address the invisibility of gifted Black girls with other learning exceptionalities we must have a shared understanding of Black girls' dual-marginalized (race and gender) positionality in American society, and in education. This shared understanding further frames the recognition of the invisibility of gifted Black girls in gifted and special education programs. Figure 1 offers a graphic representation that highlight the intersectionality (intersecting challenges) of positionality and learning exceptionalities for Black girls. The larger, overarching circles accentuate those traditional, more obvious social constructs that educational researchers and practitioners have at least recognized as institutionally problematic. What we often overlook, however, is these intersecting challenges shape the experiences of gifted Black girls with other learning exceptionalities. Recognizing the intersectionality of positionality and learning exceptionalities also offers a theorized expansion of twice exceptionality (gifted with one or more additional learning exceptionality) that is socially conceptualized, more culturally responsive, and, therefore, comprehensive (Anderson, 2020).

Black Girls' Positionality in America, and in Education

The very nature and legacy of involuntary citizenship/ minority status (versus immigrant status; Ogbu & Simmons, 1998) of Black people in America fosters a unique position (experience, history, and cultural development) in America that is far

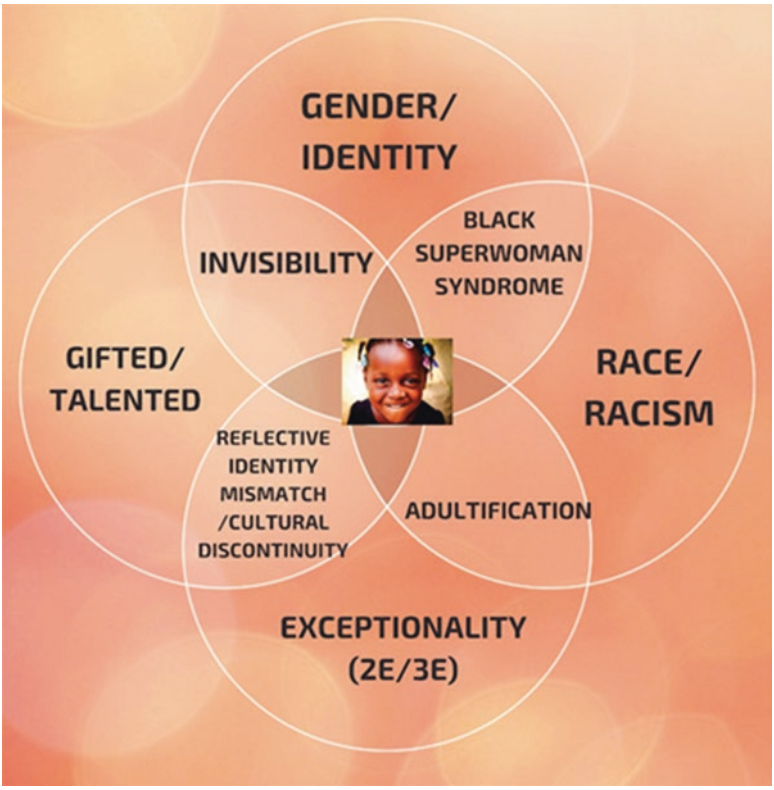

Fig. 1 Graphic representation for the intersectionality of the positionality and exceptionality of Black girls in America, and in education

different than any other minoritized group, resulting in different educational outcomes for Black people as well. Even more, Black students occupy a space in education where White teachers and peers may find it hard to understand their positionality in America, and in education "compelling them to combat racial microaggression" from peers, teachers, alike, who "maintain stereotypes about their disability and racial identity" (Collins, 2020a, p. 5).

In addition to the race/racism that contributes to actual and perceived second-class membership in American institutions, girls also must contend with gender as a historically marginalized social construct in American society that further alienates them in terms of experiences, strengths, and needs. This plight of Black girls is documented with an extensive amount of literature that confirms that Black students, especially Black girls, are often denied an opportunity to try more advanced learning opportunities (Anderson, 2020; Evans-Winters, 2014; Fordham, 2001). Black girls, more specifically, are more likely not served in gifted education or special education.

Learning Exceptionalities: Gifted, Disabled, and Twice Exceptionality

Giftedness and learning disabilities are exceptionalities to normal learning capacities that warrant additional support to maximize potential and academic achievement**.** Detailed discussions of this as a concept, and its educational implications are discussed throughout this text, and research in general (Kircher-Morris, 2021). Viewing the literature using a critical race lens, however, compels us to dig deeper to understand the underpinning issues and to finally see that the intellectual strengths and educational support needs for gifted Black girls are constantly overlooked as a result of their position in America, and in education. Interestingly, even when Black girls are served in gifted and special education programs, they experience marked isolation, indifferent responses, trauma, and too often find themselves without identifiable peer groups (Evans-Winters, 2014).

The Intersecting Challenges of Black Girls with Learning Exceptionalities

In addition to pervasive scientific and institutionalized racism in America, the socialized expectations of gender/gender roles functionally interact with the socially influenced and subjective nature in defining learning exceptionalities, to add to the invisibility of gifted Black girls with other exceptionalities. These critical underpinning influences are more subtle, but still have negative impact on the development of gifted Black girls with other exceptional conditions. We contend that they influence the extent to which gifted Black girls with other exceptionalities show up authentically and demonstrate their gifts, talents, and/or disabilities, and in turn, determine that educators recognize their talents and support needs.

The Intersection of Race and Gender Positionality: Black Superwoman Schema

Black Superwoman Schema was conceptualized by Woods-Giscombe (2010) as the perceived obligation of Black females possess to project an image of strength, and to suppress any perceived weaknesses that includes resistance for dependence on others, necessary performance/success despite limited resources, and prioritized caring for others over self (Woods-Giscombe, 2010, 2019). As a result, in school settings, we see Black girls who become very high achievers, even as they experience learning difficulties, bullying and/or isolation from their peers.

The Intersection of Opposing Learning Exceptionality: Reflective Identity Mismatch

Under-identification and sparse servicing of gifted Black students in gifted education can leave those few students that are identified feeling socially isolated and alienated with no reflective identity (Collins, 2018). Similar to White and Black student enrollment in gifted education and in special education, White educators are well represented the majority of teachers in gifted education and underrepresented in special education while the opposite is true for Black educators (Collins, 2020b). White female teachers, having culturally different expectations and experiences, may be less likely to nurture the strengths and recognize/address the challenges of gifted Black girls with other exceptionalities. Gifted Black girls with other learning exceptionalities are at risk for not fully understanding and able to manage their own strengths and challenges. This, along with cultural mismatch or cultural discontinuity in socialized expectation of gender roles between White and Black culture (Leath, 2019) affirms the importance of racial and gender reflective identity in the classroom and other specialized gifted education programs.

The Intersection of Positionality and Exceptionality: Adultification and Invisibility

Black girls typically mature physically much earlier than White girls, and therefore is seen as older and more emotionally independent (Epstein et al., 2017; Settles et al., 2008). Given the premise that gifted students are identified as those who are cognitively more advanced than their same-aged peer, this is problematic when Black girls are subconsciously or consciously viewed as older than what they really are. In addition, behavior is also a factor when identifying academic support needs for students (Davis, 2018). This was evident by a recent study by Sugngha and Harvey (2020) who studied differences between White teachers' and Black and White parents' teachers' perceptions of attention-deficit/hyperactivity disorder behavior. They reported stark differences in the extent to which these teachers and parents categorized Black boys' and girls' behavior as ADHD. White teachers tended to rate Black students higher than White students for displaying ADHD behaviors. Black parents tended not to associate behaviors to ADHD, valuing verbal, movement-oriented, outspokenness behaviors. Inability or refusal to contain these behaviors in the classroom, however, is often perceived as deviant, nonconformist, or even ADHD-like behavior. Even more, when gifted Black girls participate and contribute less in the classroom for fear disciplinary action or negative labeling, they sometimes adopt duplicitous behavior (also known as code-switching; Charity et al., 2013; Ogbu, 2004). Unfortunately, this adds to culturally ill-informed and ill-trained teachers. Further, underserved twice (2E) and thrice exceptional (learning and cultural exceptionalities, 3E; Collins, 2020a; Davis & Robinson,

2018) Black girls exist academically in one of three invisibility states: cognitively advanced/gifted, cognitively disabled, or neither (Baum et al., 2017; Mayes & Moore, 2016).

The Interconnected Convergence of Positionality and Learning Exceptionalities

The factors that contribute to under-identification, misidentification, and inadequate educational services for gifted Black girls with other exceptionalities are highly interconnected. Bounded by and within the interdependent context of cultural exceptionalities (race and gender) and cognitive exceptionalities (giftedness and disabilities), the interconnectedness of Black superwoman schema, adultification, invisibility and reflective identity mismatch is fully realized. Beyond overlap and influence, the interconnected nature that converges at the center and very essence of being for gifted Black girls with other exceptionalities compels an even closer look.

In terms of identity formation, stereotype threat is a real consequence that may be experienced by gifted Black girls (Collins et al., 2020) that also negatively impact their academic experiences. Varelas et al. (2013) assert that marginalized students construct an identity based on how they are positioned by others; they noted that an individual's community membership (e.g., classroom or school) is defined, more or less, by the extent to which they engage in the various cultural practices (e.g., developmental processes, roles, and shared beliefs, values, code-switching, etc.) within the educational setting. Consequently, and over time, changes in their identity and knowledge correlates with changes in position, further affecting educators' ability to appropriately identify all of the exceptionalities that may be present in gifted Black girls. Collins (2019) further contended that ecological influences—the intersecting nature of a socialized environment—underscores the complexity of exceptionalities within gifted education, advanced academics, and special education. Figure 2 illuminates an even more comprehensive explanation of the intersecting nature of cultural and learning exceptionalities.

Bounded by changes over time (chronosystem) and influenced by the dominant culture's societal norms (macrosystem), there are minimally fifteen (15) different intersectional constructs at play at any given time. Invisibility (I), Black superwoman schema (S), Adultification (A), and reflective identity mismatch (R) are not mutually exclusive. Their intersections represent a complex exchange process of cultural and social constructs that positively (i.e., harmonizing exchanges) or negatively (i.e., conflicting exchanges) impact identity construction, behavioral changes, academic identification and talent development (Collins, 2018, 2019).

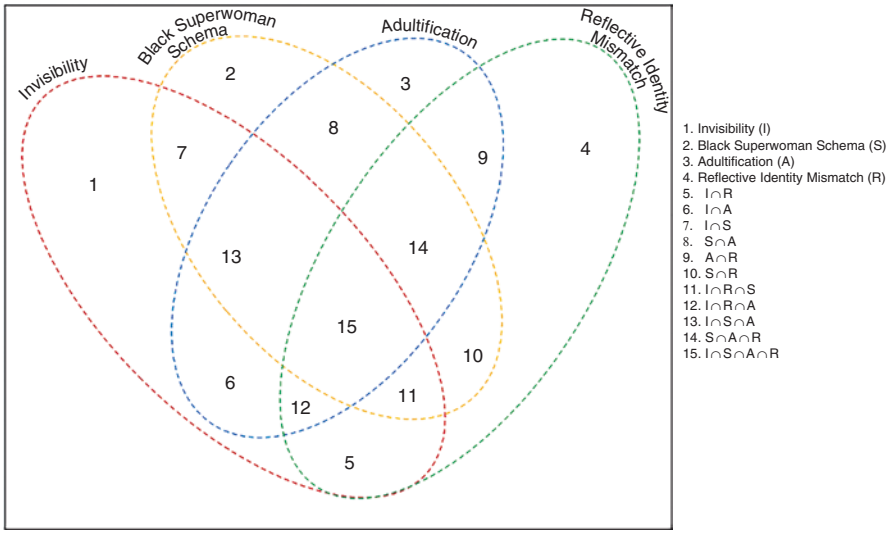

Fig. 2 Ecological context for the intersectionality of the positionality and exceptionality of Black girls in America, and in education. (Source: Adapted from Collins (2019) as cited in Coleman et al. (2022). Reprinted with permission)

Addressing Invisibility

Our school communities must be able to recognize systemic barriers that have prevented an entire subpopulation from developing their gifts and maximizing their learning potential. Rausch et al. (2019) challenged educators/administrators to learn how to remove all barriers (i.e., all -isms) related to identifying twice exceptional students and referring them for inclusion in gifted and talented (G/T) programs.

We insist that changes in practice (Davis & Moore, 2016) requires a change in thoughts and words. Definitions and conceptualizations related to giftedness, learning [dis]abilities, and other cultural exceptionalities are not acultural, and should be framed as such. Gifted and special education programs must reject gender-biased, color- and culture-blind research and practices to be more inclusive and equitable (Davis & Douglas, 2021). Something as simple as separating the prefix 'dis' in disability to write it as [dis]ability, acknowledges and situates learning exceptionalities on a continuum of abilities. Schools should also orient parents about multiple exceptionalities, empowering them to properly serve as an educational agent for their children. Teaching parents the "language" of the field helps them to understand and give voice to the complexities of the school experience for gifted Black girls (Davis, 2010, 2012, 2019; Woods & Davis, 2016).

We also challenge researchers and practitioners to approach their work from a critical race perspective; address learning exceptionalities through a more culturally responsive lens that recognizes them as social constructs, and then commit to providing curriculum, pedagogical practice, and services that are appropriate. Anderson & Martin (2018) recommended, for pedagogy and practice, use of mentoring programs, intentionally designed enrichment experiences, targeted affinity group discussions, and educator-training in the role of culture to name a few.

Conclusion

As one of the largest groups of underrepresented populations, gifted Black students are under-identified at a disproportionate rate. Gifted Black girls are at an even greater risk of being overlooked. They are underserved in gifted and advanced STEM programming. To offer effective services that this population of students deserve, we must take a more holistic approach as a consequence of Black girls social positionality in American society. Considerations for intersectionality of race, gender, and learning exceptionalities as social constructs, offers a more comprehensive and culturally responsive framework that is more befitting when determining appropriate services for gifted Black girls in schools.

The above recommendations support a neurodiversity (normal variations in the human genome rather than deficits) perspective and culturally responsive, asset-based approach to identification and comprehensive educational services that foster promotion of learning and thinking differences built on students' strengths (see Baum et al., 2017 for specific strategies on using a strengths-based, talent development approach for 2E students).

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Part V
Introduction: Time (Chronosystem: Cross-Sectional vs Longitudinal Changes Over Time)

This final section of the text includes the final chapter and the afterword. They speak to a need for adaptability, noting that the study of twice exceptionality is still too "new" with little depth of research.

As the final chapter of the text, Chapter "Reframing The Future of 2e Research: An Introduction to Arnstein's Spiral Model of Development" reaffirms the promise of integrating Bronfenbrenner's lens with talent development model to create a better and more unified understanding of exceptionalities as social constructs, noting that historical approaches for identifying and servicing twice-exceptional students up to now have not been effective and are not broad enough to enact systemic change—rather they have been slow, inconsistent, and not aligned with the global and competitive nature for which we need to prepare students. Arnstein reminds us that Bronfenbrenner developed the bioecological model after recognizing that the individual was overlooked in other theories of human development, which were largely focused on the context of development (e.g., the environment); in the bioecological model, in contrast to his earlier models, Bronfenbrenner includes time (the Chronosystem) as an important component in the way that people and environments change. However, Arnstein takes issue with limiting the presentation of time as a life-wide approach and offers a perspective that also suggests life deep experiences as a component of time. She avows that while it doesn't seem so, the chronosystem has a very critical and more prominent place in the consideration of student development and Bronfenbrenner's developmental model with respect to talent development, and further establishes that developmental research designs should ideally be longitudinal (relatively over time) rather than cross-sectional (more loosely aligned to an absolute, single point in time).

Chapter "Reframing The Future of 2e Research: An Introduction to Arnstein's Spiral Model of Development" brings our discussion full circle by revisiting some of the earlier topics through a different lens, which reframes, challenges, and calls to action provisions for changes needed to effectively and appropriately service twice-exceptional students - in schools, in psychology and counseling offices, in medical facilities and in workplaces which requires responsiveness to their individualized profiles and specific needs. Introduced and presented as

forward-thinking by means of exploring the understanding of macro-time, this distinguished view of the cross-sectional and longitudinal aspects for grasping the complex and morphic influence that environmental, societal, proximal, and individualized changes over time have on human development is offered also to challenge and reframe our approach to research aimed at engaging in the next generation of 2e related research. In contrast to micro-time (associated with direct occurrences over time within the microsystem) and meso-time (illuminated by the processes of the mesosystem which occurs over the course of days, weeks, years, etc.), macro-time (within the macrosystem) represents the shifting expectancies in wider culture, reinforcing social constructs, functioning generationally, and affecting proximal processes across the lifespan.

It includes an introduction Arnstein's (2022) Spiral Model of Development as a recommended conceptual framework that is appropriate for more progressive, future approaches to addressing twice-exceptionality. While others maintain a heavy influence from developmental psychology relevant for today, the spiral lends itself to changes in the conceptualization of the research endeavor. It, as a new development model, proposes a new method relevant for the future.

Reframing The Future of 2e Research: An Introduction to Arnstein's Spiral Model of Development

Karen B. Arnstein

Abstract Humans are multi-faceted. The asynchrony that characterizes twice-exceptional students underscores additional complexity beyond polar exceptionalities on a continuum of services. Our current approach to identify and service these students is limiting our ability to accurately understand their needs with clarity. We must continue to advance our understanding and approach with more holistic methods. Our educational system can no longer afford to lag as it has for decades in terms of innovation and dynamic processes. This chapter offers a conceptual framework, a more comprehensive perspective that will not only enable us to see the distortions of our current understanding, but one that is conceptually representative of the human development of the whole child in concert with, influenced by and who influences the environment in which they grow and develop. A juxtaposition of the psychology of current developmental models and the science of cartography is presented with an attempt to better understand the developmental trajectory of twice-exceptional (2e) population throughout the lifespan. Leveraging our common knowledge of the solar system to understand the elliptical orbits of the planets, we have a metaphor for understanding the developmental trajectory of twice-exceptional students whereby a 2e student can be thought of as their own planet. Within the context of helping the reader to better understand the complexity of 2e as well as the dangers of upholding misconceptions and misperceptions, the author offers a perspective which has the potential to change the future of research related to serving students within the educational setting.

Keywords Distortion · Identification · Developmental trajectory · Spiral Model of Development · Bronfenbrenner Bioecological Theory · Asynchronous development

Think of each twice exceptional student (2e) as their own planet, the sun as the statistical mean for measurable development, and the orbit as their three-dimensional

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(3D) trajectory for growth and developmental experiences. Some have a smooth, predictable, almost circular orbit around the sun (or mean). Others will have an orbit more like protoplanet Pluto (Wall, 2015), where they will appear predictable as their elliptical orbit is closer to the sun (or mean) and make huge developmental or cognitive leaps in growth as they move further from the sun (or mean). Erikson's (1968) Theory of Psychosocial Development, Dąbrowski's (1964) Theory of Positive Disintegration (TPD), Bronfenbrenner's (2005) Bioecological Systems Theory, and Maslow's (1943) Hierarchy of Needs all addressed human development, however, from a 2-dimensional perspective, such as development versus time. Although these theories consider changes over time, (i.e., Bronfenbrenner's Chronosystem and Erikson's stages), time is referenced as a benchmark to delineate the end of one stage and the beginning of another. Furthermore, Bronfenbrenner's chronosystem, as depicted in the bioecological systems model (see Chapter "The Intersectionality of Twice-Exceptionality: Historic, Current, and Future Perspectives"), is shown as an outer layer. This depiction can be misperceived as having equal or potentially less influence due to the graphical distance from the microsystem where the child lies in the model. As illuminated throughout this text, misperceptions and misconceptions continue to contribute to some of the critical issues that frame the complexity regarding identification and service of students with learning exceptionalities. Given a new perspective to critically synthesize concepts of time, cartography, and spatial modeling gives way to a new conceptual framework, the Spiral Model of Development, introduced here to reframe our current understanding of twice exceptionalities.

Understanding the Prevalence of Conceptual Misperceptions and Misconceptions

A misperception is an inaccurate interpretation of a scenario or ideology. A misconception arises from a mistaken comprehension of a situation or idea that leads to a faulty view or opinion. A misperception can be corrected but can also lead to a misconception which is far more difficult to correct. To comprehend how prevalent misperceptions and misconceptions can be accepted as truth, we examine the Greenland Problem as an example for case and point. Cartographers have the impossible task of converting a three-dimensional (3D) shape onto a two-dimensional (2D) sheet of paper. The science (and the art) of making maps is understanding which projection of the globe that approximates the closest properties of shape, size, direction, distance, and scale to choose from to accurately represent that part of the Earth. There exists a trade-off between which properties are determined to be of the greatest significance. There are many projections available, but no one size fits all because each one distorts some aspect of the globe. Cartographers employ multiple projections of a 3D Earth to render a 2D map to reduce distortion and improve accuracy in decision making. Attempting to render a 3D surface to a flat

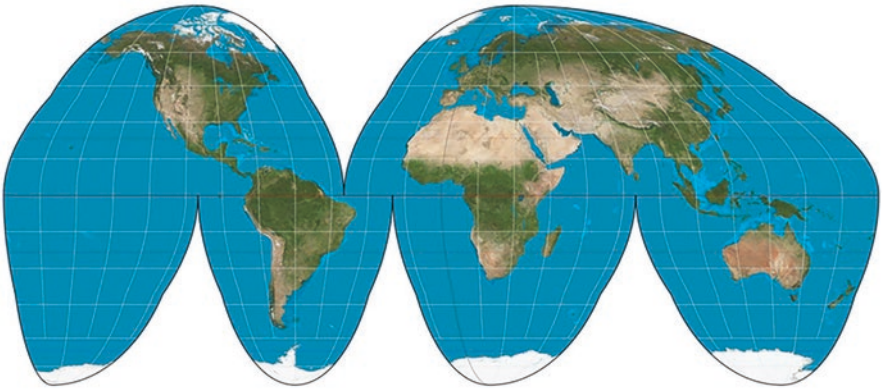

Fig. 1 Goode's homolosine projection. Note: The earth looks like an orange peel that cannot be flattened to fill in the blank spots. (Source: Strebe (2011b). Reprinted with permission. https://commons.wikimedia.org/w/index.php?title=File:Goode_homolosine_projection_SW.jpg&oldid=471012949)

surface will yield the same results as flattening an orange peel, it simply cannot be done without tearing, squashing, or stretching it (see Fig. 1). Unfortunately, as one distortion is accounted for, another is increased. Applying this same practice to our observations of human development reduces the likelihood of misinterpreting distortion (or masking), allowing for a more accurate, realistic representation and support for gifted and 2e populations.

This is the same case with understanding, interpreting, and accepting definitions of twice exceptionality. As educators focus on remediating a learning difference or delay does not serve as differentiation, therefore the differentiated curricular needs of the twice-exceptional student can be forgotten. The same can be true for identification purposes when a learning disability has been identified but testing for strengths may not have been given equal weight.

Historical Context Matters: The Greenland Problem

The Greenland Problem involves the distortion of the actual size of Greenland on a map. This distortion makes Greenland appear to be 14 times larger than it is; visually appearing to be approximately the size of the continent of Africa. The Greenland Problem is the perfect example of how we accept distortion on maps commonly used in classrooms, Google Maps, Bing, Yahoo, OpenStreetMap, and ArcGIS. It is best to know the historical context and purpose of the map before determining the projection to be used to allow for the most accurate representation. The sixteenth-century Flemish cartographer, Gerardus Mercator, created the cylindrical projection as a navigational tool by keeping the parallels (latitude) and meridians (longitude) as straight lines. No doubt you, the reader, are most familiar with this map (see

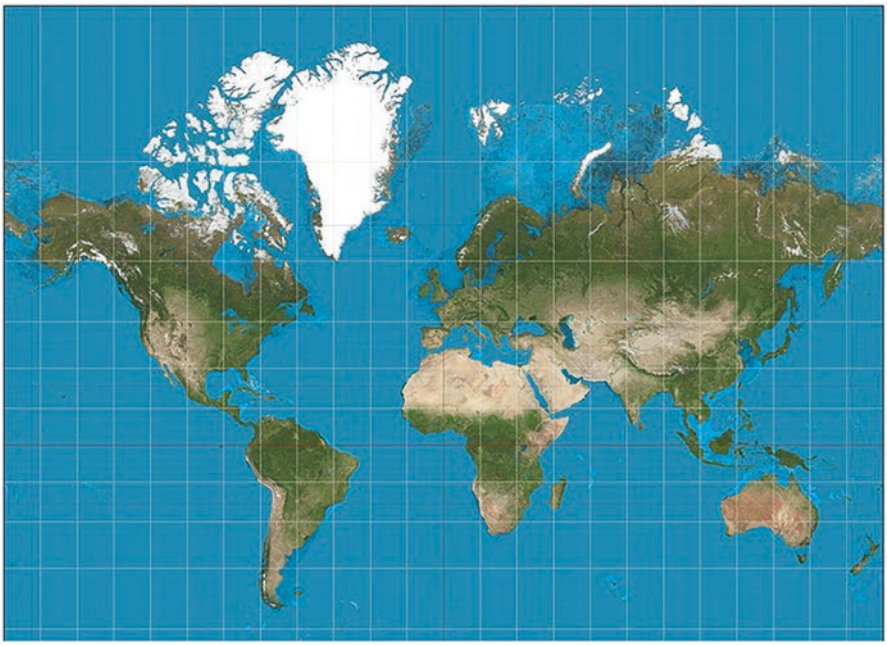

Fig. 2 Mercator projection. (Source: Strebe (2011a). https://commons.wikimedia.org/wiki/File:Mercator_projection_Square.JPG)

Fig. 2), the Mercator projection. Although acknowledged as inaccurate, it remains popular as it fills a rectangular wall space with more "map" and because familiarity breeds popularity.

It is this distortion that "can give a misleading, and some would say biased, view of the world" ("The Economist Snapshot," 2015) (see Fig. 3). Any land mass nearest to the poles will go through the greatest distortion when using the widely accepted Mercator Projection. In Fig. 3, the distortion of Greenland is apparent as it moves closer to the equator. Maintaining the actual landmass, Africa is fourteen times larger than Greenland. Figure 3 illustrates Greenland's size compared to Africa in the Mercator Projection.

Distortion and the need for correction is apparent in the fields of cartography, educational psychology, and psychology. The same holds true in education. Although the concept of intelligence and giftedness has broadened since the advent of the Intelligence Quotient (IQ) in the early 1900s, many educational stakeholders still assume that cognitive abilities fall along a bell-shaped, normal distribution curve. This curve can be organized into frequency distributions and described by its central tendency and variation using measures such as the mean and the standard deviations. It is important to note that the midpoint, or mean, of the normal curve denotes the maximum frequency.

The normal distribution of Intelligence Quotient is represented as a Gaussian (bell) curve. The Gaussian curve, or assumption, is the most well-known and widely

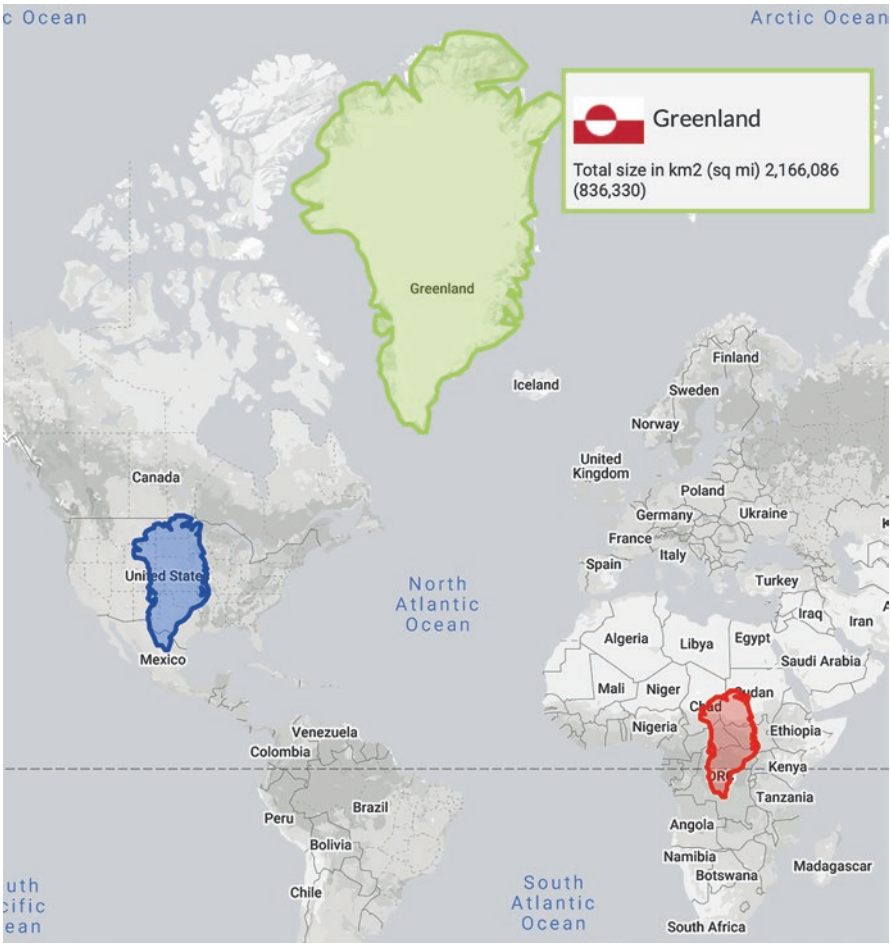

Fig. 3 The true size of Greenland. Note: The true size of Greenland in a Mercator Projection when overlaid onto the United States and Africa. The closer to the equator, the smaller Greenland appears due to increased precision of measurement. The further from the equator, the greater the distortion. (Source: Mapping developed by Karen Arnstein, EdD. Printed with permission (CC). https://thetruesize.com)

used distribution in fields ranging from engineering, statistics, physics, medicine, and education. It's popularity is due to the central limit theory (CLT) where the distribution of noise, or outliers, is well captured (Sangwoo Park et al., 2013). The strikingly perfect symmetry of the normal curve is indicative that it is a theoretical ideal where real-life distributions will never match this model (Frankfort-Nachmias & Leon-Guerrero, 2017). Employing a theoretical distribution such as the Gaussian curve provides a benchmark to understand an empirical distribution based on actual data, such as those used in education.

IQ scores for the general population will fall somewhere along the mean and up to three plus or minus standard deviations of the mean. The gifted population will typically fall in the second standard deviation and beyond with an IQ score of 130 and above. Grohol warns, "IQ… is simply a philosophical construct psychologists have created to describe a subset of human functioning they believe to be subjectively important for modern society. … IQ tests are very culturally specific and may be invalid when used in other cultures" (Grohol, 2018). This curve assumes that with a normal distribution, the mean IQ is 100.

Figure 4 shows that 68.2%, or roughly two-thirds of all people have an IQ score that falls within one standard deviation of the mean (IQ 85–115). The above average, approximately 27.2% of the population have scores that fall between the first and second standard deviation above the mean (IQ 115–129). The gifted population, approximately 2.1% of the population have scores that fall between the second and third standard deviation above the mean (IQ 130–145). The profoundly gifted population, approximately 0.1% of the population have scores greater than three standard deviations above the mean (IQ 145–160). These individuals score in the 99.9th percentile on IQ tests and have an exceptionally high level of intellectual prowess. These students fall at least three standard deviations from the mean on the bell curve, representing the extreme end of the intelligence, or IQ, continuum (Davidson Institute, n.d.). Perfect distribution represents self-regulated responses within the 1st standard deviation. The distortions appear at the 2nd and 3rd standard deviations as we expect similar self-regulated responses which now appear more distorted due to the intersectionality of OE's, contextual change, and the internal needs of the 2e individual.

Just as a misperception or distortion occurs in cartography, misunderstanding occurs as students move beyond the mean within education and psychology. In addition, the above information does not consider the intersectionality Process-Person-Context-Time (PPPCT) that is introduced in Chapter "The Intersectionality of Twice-Exceptionality: Historic, Current, and Future Perspectives" and discussed in other chapters of the book. Hollingworth documented the increased potential for social and emotional difficulties in profoundly gifted students beyond the challenges observed in moderately gifted students (Silverman, 1990); specifically, "students with IQs of 160 and above—the profoundly gifted—were more likely to report social isolation than students with IQs ranging from 125 to 155" (p. 174).

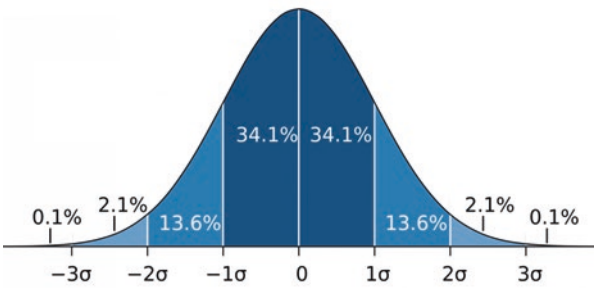

Fig. 4 Distribution of intelligence quotient. Note: For IQ, the mean point (0) represents a score of 100. (Source: Wilson (2017). Reprinted with permission. https://explorable.com/bell-curve-controversy)

According to Soto-Harrison (2020), the profoundly gifted experience differs significantly from their moderately gifted peers. Feeling significantly different from one's peers creates an internal disequilibrium that can seem insurmountable. Being out-of-sync with their peers and feeling misunderstood leads to a constant internal battle creating the perception of being deficient in some way. These individuals often report feeling lonely, misunderstood, and unable to express themselves even within their gifted peer groups. Unfortunately, it is not uncommon for profoundly gifted students to be referred for special education evaluations because educators misunderstand their unusual behavior.

In education and educational psychology, we always start with the mean, the center point, or, in the case of cartography, the equator, to understand how to navigate our decisions. In education, we begin at the mean and assess which standard deviation a student falls within to determine academic placement and specialized services. In cartography, we start at the equator to "get our bearings," moving along the meridians to determine distance, time, and location. Both fields are plagued with distortion and a need for correction. With this information, consider rotating the normal distribution of IQ counterclockwise by 90° and align the mean with the equator to better understand the distortion that occurs with our understanding of the gifted and 2e populations (see Fig. 5). As the standard deviations move further from the mean, similar to the poles on the earth, significant distortion in the perception of these students would exist. Suddenly, our perceptions are challenged as we find the largest group in the first SD of the mean (68.26%) appears to be the most accurately

Fig. 5 World Graticule and distribution curve addressing distortion created Courtney Banks (2022). Reprinted with permission. Note: Aligning the mean on a normal distribution with the known distortion of a Mercator map, the isotropic scaling respects topological relationships ensuring face validity. 1) The rotation is a transform that preserves the area under the curve. 2) Every transformation was isotropic. 3) The distance in terms of standard deviations between 0º and 30º latitude and 60º and 90º demonstrates the distortional effect as we move further from the mean even though it appears to be the same distance under the curve

represented group. The gifted and intellectually [dis]abled populations appear to be the largest groups, but statistically are the smallest.

It is not enough to merely acknowledge bias or distortion; we must decide how to reduce the distortion to create an accurate representation of human development. All metaphors aside, our education system is designed and enacted to meet the needs of the "average" (68.2%) struggles to do so for the outliers (31.8%).

Spiral Model of Development

Atoms flowing, colliding, vibrating - we are always in motion, no matter how much we try to reach momentary stillness. Adding this important scientific fact as an analogy to the same discussion of PPCT, Arnstein's Model of Development offers additional perspective to further explain the complexity of 2e. Consider this—our cells reproduce, synapses fire, and the earth rotates on its axis orbiting the sun. Similar to the Mercator projection (see Fig. 2) so widely accepted as the norm, so too is the idea of perfectly circular orbits around the sun for each planet (see Fig. 6).

Human development is dynamic, and our developmental models and educational development processes should represent it as such. Humans are multifaceted, always growing, changing, and responding to their environment (Time; Bronfenbrenner, 2005; Bronfenbrenner & Morris, 2007; see also Cotton et al. chapter in this text). Growth and development must be represented as more than a stair-step (Erikson, 1968) or vertical (Dąbrowski, 1964) model, understanding that as we encounter different situations in life, we also spiral back and forth through different developmental stages to meet the demands of this new challenge. This spiraling concept is not new. It is used in elementary school mathematics curricula, and it is the model of

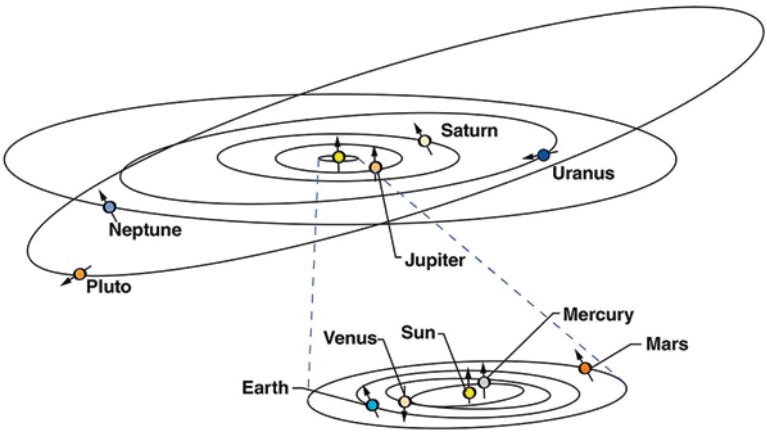

Fig. 6 Planetary orbits in the solar system. (Source: Reprinted with permission [NASA]. https://www.nasa.gov/sites/default/files/thumbnails/image/edu_what_is_pluto_3.png)

our solar system. Arnstein's Spiral Model of Development (2017) is a super-synthesis of multiple theories and concepts that incorporates a seemingly unrelated perspective and concept of planetary elliptical orbits around the sun to enhance our understanding of human development, and more specifically in our case, twice-exceptionality.

Depicted in this simple photographic image (see Fig. 7), Arnstein's Spiral Model of Development uses the sun as the mean, or the average expectation for age, cognitive, social, emotional, and physical development. Over time, this mean acts as a regression line, allowing us to determine average ages to expect developmental patterns in each domain. Each gifted or twice-exceptional student can be represented by the protoplanet Pluto where the appearance of competency within a particular domain (academic, social, emotional, or physical) may appear "on track" or "age-appropriate" when the child's orbit is closer to the mean on their elliptical orbit. If the student is not yet identified as gifted, the parents, teachers, and counselors in their lives, who work within the macrosystem, may not realize that this student is failing to grow towards his or her potential. That student is "flying under the radar" and possibly falling into underachievement and despair. There are multiple layers of distortion that lead to the misperceptions and misconceptions outlined in this chapter. As the 2e child moves further from the mean on their specific elliptical developmental path, the appearance of competency may suddenly change, causing concern for parents and educators. The higher the IQ, the more asynchronous the child appears due to the highs and lows in their levels of maturity, social skills, and

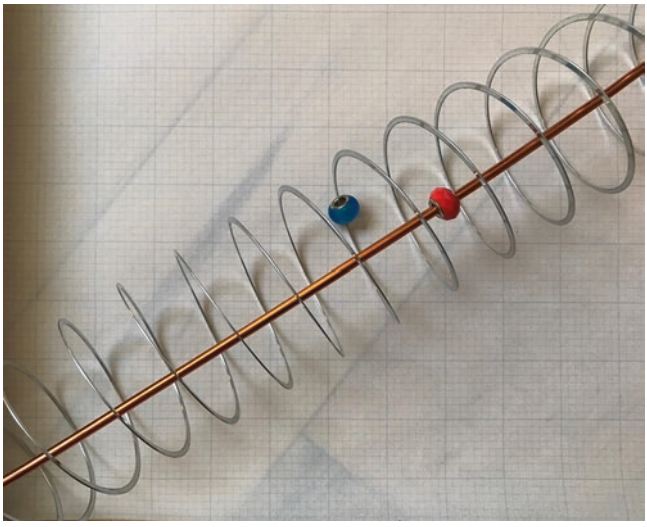

Fig. 7 Photographic representation of Arnstein's spiral model of development. Note: The red bead (farthest on the right) on the regression line in the center of the spiral is the typical student. The blue bead (on the left) represents the twice-exceptional student who may be in the 3rd standard deviation (further from the mean for IQ) leading to higher asynchrony and a greater elliptical orbit around the mean. (Source: Image taken by Karen Arnstein (2017). Printed with permission)

academics, appearing to be more elliptical in the orbit they maintain around the sun. The students (planets) closer to the mean (the sun) with the circular orbit and represent the 68.26% of students that teachers in the macrosystem are most familiar with. It is the 2e or profoundly gifted student that teachers and other professionals rarely see because their orbit around the norm is so widely elliptical. From a 2-dimensional point of view, these two students appear to be very close in their abilities dependent upon the domain that is examined. In reality, there is a much greater distance that can be seen if the spiral is stretched out. Not only do we know there is a distance, but we will be able to measure it and act on this distance from the mean.

From a 2-dimensional point of view, these two students appear to be very close in their abilities dependent upon the domain that is examined. In reality, there is a much greater distance that can be seen if the spiral is stretched out.

If we employ the Spiral Model of Development, we can visualize the twice-exceptional with greater clarity using Bronfenbrenner's and Dabrowski's models for context. The hypothesis is that these twice-exceptional students seem dysregulated. They are in classrooms or places they do not belong, trying to bring disparate pieces together to frantically make change. Are these students presented with material they feel comfortable and challenged with? Are there kids (or the teacher) in the classroom who bully them? Does the teacher relate to them? Does the teacher respect them? Do they fit within the model of the school system and the standards presented by governing bodies? Do they fit within the context of relationships and religions of the people in the area within the cultural norms? All of these questions have a multiplicative effect (Arnstein & Gelston, 2022).

The educational system and the lack of fit in the macrosystem act as pressures activating the overexcitabilities (OEs) in a gifted or twice-exceptional person. This pressure increases the spin on their (planetary) axis. Imagine if the Earth had OEs and pollution or war could activate those OEs, increasing the speed on the axis, shortening the day from 24 hours to12 hours? What would happen to our ecosystems and life? There is a lot of energy expended without anything to show for it. This sped-up day does not impact the elliptical orbit around the sun (the year), but it can foretell a potential disintegrative event like the kinetic energy built up in a child's pull-back car. In this state, students appear to stagnate and possibly regress for what may seem like months, until one day they wake up and make a 6-month developmental or cognitive leap.

It is important to remember that at one time all orbits were considered circular. It was Johannes Kepler who discovered that planetary orbits were elliptical, correcting our misperceptions. Just like we can correct a Mercator map, we can correct the misperceptions and misconceptions in our thinking about the outliers in our educational system.

If we only examine student performance based on scores identifying placement within the standard deviations of IQ, even with fluid intelligence at play, we would not expect large fluctuations. The hypothesis of Arnstein's Spiral Model of Development is that using the appearance of competency as a dependent variable

within a multivariate analysis of variance (MANOVA), we would expect to see large variations of competency based on daily fluctuations. The variables used to describe the appearance of competency, such as social, emotional, or academic skills, need to be clearly defined before data collection. This is where context matters as definitions can vary widely based on the macrosystem within which the researcher and participant sample is working within. Other variables that contribute to higher variability need to be considered and clearly defined. I would even speculate that several variables that I outlined Chapter "The Intersectionality of Twice-Exceptionality: Historic, Current, and Future Perspectives" as well as other cultural and linguistic factors are not considered even when students have been identified as gifted and talented. Due to the large swings in the appearance of competency, many students end up unidentified, misidentified, and/or underserved, never fulfilling their ontological vocation of living up to their true potential.

Conclusion

In the most general terms, twice-exceptional students are those who qualify for both special education and gifted education services. These students come from every cultural, socioeconomic, racial, and ethnic group, and they can be the most difficult to identify and serve in schools. Using the Spiral Model of Development, we can visualize the twice-exceptional student with greater clarity using both Bronfenbrenner's and Dąbrowski's models for context.

Rarely do we ask, "What do we want for our children?" Is the role of public education to provide career readiness? Is it to promote democracy in society while developing well-rounded, active citizens? Or is it to support students in fulfilling their potential? Since John Dewey's time, reformers have attempted to "fix" public education but could not foresee the emergence of silos that prevent effective communication and collaboration. The hyper focus on metrics which measure efficacy, such as accountability report cards and test scores, inhibits the application of new research to support teachers reach these goals. Moving toward a post-COVID-19 era while simultaneously forced to face institutional racism could be the best time to reexamine long-held goals of public education. Twice-exceptional students require an interdisciplinary collaboration to achieve their potential (Baum et al., 1991, 2001, 2017; Baum & Owen, 2004; Bensnoy et al., 2015; Coleman & Gallagher, 2015; Foley-Nicpon et al., 2017; Omdal, 2015). Researchers, leaders, and educators can reevaluate and revise these goals, with an awareness of implicit bias to create a more inclusive system to identify, serve, and value gifted, twice-exceptional, and multi-exceptional students. The Spiral Model of Development can provide the paradigm shift necessary to understand the developmental trajectory of twice-exceptional students.

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Correction to: Twice or Thrice? Identification Issues and Possibilities Related to Students with Exceptionalities in Australian Schools

Mary-Anne Haines, Genevieve Thraves, and Linley Cornish

Correction to:
Chapter 8 in: F. H. R. Piske et al. (eds.),
***Critical Issues in Servicing Twice Exceptional Students*,**
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The authors' affiliations were published incorrectly. They have now been corrected. The correct affiliations are listed below.

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Afterword

By Kristina Henry Collins

> *Scientists' values and beliefs are influenced by the larger culture in which they live. Such personal views influence the questions they choose to pursue and how they investigate those questions. Adopting a stance on how to present scientific information is the cultural tool used to contextually preserve, orient newcomers, and communicate values, beliefs and findings within and outside of the scientific community … we do not shed our cultural practices just because we are presenting or being presented with facts and/or formulas*
>
> ~ Drs. Kristina Henry Collins, Deepika Sangam, & Leslie Huling
> (LBJ Institute for STEM Education and Research, Texas State University)

In addition to the quote highlighted above, *Collins, Sangam, & Huling (2022)* also declared in a position paper on culturally responsive evaluation of STEM products and activities that:

> It is essential that curriculum developers, educators, and presenters of scientific information possess multi-perspective competency skills (i.e., respect for, value, and ability to effectively translate knowledge about interdisciplinary design, multicultural domains, and cognitive diversity). This fosters respect, value, appreciation for the learner and/or audience that receives the information as well as remove and/or lessen the consequences of implicit biases, stereotype threat, and the "chilly" climate that is associated with STEM. A *culturally responsive professional* honors cognitive diversity and therefore **e**xhibits diverse ways of knowing, understanding, and representing information, and is deliberate to ensure diversity, equity, inclusion, and access is a central and intentional part of STEM processes in research, practice, and messaging. In STEM education, cultural responsiveness is essential for underrepresented students, and also has a positive impact on all students' ability to think critically.

As editors for *Critical Issues in Servicing Twice Exceptional Students,* we have further illustrated throughout this text that all educators should be held accountable for culturally responsive competency through their own professional learning and talent development. Twice exceptionality includes the characterization of giftedness and some other learning exceptionality or physical disability, but has been separately evaluated as a longstanding field of study in gifted education and special

F. H. R. Piske et al. (eds.), *Critical Issues in Servicing Twice Exceptional Students*, https://doi.org/10.1007/978-3-031-10378-0

education, respectively. Recognizing the validity of intersectionality as explained through the lens of Bronfenbrenner's bioecological systems (2005) with considerations of Subotnik et al. (2011) talent development megamodel, implications for the consequence of their intersectionality outlined in this text make it appropriate to both domains of study. This is especially so since giftedness is not thoroughly addressed in teacher training at the undergraduate and gifted endorsements are at the graduate level only, and special education courses at the undergraduate and graduate levels often have gaps in their discussion of twice exceptionality. Addressing these shortcomings in both teacher-training programs fills gaps in preservice and new teacher training and preparation—a major critical issues at hand. We have substantiated the notion that educational professionals at all levels should facilitate strategies for teaching that is embedded with social emotional learning, culturally responsive interventions, talent development, and comprehensive program development. As action and intervention researchers, to some extent by default, they along with formal researchers, teacher-trainers, mental health professionals should situate themselves as partners and resources to families of gifted students with other exceptionalities.

In addition, we have inherently published a multicultural discussion based on topics of exceptionalities that affect people from all backgrounds. As a reference text in educational psychology, special education, counselling and related fields, this book provides in-depth information for researchers, scholars and practitioners, alike. The way that it is presented offers a divergent perspective grounded in a conceptual framework and psychological lens that uniquely positions the pragmatic recommendations and call to action. This not only make it accessible to practitioners but also provides direction for future research and application that may foster systemic change and broader impact. Contributing authors have helped us to accomplish our goal to provide a basis for scientific study, translational research, and informed practices to better understand the importance of knowing and attending to the social, emotional and cultural dimensions of 2e, 3e, and ME students while simultaneously fostering the appropriate cognitive skill development for whole-child well-being.

Borrowing from the anonymous feedback offered by peers in the field, we are proud to present readers with a book that serve towards adding and building diverse knowledge and perspectives in the twice-exceptional area and to move the field towards building more contextually (e.g., historical, cultural, social, economic) sensitive interdisciplinary thinking and research. While the concepts mentioned may not be new, this book provides a basis for shared understanding for historically inconsistent language and pushes the envelope for approach and future directions in the field in special and gifted education. In novel ways, it updates, clarifies and explains topics acknowledging the critical issues in servicing student with exceptionalities for decades; it clarifies more suitable language, and offers novel approaches as solutions to the longstanding issues. It includes a wider range of perspectives addressing different aspects of the 2e experience from different viewpoints, different scale, and experts with diverse training. For survey type courses, its strengths include a comprehensive presentation/review of several current issues

related to gifted and twice-exceptional education. It is perfectly designed to be supplemented by a curriculum design workbook for school districts The information is concise and up to date, giving the readers access to current research with one-third of the text (4 out of 13) written by international authors, appealing to and giving example/guidance to our international for translation and connection to Bronfenbrenner's s lens—consequently, increasing the chances of even broader adoption and answer for a call to action. *Critical Issues in Servicing Twice Exceptional Students* move the field towards more cohesive strands for future research to be accumulatively useful.