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Conceptual Analysis of Twice Exceptionality*

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Abstract

The concept of twice-exceptional is used to define individuals who are gifted or talented in one or more domains while having disability, disorder or difficulty in certain areas. This situation has made the definition and acceptance of the concept difficult since giftedness and disability are mentioned together. In order to clarify current understanding of the concept, a conceptual analysis of the term "twice-exceptional" was conducted in this study using Rodgers' evolutionary concept analysis method. Firstly, the epistemological and ontological structure of the concept was discussed. It was seen that the concept was used in different terms in literature such as "twice exceptional", "dual exceptionality", "gifted with learning difficulties", "gifted handicapped". Instead of looking for an alternative term for the concept, existing studies were reviewed and the characteristics of the concept were tried to be revealed. Although the concept has been used for almost four decades, its implications date back to gifted studies addressing learning difficulties a century ago. It was later associated with Asperger's Syndrome, Attention Deficit and Hyperactivity Disorder, Autism Spectrum Disorder and other deficits. It was concluded that definition and characteristics of relevant concepts of twice exceptionality such as giftedness and disability have changed over time, which has also affected the evolution of twice exceptionality. Therefore, a clear definition or sharp boundary of the concept cannot be claimed, but its importance has been revealed by the field studies which also contributes to the further development of the concept.

Keywords: Twice Exceptionality, Gifted and Talented, Specific Learning Disability, Asperger's Syndrome, Attention Deficit and Hyperactivity Disorder

1. Introduction

1.1 Introduce the Problem

The first implications on the concept of twice-exceptional (2e) began in the 1900s with Hollingworth's coming up with a relation between giftedness and learning disabilities. Later, Asperger's syndrome (AS), described as a variant of Autism by Asperger, was included in the concept of 2e claiming that AS was likely to be seen in gifted children. This situation has led to discussions on whether an individual can have academically superiority together with deficiency, disorder or disability.

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While the discussion has continued over coexistence of giftedness and disability, its understanding, identification and characteristics; "The National Twice Exceptional Community of Practice" (2eCoP) developed a common definition of the concept of 2e in 2014. However, it is still not clear whether the concepts of intelligence and giftedness, which are constantly redefining, and deficiency or disorder in certain areas can be together with their own characteristics, so the conceptual confusion has not been resolved. The underlying reason is that the question of "What is the concept of 2e?" has not been explained, yet. A definition is formed by keeping the common qualities in many examples to be observed and discarding the non-common qualities. Therefore, every definition is an abstraction and the definition of each concept expresses its core. The core of the concept has an epistemological and ontological background. In order to reach the meaning of the concept, it is necessary to learn the historical background and concept phrases because the change in the phrases relating the concept effects the development process of the concept in its context. This situation paradoxically prevents a final definition of the concept, while revealing the richness of it in terms of content. The concept of 2e is a good example as the change in the concepts of intelligence and giftedness, the basic phrases of the concept, in the historical background has brought with the change in the concept of 2e. Therefore, in order to understand the concept of 2e, firstly it is necessary to clarify the concepts of intelligence and giftedness and then other relevant concepts such as autism spectrum disorder (ASD), specific learning disability (SLD) and attention deficit hyperactivity disorder (ADHD). In this study, associating concepts, various definitions and characteristics of the concept of 2e are reviewed and conceptual analysis is tried to be developed.

2. Method

The study was conducted using conceptual analysis within the qualitative research method. Conceptual analysis is the analysis of the data obtained from theoretical books, scientific articles, research papers and field studies considering the historical process of the concept, including the context of the concept, surrogate and related terms, the antecedents of the concept, its characteristics, examples and consequences related. Rodgers' evolutionary concept analysis method was used to analyze the data obtained from the documents in the study as it contributed to the clarification, definition and understanding of the concept within the discipline in which it was used by proceeding in a systematic and clear/simple manner in the analysis process, following a detailed process of explanation and carrying the inquiry process to a higher level (as cited in Chamberlain, 2015). In this inductive model, Rodgers argues that in the analysis of a concept, the concept may develop and change over time, but it can be handled without breaking away from the context in which it is originally used, and that the resulting analyses are not definitive results, but can only be guiding. In Rodgers' evolutionary concept analysis, it is first necessary to identify the concept that serves a human purpose, solves a problem or adequately explains the characteristics of a phenomenon. Then, by examining the surrogates terms, the distinctive features of the concept are tried to be revealed. For this purpose, an appropriate sample is determined by taking into account theoretical studies, interviews, researches, and various disciplines relating concept. Based on the sample, the characteristics of the concept are revealed. In this process, past events and phenomena related to the concept should be analyzed and the antecedents and consequences of the concept should be revealed. Although the last step of the model, in which other relevant concepts are also explained, is to define a model case of the concept, the main purpose is to provide a suggestion for future studies by asking questions and presenting hypotheses instead of reaching a final conclusion (Toftthagen & Fagerstrøm, 2010). Accordingly, in this study, the concepts related to 2e were discussed and clarified, the characteristics of the concept, its developmental process, antecedents were determined based on the knowledge obtained from the data sources, and an overall conclusion was presented that would develop knowledge in the field of 2e.

3. Results

The concept of 2e includes coexisting of giftedness and disability, paradoxically, having superior intellectual capability or talent along with at least one disability as mental, physical, psychosocial or other disorders such as AS/ASD, SLD and ADHD that lead to learning difficulties. In order to clarify this definition, it is essential to clarify the developments in the epistemological and differentiated ontological substructure of the concept of 2e so first and foremost the concepts of intelligence and giftedness are to be revealed.

It is seen that the first research on intelligence began in the second half of the 19th century with Galton's studies on intelligence. Galton, who almost ignores the effect of environment while emphasizing the hereditary characteristic of intelligence, argues that intelligence has an inherited structure and related to sharpness or sensitivity in the senses. Intelligence has gained a primitive identity with Galton's researches (Büyükcinal Göyçek, 2019). In the first quarter of the 20th century, Binet and Simon's intelligence theory and Terman's longitudinal studies on gifted students brought a different dimension to the concept of intelligence. Binet argues that intelligence has a so complex and multicomponent structure that Galton's definition of intelligence based on heredity and physical characteristics is inadequate to explain that complicated concept (Sak, 2010). According to Binet, intelligence has three basic characteristics: the ability to understand and keep an instruction in mind, the ability of easily adapting to a situation or performing the expected behavior, and the ability to judge through self-evaluation (Erdem, 2013). Binet claiming that the most reliable way of assessing the intelligence of individuals is psychological, emphasized that in order to measure intelligence, individuals should be classified in terms of their mental ability, rather than measuring simple characteristics such as weight and height. According to Binet, while one physician may diagnose a child as an idiot, another may identify as an imbecile or a moron; while one teacher evaluates intelligence according to school achievement, some others can notice a child who is unsuccessful but very intelligent. At that, Binet, in need of an objective measurement tool, develops the Binet-Simon scale ranked according to the degree of difficulty as a result of intensive research and experiments (Bolat, 2015). Binet and Simon define intelligence in terms of three different components: management, adaptation and judgement. Management is considered as deciding what needs to be done and how to do it skillfully; adaptation is the monitoring of the strategy chosen and used during the task; and judgment is the ability to criticize one's own thoughts and behaviors (Köksal, 2007). Terman, influenced by Binet, develops the first intelligence test in a way to distinguish gifted individuals and introduces the first standardized intelligence test called "Stanford-Binet Intelligence Scale" in 1916. In addition to intelligence test studies, Terman supports the literature through the long-term researches on students with high IQ (Alamer, 2017; Assouline et al., 2009). In a longitudinal study conducted by Terman, it is found that there is a relation between social adaptation, emotional sensitivity and cognition levels of gifted children (Gündüz, 2010; Terman, 1925). Attempts to measure intelligence objectively, which started with Binet, were developed with Terman by adding criteria to measure giftedness. Intelligence as a concept can be evaluated from different perspectives depending on the discipline, cultural context and scientific developments. Although it was first defined by emphasizing its hereditary characteristics based on its biological structure, today its complicated, multi-dimensional and developmental structure have been emphasized. This situation makes it difficult to make an ultimate definition of intelligence. As the concept of intelligence develops, the concept of giftedness also changes and redefines accordingly. This constant change in related concepts of 2e prevents a clear definition of it as well.

In a study conducted by McAlpine (2004) on the definition of giftedness, which is one of the main components of the concept of 2e, it is stated that there are two hundred and thirteen different definitions of giftedness. It is emphasized that this difference in definitions is based on the epistemological and cultural context of the time. In 1972 Marland Report was released in the United States, which is considered as a milestone in the field of giftedness. With its wide scope, the Marland Report is seen crucial for many areas concerning definition, diagnostic process, characteristics, psychosocial needs and education of gifted students (Jolly & Robins, 2016; Lindquist, 2006; Tagtmayer, 2017). According to the Report, the concept of giftedness and talent are used to describe individuals having superior performance and achievement or the potential in at least one of the six different areas of general intellectual ability, specific academic ability, creative or productive thinking, leadership ability, ability in visual and performing arts and psychomotor ability (Marland, 1972). In addition, the report emphasizes that there is a great risk for the states if gifted and talented individuals are not identified and supported with the appropriate educational services. The Marland Report's multidimensional approach to the concepts of giftedness and talent and the theorists' inclusion of factors such as environment and luck, which affect intelligence and talent, began to lay a foundation for the concept of 2e. Renzulli's three-ring conception of giftedness can be considered as one of these theoretical bases. Renzulli (1986) considers giftedness as a combination of above average ability, creativity and task commitment. According to Renzulli, a gifted individual has three sets of characteristics interacting with each other. While general ability includes word fluency, verbal and numerical reasoning, abstract thinking, selective recall of information and etc.; specific ability is the capacity of acquiring knowledge and performing in a specific area such as painting, dancing, play writing, statistics, chemistry, etc. Creativity as the second involves forming new ideas and using them to solve new problems. Task commitment is

the ability of undertaking and carrying out works through high level of dedication, enthusiasm, interest, perseverance, endurance and self-confidence. Traits in the creativity and task commitment rings are changeable and can be developed with appropriate education, whereas having above-average ability is permanent (Şentürk & Kefeli, 2019). Renzulli's (1986) giftedness and talented theory asserts that individuals cannot be identified as gifted or talented just because of academic achievement and IQ, but also having superior performance in task commitment and creativity. Having all the traits of any ring is not enough to be gifted but there must be interaction between and among the rings so that gifted behavior can emerge. Renzulli emphasizes that giftedness includes different variables other than IQ and also one can be deficient in some performance areas whereas very good at others. That can be seen as an important point that addresses the co-existence of giftedness and difficulty in the concept of 2e. After Renzulli, Gagne (1992) proposes a model that differentiates giftedness and talent. In his "Differentiated Model of Giftedness and Talent", Gagne does not see the concepts of giftedness and talent as equivalent and does not use them interchangeably. This model focuses on the development of talent rather than gifts (Smith, 2004). According to the model, gifts refers to innate and natural abilities that have developed without any intervention whereas talent refers to the systematic development of skills in a particular area. Gagne explains giftedness in four categories: intellectual, creative, social-affective and sensory-motor; and five categories of talent: academic, technical, interpersonal, athletic and artistic. The components of giftedness and talent were updated and a more detailed model emerged (Gagne, 2004). Furthermore, Gagne examines the success of gifted students who are in the top 10% of their class and attributes the stability of their success to the potential for continuous learning. From another perspective, Gagne claims that when academically gifted students are removed from their group, their achievement gradually decreases, regardless of the reason (Alamer, 2017; Büyükcinal-Göyçek, 2019). Gagne claims that a gifted child, who has a natural ability, is exposed to many factors that can affect him during his developmental process, and that he can develop his giftedness and transform it into giftedness through intrinsic motivation and environmental influences. Since Gagne sees giftedness as a natural ability or potential, he argues that children can maximize their potential through various interventions and experiences. Gagne's model also recognizes that chance is an important factor in the development of giftedness and other influences. He states that not all students have natural abilities, nor do they have the opportunity to access the proper interventions. Gagne's attitude emphasizes the importance of transforming intelligence into talent by recognizing the concept of 2e and preparing an appropriate educational environment for individuals. Finally, Tannebaum developed the "Sea Star Model" in the early 1980s, which, as expected, is based on the psychological and educational characteristics of gifted individuals. The Sea Star Model is explained in Tannenbaum's "Enriched Matrix Model". Tannenbaum argues that giftedness and talent should be identified within the educational process instead of first identifying and then educating gifted and talented individuals. This understanding is very important for the identification of 2e individuals. Because, as it is known, learning difficulties such as SLD and ADHD can mask giftedness and talent. Therefore, observations during learning process and cooperation between teachers and parents can be offered as a solution to the problems in the identification steps. In Tannenbaum's Sea Star Model of Giftedness, five factors must be present to be gifted: general ability, special aptitude, non-intellective requisites, environmental supports and chance factor. Each of these factors is necessary but not sufficient on its own to reveal giftedness. Therefore, the combination of four factors does not mean anything without the fifth one (Demirel & Sak, 2011). These five factors interact in different ways for different giftedness areas, but they all manifest themselves in a certain way in each giftedness area (Duman, 2013). According to Tannenbaum, environmental supports are important for the emergence of giftedness and talent. It should not be overlooked that the environment has a two-way effect; it has the potential to enhance giftedness and talent as well as to hinder or blunt it (Ercan, 2013). The concept of giftedness is not very precise and clear for Tannenbaum. This view stems from the lack of certainty in the tools and methods that identify giftedness. Tannenbaum also mentions other factors that contribute to this ambiguity such as the age of child, different special abilities, subcultural identity, and the future of individuals about whom there is no definite interpretation. Given all these uncertainties, the only thing that can be done is to evaluate the gifted child with his peers. Tannenbaum states that identifying the gifted and talented child is a process of getting to know him and for this reason he prefers to use the term "promising" instead of "gifted". However, he adds that promising individuals also arouse suspicion due to the previously mentioned uncertainties. According to Tannenbaum, one can hope for the future but never be sure (Leana, 2005). Having superior intelligence and talent, which is one of the prerequisites of the concept of 2e, has become a characteristic determined in the process with Tannenbaum. In addition, the emphasis on the chance factor while identifying giftedness and talent along with some difficulties or disorders supports the comprehensibility of the concept of 2e.

As can be seen, each model has a multidimensional approach to the concept of giftedness and talent, which contributes to the enrichment of the concept of giftedness and talent discussed in the Marland Report. These models move away from one-dimensional definition based on intelligence scores and indicate that intelligence can emerge in cognitive, social, artistic or physical domains and should be considered multidimensional. In the meantime, the models emphasize the importance of studies relating environment, personality traits, and special abilities and interests of gifted and talented individuals, and also emphasize the possibility of difficulties and disorders in certain areas which points out the concept of 2e. It is known that the implication of the concept of 2e dates back to second half of the 19th century and theoretical studies in the field of giftedness and talent contribute to the understanding of it as well as revealing new dimensions.

In literature, "dual exceptionality", "gifted with learning difficulties", "gifted handicapped" have been used as surrogate terms of 2e although there is a conceptual difference among them. In this study, it is seen more meaningful to clarify the concept of twice-exceptional instead of looking for an alternative term as a concept is an ontic expression of the meaning.

The first implication of the concept of 2e dates back to 19th century and develop during 20th century. For the first time in 1923, the concepts of giftedness and learning difficulties were mentioned together by Hollingworth. Therefore, the first implication of 2e was limited to learning disabilities. Then, in 1944, with Asperger's syndrome, a different form of autism, it was claimed by Asperger that gifted children could also have AS along with their giftedness.

Thus, in the 1950s, the concept of giftedness began to be considered together with learning difficulties and Asperger's syndrome. These developments were detailed in the book "Providing Programs for the Gifted Handicapped" published in 1977 (Assouline & Whiteman, 2011). In the 1970s, legal regulations relating the concept of 2e began in the United States, for example, in 1975, the "Education for All Handicapped Children Act" was enacted and learning disabilities were explained, which can be seen as a step to understand 2e individuals in terms of disability, disorder or difficulty. The studies emphasizing not only intelligence scores but also environmental and chance factors in giftedness and talent theories paved the way for research on the concept of 2e during these years. Especially, between 1980-95, many researches on SLD and giftedness and talent were included in the literature. The first experimental studies on 2e individuals were officially initiated by John Hopkins University in 1981 (Buică-Belciu & Popovici, 2014). Owing to theoretical framework and field researches, the concept of learning disability was included in the "Individuals with Disabilities Education Act" (IDEA) in 2004, as well as it was indirectly mentioned the needs of 2e individuals. In 2014, the National Twice Exceptional Community of Practice was formed and a common definition of the concept of 2e was developed (Baldwin et al., 2015). The concept of 2e has been developed through the studies in the both special education and giftedness and talent areas so that collaboration of them is crucial in clarifying the concept of 2e, identifying students' needs and providing appropriate psycho-social and educational services. The historical development of the concept of 2e is summarized in Table 1.

Table 1: Historical development process of the concept of 2e

Year	Development	Impact on 2e
1923	Hollingworth published the book called "Special Talents and Defects: Their Significance for Education"	He coined the term "gifted". He stated that some gifted students could have learning difficulties
1944	In his article Autistic Psychopathy in Childhood, Asperger described a new personality disorder, later named Asperger's Syndrome.	He claimed that this syndrome was more likely to occur in gifted/talented children. Characteristics listed: overly elaborate speech content, disruption of two-way interactions, high-level logical abstract thinking, isolated interests, repetitive monotypic play, disregard for environmental demands.
1973	Elkind published "The Gifted Child With Learning Disabilities"	Introduced the term of "gifted children with learning disabilities".

1975	Education for All Handicapped Children Act was passed	Free and appropriate education became compulsory for all children with disabilities. The definition of "learning disabled" was included.
1978	The Gifted and Talented Education Act was passed	A department for the gifted and talented was established at the National Institute of Education. "Giftedness" was defined. Gifted behavior occurs in specific people, at specific times and under specific conditions. He noted that bright children with academic, attention and social difficulties often show this behavior when they are engaged in an area of interest or talent.
1978	Renzulli defined giftedness as above-average ability, creativity and commitment to task.	
1980-2000	Educational programs for gifted students with learning disabilities have been developed in USA.	Programs were developed to meet the educational needs of gifted and talented students with learning disabilities in different fields.
1984	Initiated federal projects and state grants	Jacob Javits Grants: 2e Children Project, Great Expectations Project, etc. It was recognized that students with learning disabilities may also be gifted and talented. To identify these students a problem-solving approach with comprehensive teamwork and the use of multiple data sources were encouraged.
2004	The Individuals with Disabilities Education Act (IDEA) is reinstated.	
2014	National Twice Exceptional Community of Practice was established	A common definition of the concept of 2e was developed with the cooperation of academics and educators working in the field of 2e.

Source: Baldwin et al., 2015.

In the first definitions of 2e, a gifted child who has a learning disability is defined as 2e (Klingner, 2022). According to the common definition developed in 2014 by 2eCoP, the concept of 2e is explained as individuals showing giftedness or talent in one or more areas, while showing deficits or having difficulties in one or more areas (Neihart, 2008; Ömür, 2019). The concept of 2e includes having one of the disabilities such as AS, SLD, ADHD, emotional/behavioral disorder, speech and language disorder, physical disabilities along with giftedness and talent (Yenioğlu & Melekoğlu, 2020).

2e individuals are commonly known as having giftedness and at least one disability, deficit or disorder that makes gifted students also have learning difficulties and prevents fulfilling their high potential (Buică-Belciu & Popovici, 2014; Neihart, 2008; Nielsen, 2002). The development of the concept of 2e has been highly influenced by the researches revealing gifted students cannot always show superior academic performance and also have difficulty in learning because of coexisting disability. SLD is one of the most common difficulties among gifted students. It is defined as difficulties in listening, thinking, speaking, reading, writing, and performing mathematical calculations, which are caused by the influence of one or more psychological processes that are fundamental in understanding and using written and spoken language (IDEA, 2004). It is very difficult to make a full list of common characteristics of students having SLD because each individual differs in terms of personal traits and can have a unique set of patterns (Yenioğlu & Melekoğlu, 2020). However the most basic characteristic of this group is that they have normal or superior intelligence capacity but significant difficulties in academic areas, specifically in reading and writing (Alamer, 2017). Gifted individuals with SLD are defined as having difficulties in one or more of certain areas such as reading, writing, and mathematics, while they are identified as gifted or talented owing to high performance in at least one specific domain (Boothe, 2010). In recent years it has become widely accepted and understood that gifted individuals may also have SLD (Brody & Mill, 1997).

In the historical development of the concept of 2e, after Hollingworth's findings on gifted children's asynchronous development which could be appeared as having learning difficulty despite high intelligence capacity, first 2e discussions got started. Shortly after, as a new disorder Asperger's syndrome was defined and it was claimed that

it was also possible for gifted students to have that syndrome. This has led to the expansion of the definition of the concept of 2e. AS can be a clinically complex, chronic neurodevelopmental condition when it is associated with 2e. AS is mainly considered within ASD but the main distinguished feature is that there is no delay or regression in language and cognitive development in AS as in ASD (Girli, 2007). Gifted individuals with AS may exhibit emotional maladjustment, pedantry, excessive focus on special interests, attention deficits or certain sensory characteristics due to AS (Reis et al., 2021).

Another concept that has recently been associated with 2e is ADHD, which is one of the most common neurobehavioral disorders in childhood and can profoundly affect children's academic achievement, development and social interaction (American Academy of Pediatrics, 2019). In the DSM-IV-TR, the American Psychological Association lists common characteristics of children with ADHD as: problems with sustaining attention, daydreaming, difficulty listening attentively, difficulty with task adherence and following tasks, lack of attention to detail, difficulty with organization and time management, difficulty sitting still, talking too much, and often interrupting others. Gifted individuals with ADHD may exhibit characteristics such as difficulty in switching to another subject when they pay attention to one subject, untimely movement and speech, boredom and rejection of routines, inability of social adaptation, stubbornness, working memory deficits and less systematic thinking (Kargı & Akman, 2003; Sayı, 2018; Webb & Latimer, 1993). Correspondingly, the situation of 2e individuals' having giftedness together with a difficulty/disorder or disability such as SLD, AS or ADHD make the concept of 2e incomprehensible and cause ongoing ontological and epistemological discussions. While some studies in the literature claim that giftedness, talent and disability in certain areas are incompatible, on the other hand, many studies emphasize that these two conditions can coexist paradoxically in a 2e learner (Alamer, 2017).

After the first empirical researches at John Hopkins University, Foley-Nicpon et al. (2011) conducted a comprehensive study on 2E individuals and found that gifted and talented students could have a disability, difficulty or disorder at the same time. Similarly to these findings, the recent studies have also contributed to the understanding of the differences and complexity experienced by 2e students in their academic, social and emotional life (Baum & Owen, 2004; Foley-Nicpon et al., 2011; Trail, 2010). Furthermore, Jarosewich and Stocking (2002) made a research with 1762 gifted children and concluded that 3.1% of them had also ADHD. According to Chae, Kim, and Noh's (2003) study 9.4% of gifted children had ADHD. Minahim and Rohde (2015) found that this rate increased to 3.8% in gifted adults and 15.38% in gifted children. Based on previous studies, Antshel (2008) statistically inferred that 10% of individuals with ADHD are also gifted (Sayı, 2018). On the other hand, there are also studies in the literature that accept that giftedness, talent and disability in any field cannot be together. In addition to these discussions, studies in the literature emphasize that there are major problems in the identification of 2e children (Klingner, 2022; Lindquist, 2006). Until 2000, many researchers expressed their concerns that giftedness was often misdiagnosed as ADHD and at the same time the diagnosis of ADHD was almost non-existent in gifted individuals (as cited in Kaufman et al., 2000; Tucker & Hafenstein, 1997; Webb & Latimer, 1993). These concerns are based on the understanding that when giftedness is dominant, difficulties or disabilities may be masked and when difficulties are dominant, giftedness may not emerge because of the masking effect. In the third case, giftedness and difficulties may mask each other at the same time and so neither giftedness nor disabilities and difficulties may not be diagnosed (Lindquist, 2006). Most of the symptoms shown by gifted children and children having only ADHD are similar. For example, a student identified as 2e because of giftedness and ADHD tends to get bored quickly with simple academic tasks, move on to another without completing his task, and not focus carefully on the instructions or details. Functional impairments resulting from ADHD can overshadow the high potential and success of gifted students. Even if the failure of them are understood, they are often labelled as "being spoiled" or "not working hard enough". However, in some cases, the lack of focusing at learning process can be tolerated through rapid learning as a characteristic of giftedness. This is also the case for students who have giftedness with SLD and AS, as well. It is stated in the literature that many gifted students with SLD cannot be identified at the appropriate time (Brody & Mills, 1997; Foley-Nicpon et al., 2011). Even though these 2e students may not be unsuccessful, mostly, they do not feel successful enough because they cannot reveal their potential sufficiently and reach their expectations (Madjar & Manor 2020). As there are problems in the identification of 2e students, the tendency to make diagnoses based on performance or IQ scores causes this problem to grow, which make it more difficult to provide an overall framework about the concept of 2e.

The common characteristics of gifted students without any disability and gifted students with SLD, ADHD and ASD/AS, which are mostly seen in 2e, are listed in Table 2 in terms of a academic ability, attention, organizational skills and their social, behavioral and emotional issues. To notice these characteristics can contribute to recognize and identify 2e students and also reduce the confusion to some extent.

Table 2: Characteristics of 2e Students

SLD and Giftedness	ADHD and Giftedness	and ASD/AS Giftedness	and Giftedness
<p>Academic Difficulty in reading despite early verbal development Disgraphics Dyslectic Dyscalculia Problems with short-term memory Strong in critical and creative thinking in-depth knowledge in the Specific interests Preference for spatial tasks</p>	<p>Difficulty starting, following or completing a task Strong in critical and creative thinking Preference for spatial tasks</p>	<p>Appropriate cognitive development without language delay Difficulty in understanding abstract concepts and tasks that require critical and creative thinking Preference for spatial tasks Preoccupation with one or more uniform and restricted types of task</p>	<p>Rich vocabulary, Fast reading skills Early reading tendency Powerful memory Higher level thinking and problem solving skills Power of conceptualisation, synthesis and abstraction</p>
<p>Attention Short attention span and rapid distraction Excessive movement, inactivity or apathy</p>	<p>Inability to stay still, fidgeting, constant movement Difficulty staying still Rapid distraction</p>	<p>Specific or repetitive movements Persistent preoccupation with parts of objects</p>	<p>Long attention span in areas of interest Distraction in early boredom due to fast learning</p>

O r g a n i s a t i o n S k i l l s	Difficulty understanding and following instructions			
	Difficulty in expressing thoughts verbally and in writing	Difficulty in following and completing instructions	in and	Following and finishing instructions quickly and easily
S o c i a l I s s u e s	Difficulty doing work when there is no structure or predictability (non-verbal learning disability)	Difficulty in time management	Rigid adherence to dysfunctional routines or rituals	Detailed and creative thinking
			Social in interaction quantitative deterioration in (at least two ways)	Developed sense of humour
	Problems reading in a social context (non-verbal learning disability)	Difficulty in making sense of subjects in their social context	Peer relationship failure to develop	Ability to communicate well with parents, teachers and other adults
			Lack of sharing spontaneous interest or happiness of achievements	High sense of responsibility
			Lack of social or emotional interdependence	

The table was adapted from “An operational definition of twice-exceptional learners: Implications and applications” by Reis, Baum and Burke (2014) and characteristics of gifted students were added.

Table 2 lists the typical characteristics of gifted students with SLD, ADHD, ASD/ASD under certain headings. This situation reveals the conceptual complexity of the concept of 2e in the identification process. In addition, the fact that a student shows superior intelligence/giftedness in one or more areas while at the same time showing inadequacy and having difficulties in one or more areas makes it difficult to identify the situation, define the concept and intervention methods. However, as can be seen in the table, some features are intertwined with each other or too difficult to comprehend. While a gifted student can complete a task faster than his peers and have the ability of detailed and creative thinking, a gifted student with ADHD or SLD may have difficulty in understanding and completing instructions or may not be able to express his thoughts verbally or in writing. Therefore, the general assumption that a gifted student is competent and successful in all areas ignores the possibility that students with deficiencies or difficulties in some aspects may also be gifted. From another view, the failure of a student identified as gifted is attributed to not paying enough attention or being spoiled. Gifted students are usually aware of this failure and may feel social and emotional inadequacies in addition to academic problems. Therefore, first of all it is necessary to understand the concept of 2e and the common characteristics of 2e students, and then develop comprehensive and multifaceted identification procedures and tools.

4. Discussion

The concept of 2e was analyzed in the context of ontological and epistemological developments. An in-depth national and international literature review on the concept of 2e was conducted. It has been determined that there are discussions about the concept in line with the recent developments in the literature. In this study, an ontological description has also been made along with epistemological review of the concept. The discussions in the epistemological process starts with the question "What is 2e?" and this is followed by the ontological questions such as "Is it possible to be 2e? If so, how can it be defined?". In this process, each question about the concept is divided into sub-questions. First of all, a common definition of the concept of 2e in the literature has been used as the answer of first question. In order to review the discussions in the literature, the nature of the concept of 2e is emphasized based on its definition. It is determined that the most important discussions about 2e is whether there can be any difficulty, disorder or disability together with giftedness. It has been stated in many experimental researches that paradoxically, despite their high cognitive capacity, gifted students can experience deficiencies and difficulties in some areas such as academic, social, behavioral or emotional due to their asynchronous development. For all that, it is not clear enough that the same questions, "Is it possible to be 2e? If so, how can it be identified", remain to be answered. Actually, because of the masking effect the students are identified according to their main domain and the other side is usually overshadowed but when both the giftedness and disability areas are similarly dominant, both can mask each other and neither the giftedness nor any disability can be revealed all their life. Thus, it has been concluded that the concept of 2e is not comprehensible and clear enough in spite of a common definition and many research findings. Another reason that makes the concept of 2e complex and confusing is the theories and definitions of giftedness and talent. While every single development of gifted theories enriches and supports and the understanding of the concept of 2e, paradoxically, it also causes the same questions to be asked over again and made a new definition, which leads to a new confusion. Regarding the concept of giftedness and talent, the multidimensional definition in the Marland report and the theories of intelligence contributed to develop that main definition are discussed. It is seen that the theoretical studies of Renzulli, Gagne and Tannenbaum about giftedness and talent have diversified and enriched the studies on the concept of 2e.

The fact that the concepts of giftedness and talent, correlating with the concept of 2e, and the areas of disability, disorder or difficulty such as SLD, ADHD and AS are in constant development, in other words, the dynamic structure of each concept that constitutes 2e, which is open to new developments, enables the enrichment and development of the concept of 2e; on the other hand, paradoxically, it leads to confusion and constant redefinition of the concept. If the concept had a simple content in itself, it would be expected a clear and final definition would be made and the definition would be comprehensible but the concept of 2e has to be defined over again depending on the developments in its background. As long as the concept of giftedness and talent are not clarified, the definition of 2e cannot be sufficiently understood, but it needs to be accepted and recognized.

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