

Non-Visible Hierarchy Between Giftedness and Disability: Metaphoric Perceptions on Twice Exceptionality

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HOW TO CITE: | ABSTRACT:

Yunus Emre Demir , Ramazan Karataş, Seockhoon Chung, Çiğdem Müge Haylı (2026). Non-Visible Hierarchy Between Giftedness and Disability: Metaphoric Perceptions on Twice Exceptionality. International Journal of Special Education, 41(11s), 1329-1343

This study investigates the metaphorical perceptions of special education teacher candidates regarding twice-exceptionality (2E), a concept characterized by the co-occurrence of giftedness and disability. Despite increasing recognition, ambiguous definitions and potential masking effects often lead to the oversight and misdiagnosis of 2E individuals' needs. This research aims to examine how future special education teachers perceive the relationship between giftedness and disability within the 2E context and whether a normative hierarchy exists in their perceptions. In the study that qualitative phenomenological design was employed, data were collected from 210 special education teacher candidates enrolled at Anadolu University, Türkiye using an open-ended questionnaire that elicited metaphorical expressions related to giftedness, disability, and 2E. Valid responses were obtained for giftedness (n=153), disability (n=138), and 2E (n=143) and non-metaphorical responses were excluded. Content analysis was used to categorize and analyze the metaphors, and perceptions of participants who had and had not taken a 2E course were compared. The findings reveal diverse metaphorical understandings of giftedness, disability, and 2E. A significant prevalence of metaphors associating giftedness with valuable and rare entities indicates a societal perception that giftedness is inherently superior. Conversely, metaphors related to disability further reinforce this hierarchical perception. However, metaphors from participants who had taken the 2E course revealed that beyond its contradictory elements, 2E is also perceived as complex, functional, holistic, and multifaceted. These findings underscore the critical need for comprehensive education to foster a holistic understanding of 2E among future educators, supporting inclusive educational practices that address both the strengths and challenges of 2E students

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terms and conditions of the Creative CommonsAttribution (CC BY)	without prioritizing one over the other. The study highlights the importance of challenging normative hierarchies in perceptions of giftedness and disability.
license (http://creativecommons.org/licenses/by/4.0/).	Keywords: Twice-exceptionality; Metaphorical Perceptions; Disability; Giftedness, Special Education

1. Introduction

The ambiguities and misconceptions in the definitions of disability and giftedness complicate the comprehensive definition of twice-exceptionality (Pereira et al., 2015). The initial formal definition of twice-exceptionality (2E) in the literature was provided by the Council for Exceptional Children, stating that the presence of a disability in highly capable children might mask their talents (Maker, 1977). In the same source, the term "Gifted Handicapped" was used for 2E individuals. While Baum and Owen (2004) define 2E as the simultaneous possession of giftedness and disability, Montgomery (2015) defines it as the accompaniment of at least one disability by at least one giftedness condition. The theoretical construct of the term 2E asserts a balanced, non-hierarchical interplay between giftedness and disability. However the act of naming these differences separately often creates a subtle, yet powerful, perception that one condition precedes or overshadows the other.

Upon examining studies on 2E individuals, it is evident that in the past, giftedness and disability were treated as independent entities, but more recently, they are no longer separated (Kaufman, 2018). This new approach has provided an opportunity to gain more insight into the nature of 2E and has also increased the possibility of uncovering the complex relationships between giftedness and disability (Prior, 2013). Although initial studies in the field of 2E primarily focused on learning disabilities, today, conditions such as attention deficit hyperactivity disorder, autism spectrum disorder, etc., frequently accompany giftedness/intelligence (Reis et al., 2014; Anderson et al., 2018).

In a world where intelligence tests are popular, the disabilities of 2E children are often

overlooked due to approaches focused on discovering children's giftedness. However, for 2E children, adaptations are needed not only for giftedness-related arrangements but also for special needs (Baldwin et al., 2015; Kaufman, 2018). In this regard, Demir and Done (2022) emphasize in their study that the global system, which puts 2E children into a competitive environment based on their talents, is unacceptable; instead, their individual differences and needs should be prioritized.

Special education teachers are responsible for ensuring that twice-exceptional children reach their full potential in terms of giftedness, as well as making appropriate intervention programs accessible for their disabilities (Coleman and Gallagher, 2015; Renzulli and Gelbar, 2020). Furthermore, teachers are tasked with ensuring students are in an inclusive environment, increasing their motivation for learning, and enabling them to embrace their strengths and weaknesses (Kirk et al., 2011). Additionally, teachers' awareness levels regarding the phenomenon of 2E play a decisive role in shaping their perceptions and attitudes towards the concepts of giftedness and disability. In this context, special education teachers, by being responsible for the design, implementation, and monitoring of individualized intervention programs in the educational process of 2E children, hold a central position in realizing this awareness (Collins and O'Brien, 2003; Shaw, 2017).

The talents and disabilities of 2E children can mask each other (Reis et al., 1997). This masking effect may inadvertently reinforce a perceived hierarchy, in which one attribute is recognized or prioritized over the other. As a result, their social, emotional, and other needs may not be perceived as giftedness/disability, or they may not be examined to determine if they

possess either giftedness or disability (White et al., 2011; Gelbar et al., 2015). Twice-exceptionality can lead to these children performing poorly in schools compared to their typically developing peers (Beckmann and Minnaert, 2018). Furthermore, parental stress levels also impact the academic success of their 2E children (Wells, 2018). In this context, accurate diagnosis and the development of appropriate intervention programs that include the family are crucial for the education of 2E individuals.

Foucault's (1977, 1982) theory of power relations explains how societal norms often prioritize giftedness while marginalizing disability. Consequently, it can be concluded that the masking observed in 2E individuals triggers the formation of societal prejudices, stemming from this normative hierarchy. This situation can lead to misdiagnoses and inadequate interventions for 2E individuals. Assuming that all components of 2E are perceived societally as merely a difference and diversity, this normative hierarchy and the formation of prejudices can be prevented. In this context, Deleuze and Guattari's (1987) rhizomatic thinking reveals that categories such as giftedness and disability are not superior or independent of each other, but rather are interconnected in a holistic and complex manner, possessing equal value.

Metaphor is not merely a form of expression; it is also a mental exploration process that expands an individual's world of meaning through perceptual similarities and triggers creativity (Marshall, 2010). Metaphors facilitate the simple and effective transmission of complex ideas, contributing to the establishment of connections between different phenomena, the structuring of thought, and thus the enrichment of language (Saban, 2008a). Therefore, metaphor emerges as a form of comprehension that takes shape not on the surface of language, but in its depths. In this research, the metaphorical perceptions of pre-service special education teachers, who are continuing their undergraduate education at the Faculty of Education, Anadolu University, Türkiye, regarding the term 2E will be

examined. Accordingly, participants' demographic information, whether they have received training on 2E, and their metaphorical perceptions on 2E will be investigated using an open-ended questionnaire.

The research will reveal the symbolic, deep, detailed, and emotional perceptions of future teachers, who are likely to work with 2E children, have regarding giftedness, disability and twice-exceptionality which falls outside the stereotypical categorical classifications in special education. These metaphorical perceptions aim to investigate the existing thought systems of teacher candidates regarding twice-exceptionality (whether it is a stereotypical thought system or one outside the stereotypes). Through these metaphorical perceptions, it is aimed to evaluate the relationship between disability and giftedness within the concept of difference from the perspective of teachers. Furthermore, it is also targeted to examine whether there is a perceptually hierarchical structure between disability and giftedness. Additionally, the sub-questions expected to be answered within the scope of the research are:

1. What are the metaphorical perspectives of prospective special education teachers on disability and giftedness?

2. How do the metaphorical perceptions of prospective teachers who have taken and have not taken the 2E course differ regarding 2E?

3. Is there a normative hierarchy between giftedness and disability from the perspective of prospective teachers?

2. Methodology

This study was designed using the phenomenology qualitative research method. The phenomenological design aims to investigate deeply into individuals' shared experiences (awareness, perception) and to examine what these experiences mean to the individuals involved (Yıldırım & Şimşek, 2013; Creswell & Creswell, 2018). This research, employing a phenomenological design, aims to meticulously investigate the subjective

metaphorical perceptions of pro-service special education teachers regarding the concepts of 2E, giftedness, and disability, and to uncover the profound and symbolic meanings they attribute to these concepts. Furthermore, this design allows for an inquiry into participants' perceptions of the relationship between giftedness and disability, and whether their mental images and thought systems are stereotypical.

Participants

The participant group for this study consisted of university students enrolled in the Special Education Teacher Training Undergraduate Programs at Anadolu University Faculty of Education. Participants were selected using a purposeful sampling method to obtain data relevant to the study's objective. Purposeful sampling is considered a method of deliberately selecting the most appropriate group for the study's aim (Yıldırım & Şimşek, 2013; Büyüköztürk et al., 2014).

A total of 210 special education department students voluntarily participated in the research. Of the participants, 125 (59.5%) were female, and 85 (40.5%) were male.

Regarding course enrollment, 74 (35%) participants had taken or were currently taking a course on twice-exceptionality, while 136 (65%) had not taken the course previously or yet. The distribution of participants by class level was as follows: 36 (17.15%) were first-year students, 88 (41.9%) were second-year students, 71 (33.8%) were third-year students, and 15 (7.15%) were fourth-year students. Among the 74 participants who had taken or were currently taking the twice-exceptionality course, 3 (4%) were first-year, 40 (54%) were second-year, 21 (28%) were third-year, and 10 (14%) were fourth-year students. Of the 136 participants who had not taken the twice-exceptionality course, 33 (24%) were first-year, 48 (35%) were second-year, 50 (37%) were third-year, and 5 (4%) were fourth-year students.

The gender distribution of those who had taken or were currently taking the twice-exceptionality course was 45 female (61%) and 29 male (39%). The gender distribution of those who had not taken the twice-exceptionality course was 80 female (59%) and 56 male (41%). The age range of the participants varied between 18 and 33 years, with an average age of 21.5 years.

Table 1: Participants' Demographic Data

Participants	Demographic Categories	Classification	Frekans (f)	Percentage (%)
Special Education Teacher Candidates	Gender	Female (F)	125	59.5%
		Male (M)	85	40.5%
	Class Level	First Year	36	17.15%
		Second Year	88	41.9%
		Third year	71	33.8%
		Fourth Year	15	7.15%
	Course Enrollment	Enrolled	74	35%
		Non Enrolled	136	65%

Data Collection Tools

To collect research data, a demographic information form prepared by the researchers with expert consultation and an open-ended questionnaire were used. The demographic information form included questions to determine participants' gender, age, and current class level. The open-ended questionnaire was designed to examine participants' metaphorical perceptions of twice-exceptionality, giftedness, and disability. Accordingly, the metaphorical questions separately asked in the open-ended questionnaire, such as 'giftedness/disability/2E is like... because...!', provided a qualitative data source that allowed for an in-depth examination of participants' experiences regarding these concepts. Participants, including those who had not taken the twice-exceptionality course, were provided with an instruction containing the definition of twice-exceptionality to enable them to produce more meaningful metaphors.

Data Collection Process

All data collection instruments (personal information form and open-ended questionnaire) were delivered to participants via printed copies of the open-ended questionnaire and an identical "Google Forms" version, according to their preferences. In both methods, participants were informed about their rights and the study, and their consent was requested for the use of the information they shared for the study. Furthermore, participants were informed of their right to withdraw from the study at any time. During the data collection process, participants' requests for information regarding the study were addressed. To protect the personal data of participants when sharing research findings, their names were concealed, and pseudonyms were used instead.

Data Analysis

Data were analyzed using content analysis to evaluate participants' metaphorical perceptions of giftedness and twice-exceptionality. In this method, metaphors are categorized, and sub-themes are created by identifying the justifications underlying the metaphors. Additionally, frequencies are calculated based on the most commonly

expressed similar metaphors or similar structures underlying the metaphors (Yıldırım & Şimşek, 2013).

Expressions that were not metaphorical or did not provide a reference for the definition of the relevant concepts were excluded from the evaluation. Furthermore, the metaphorical perceptions of prospective special education teachers who had taken the 2E course were compared with those who had not. Since metaphors reflect individual experiences and carry meanings beyond the expressed images (Saban, 2008b), the analysis process was conducted in a manner that would reveal these multi-layered evaluations.

Credibility and Ethics

Participation in the research is entirely voluntary and no information that could potentially reveal participants' identities was included in the study. Furthermore, to ensure consistency in the evaluation of metaphors, data analysis (code development and categorization, etc.) was conducted through an inductive approach, reaching consensus among researchers. Additionally, the findings obtained were directly supported by the participants' statements. The direct quotations presented in the findings section are referenced using participant codes such as P1, P2, and P3. Prior to data collection, research permission was obtained from the Anadolu University Social and Human Sciences Scientific Research and Publication Ethics Committee. To enhance the trustworthiness of the study, an audit trail was maintained, documenting all research decisions, data collection procedures, and analysis steps, which allows for an external review of the research process.

3. Results

Upon examining the data obtained from 210 participants in the study, non-metaphorical responses were excluded from the analysis, and valid responses were subsequently identified separately for each concept: giftedness (n=153), disability (n=138), and twice exceptionality (2E) (n=143). Accordingly, while metaphorical perceptions connected to giftedness and

disability were analyzed holistically regardless of participants' enrollment in the 2E course, those concerning 2E were examined separately by presenting the data of enrolled and non-enrolled participants in 2 (two) distinct tables. Although the same sub-themes were employed in both tables, an additional sub-theme, 'art and sports activities,' was incorporated into the table containing data from students who had not

enrolled in the 2E course due to their differentiating metaphorical responses. Furthermore, when examining the perceptions related to the 2E theme, the presence and status of the normative hierarchy between giftedness and disability was compared between participants who had and had not enrolled in the 2E course.

Table 2: Metaphoric Perceptions on Giftedness

Themes	Frequency (f)	Percentage (%)	Sub-Themes	Frequency (f)	Percentage (%)
Precious Stones/'Treasures	54	35.5%	Ore	31	20.5%
			Diamond	19	12.5%
			Iron	4	2.5%
Nature and Natural Elements	46	30%	Landforms	13	8.5%
			Flower/'Tree	13	8.5%
			Celestial Bodies/Space	9	6%
			Natural Events	8	5%
			Animals	3	2%
Culture, Art, and Human-Made Objects	31	20%	Objects/Books	15	10%
			Art/Music	8	5%
			Technology Tools/Equipment	4	2.5%
			Vehicles	4	2.5%
Inner Motivation	18	12%	Super Power/Gift	9	6%
			Science and Discovery	5	3%
			Secret	3	2%
			Love	1	1%
Play/Sports	4	2.5%	Play/Sports	4	2.5%
Total	153	100%		153	100%

In the table 2, the metaphors related to giftedness (n=153) were grouped under five main themes and 13 sub-themes. The most prevalent theme was "Precious Stones and Treasures," accounting for 35.5% of the responses. Participants predominantly associated giftedness with valuable and rare entities such as diamonds, ore, and iron. This suggests that gifted individuals are perceived by society as valuable assets requiring discovery and cultivation.

The second most frequently utilized theme was "Nature and Natural Elements," comprising 30% of the metaphors. Metaphors involving celestial bodies and natural phenomena further indicate that giftedness is attributed with high value. Moreover, this theme implies that giftedness is perceived as an innate, extraordinary natural occurrence, a process that develops spontaneously and matures over time. This was followed by "Culture, Art, and Human-Made Objects," representing 20% of the metaphors. Accordingly, giftedness is viewed as a condition that can be produced or enhanced through human creativity. Metaphors generated within the scope of "Inner Power and Motivation" (12%) reveal that giftedness is perceived as a mysterious quality, not always externally discernible, and necessitating

discovery. Metaphors specifically generated for "Play and Sports" (2.5%) suggest that the perception of giftedness is primarily cognitively oriented. Representative statements illustrating participants' metaphorical perceptions of "Giftedness" include the following:

P116: 'Giftedness is like a diamond; because a diamond is a rare stone found in nature, notable for its brilliance and hardness. Giftedness, just like a diamond, is an innate quality that shines and has high potential. However, just as a diamond appears raw and rough before being processed, giftedness must also be cultivated with appropriate guidance and education.'

P54: 'Giftedness resembles a deep volcano because when it surfaces through the right channels, it makes the soil fertile, but if it is closed off, pressure builds up and it erupts.'

P88: 'Giftedness is like a "high-speed train" because a high-speed train allows you to reach your destination in the shortest time, but it must run on suitable tracks. If it is on an unsuitable track, it will derail.' *P81: 'Giftedness is almost like a magic wand (super power); because it is in your hands to use it wherever and however you imagine.'*

P37: 'Giftedness is like a football player performing exceptionally in different positions, just like Messi. You pass the ball to Messi and leave the rest to him.'

Table 3: Metaphoric Perceptions on Disability

Themes	Frequency (f)	Percentage (%)	Sub-themes	Frequency (f)	Percentage (%)
Dysfunction and Fragility	43	31%	Broken Object	17	12%
			Low/None Functional Transportation	15	10.75%
			Broken Technological Device/Instrument	8	6%
			Unbalanced Kite	1	0.75%
			Subtitle-less Movie	1	0.75%
			Unequipped Army	1	0.75%
Limitations and	42	30%	Bars/Barrier	20	14%

Mystery			Puzzle/Labyrinth	9	6.5%
			Shadow	5	3.5%
			Mysterious Door	4	3%
			Social Status and Relationships	3	2.25%
			Masked Artist	1	0.75%
Nature and Natural Process	33	24%	Natural Events	10	7%
			Landforms	8	6%
			Animals	7	5.25%
			Minerals	5	3.5%
			Dust	3	2.25%
Flawed Beauty and Contradiction	16	12%	Thorny Rose / Spoiled Fruit	12	9%
			Kintsugi	1	0.75%
			Dimple	1	0.75%
			Karma	1	0.75%
			Shy Theater Actor	1	0.75%
Background Potential	4	3%	Reserve Football Player	2	1.5%
			Pizza Crust	1	0.75%
			Reducing a character's power in a digital game	1	0.75%
Total	138	100%		138	100%

A total of 138 valid metaphors related to the concept of disability were categorized under five main themes and 20 sub-themes. The most frequently employed metaphorical theme by participants was "Dysfunction and Fragility" (31%). Metaphors such as "broken object," "unequipped army," and "subtitle-less movie" indicate that disability is predominantly perceived as an incomplete, flawed, or unfinished state. These expressions reflect a

widespread norm-centric and deficit-oriented perspective on disability within society. The metaphorical theme of "Limitations and Mystery" (30%), with metaphors like "bars," "labyrinth," "mysterious door," and "shadow," suggests that disability is perceived as an unknown entity and a "problem to be solved." Conversely, nature metaphors (24%) reflect that disability is a natural process, while themes of "Flawed Beauty and Contradiction" (12%) point

to a contradictory perspective on disability, encompassing both a meaningful and accepted difference (e.g., dimple, kintsugi) and a negative condition with potential flaws (e.g., thorny rose, spoiled fruit). Three percent of participants associated disability with metaphorical structures that remain in the background (e.g., pizza crust) but hold inherent potential (e.g., reserve football player). This indicates that perceptions of disability are not monolithic and encompass contradictory viewpoints, interwoven with both inclusive and normative biases. Representative quotes from participants' metaphors for disability are as follows:

P121: *'Disability is like a car with a powerful engine but a broken mirror; because even though its engine (i.e., mental capacity) is very powerful, this small but critical malfunction (inadequacy) affecting the field of vision can make it difficult to reach the goal. However, with the right support, both safe and fast progress can be made.'*

P120: *'It's like an artist wearing a mask; the mask shows people a powerful creative mind, but the face beneath shows someone anxious and struggling. Everyone only sees the mask, and because the face is not seen, the difficulty is not noticed.'*

P81: *'It's like a rainbow because differences are beautiful and add color to life.'*

P78: *'A disability accompanying giftedness is like a dimple on the face; because at first glance it seems like a flaw, but in fact, it is a detail that makes that person special, unforgettable, and different.'*

P10: *'Disability is like the crust of a pizza because it is the most disregarded and abandoned part of a pizza, yet the functional part that holds the pizza together and allows us to eat it comfortably is its crust.'*

P44: *'It's like the "nerf" (balancing-weakening) applied to very powerful game characters because if there wasn't such an area of disability, it might be too much for the world.'*

Table 4: Enrolled Participant's Metaphoric Perceptions on Twice Exceptionality

Themes	Answers	Frequency (f)	Percentage (%)
Nature and Natural Phenomena / Universe	Sky (1), Iceberg (1), Moon (1), Cactus/Flower/Tree (5), Fruit (1), Rainbow (1), Ore/Diamond (5), Coal (1), Pearl (1)	17	30%
Technology and Everyday Objects	Double-Sided Tape (1), PC (2), Colored Ballpoint Pen (1), Credit Card (2), Zero Cola (1), Internet (1), Candle (1), Music Box (1), Magnet (3), Key-Lock (1), Tahini-Molasses (1), Sewing Machine (1)	16	28%
Paradoxical Combinations	Leading actor-Extra (1), Metal-Classical Music (1), Unbalanced Scale (3), Black-White (1), Empty-Full Glass (1), Ice-Fire (1), Hydrogen-Oxygen (1), Night-Day (3)	12	21%
Complexity/Challenges	Matryoshka (1), Flat Tire Car (1), Labyrinth (1), Uphill/Challenging Road (2), Unflying Kite (1), Untuned Guitar (2), Crawling Baby (1)	9	16%
Social Phenomena and Diversity	Speaking Different Languages (1), Football Players with Different Strengths (1), War (1)	3	5%
Total		57	100%

It was observed that participants who had enrolled in the 2E course generated a total

of 57 valid metaphors related to 2E. These metaphors were grouped under five main themes and 39 sub-themes. The most dominant theme was nature and natural phenomena, accounting for 30%. Through metaphors such as "iceberg," "diamond," "flower," and "ore," participants characterized 2E as an innate, valuable structure awaiting discovery, often remaining beneath the surface. This was followed by the theme of technology and everyday objects at 28%; metaphors in this category (e.g., magnet, double-sided tape, music box, sewing machine) reveal the multi-functional or versatile nature of twice exceptionality. The paradoxical combinations theme, ranking third at 21%, reflected the contradictory nature of 2E, encompassing both strengths and limitations simultaneously. Metaphors such as "unbalanced scale," "night-day," and "empty-full glass" illustrate this situation. Under the complexity and challenges theme (16%), participants described 2E as a complex and demanding process in terms of understanding and diagnosis. Finally, the social phenomena and diversity theme (5%) emphasized the diversity of 2E

individuals (e.g., different languages, football players with different strengths), while the metaphor of war, a social phenomenon, reflected the struggle dimension inherent in 2E. Opinions from participants who had enrolled in the 2E course are as follows:

P11: 'It's like the sky, boundless.'

P4: 'It's like a multi-colored ballpoint pen because the favorite colors are used a lot, and the unliked colors dry up.'

P1: '2E is like being both the leading actor and an extra on the same stage; because a person can be a shining star in one area, while remaining in the background in another.'

P19: 'It's like a Matryoshka doll because it has nested differences. At the same time, both giftedness and inadequacy exist together, and this complex structure is only understood when carefully observed.'

P46: 'It's like an untuned guitar. Because no matter how much we play it, it won't give us the rhythm and note we want unless we fix its tuning.'

P50: '2E is like war; because there is always a struggle within itself.'

Table 5: Un-Enrolled Participant's Metaphoric Perceptions on Twice Exceptionality

Themes	Answers	Frequency (f)	Percentage (%)
Nature and Natural Phenomena / Universe	Animal (2), Iceberg (2), Complex Weather (4), Cloud (1), Sun (1), Rainbow (5), Flower/Tree (7), Oasis (1), Cracked Diamond/Jewel/Treasure (7), Bad-Tasting Fruit (2), Atom (1), Mud (1)	34	40%
Paradoxical Combinations	Opposite Direction (4), Defense-Attack (1), Opposite Poles (2), Unbalanced Scale (1), Ying-Yang Philosophy (1), Water-Oil (1), Melody without Notes (1), Explorer without Compass (1), Fragile Skyscraper (1), Parallel Universe (1), Candle in the Dark (1), Night-Day (2)	17	20%
Technology and Everyday Objects	Incomplete Puzzle (1), Coin (1), PC (2), Smartphone (2), Artificial Intelligence (1), Calculator (1), Mirror (1), Broken Lightbulb (1), Gift Package (1), Credit Card (1), Chocolate (1), Foggy Glasses (1), Key (1)	15	17%
Complexity/Challenges	Complex Painting (2), Uphill/Challenging Road (2), Labyrinth (1), Mathematics (1), Short Circuit (1), Stony Rice (1), Tired Sailor (1), Patched Kite (2), Left-	12	14%

Handed Musician (1)			
Sports and Art Activities	Football (3), Horse Racing (2), Orchestra (1)	6	7%
Social Phenomena and Diversity	Speaking Different Languages (1), Mosaic (1)	2	2%
Total		143	100%

Data obtained from a total of 143 participants who had not enrolled in the 2E course were categorized into six themes and 51 sub-themes. The majority of the data comprised metaphors under the nature theme (40%). Images such as iceberg (2) and rainbow (5) emphasize both the depth and diversity in nature, while metaphors like bad-tasting fruit (2) and cracked jewel (7) simultaneously highlight the dilemma of potential and flaw/fragility. The second dominant theme, paradoxical combinations, reflects the perception that 2E encompasses both strengths and weaknesses. Metaphors related to technology and everyday objects (17%) represent both functionality (smartphone) and dysfunctional functionality (broken lightbulb), while the challenge theme (14%) expresses the cognitive and emotional struggles and obstacles experienced by 2E individuals. The sub-themes of football and orchestra within the sports and art activities theme (7%) indicate that 2E is perceived as a collective harmony and integrity, while the horse racing image emphasizes 2E's position within a performance-oriented social structure and the role of environmental expectations (family/school) in managing an individual's abilities. The social phenomena and diversity theme (2%) suggests that 2E individuals' experiences in a social context are less prominent compared to other themes (nature, paradox) and that they are not yet sufficiently recognized within social diversity. Participant responses are as follows:

P78: 'It's like a cracked diamond because it holds extraordinary value within, but in its raw state, it doesn't shine enough; it needs to be processed correctly.'

P121: 'I think it's like the Ying Yang symbol; because the white within the black and the black within

the white, I thought of it as inadequacy within giftedness and giftedness within inadequacy.'

P97: 'It's like a cracked lightbulb because it can emit a powerful light, but sometimes it cannot fully show its light due to that crack.'

P70: 'It's like an uphill mountain that leads to a view at the end of the road because sometimes we walk on a flat road, and sometimes we walk on an uphill road full of obstacles, but the end of the road opens up to that beautiful view.'

P73: '2E is like an orchestra; because the sounds of different instruments are unique, but harmony can be achieved together.'

P7: 'It's like two friends speaking different languages; because they embody both similarity and disagreement at the same time—when they come together, a special but challenging communication is required.'

When comparing the metaphorical perceptions of participants who had and had not enrolled in the 2E course, both groups conceptualized 2E as a multi-dimensional construct encompassing both potential and challenges. However, participants who had not enrolled in the 2E course generated more metaphors centered around flaws and dysfunctionality concerning 2E, drawing from nature (especially cracked diamond, bad-tasting fruit), technology (broken lightbulb, incomplete puzzle), and paradoxical combinations (Ying-Yang, explorer without compass). This suggests that they approached giftedness and disability on a more hierarchical and opposing plane. In contrast, participants who had enrolled in the 2E course described giftedness and disability as intertwined, complementary elements in their metaphors (e.g., Matryoshka, music box, sewing machine, double-sided tape), emphasizing

complexity, functionality, wholeness, and versatility. This demonstrates the awareness-raising effect of 2E education, contributing to participants' interpretation of twice exceptionality with a more inclusive and dynamic perspective.

4. Discussion and Conclusion

This study makes significant contributions to the twice-exceptional (2E) literature by deeply examining the metaphorical perceptions of special education teacher candidates regarding the 2E concept. The findings reflect the meanings teacher candidates ascribe to the concepts of giftedness and disability, in addition to 2E, highlighting the differences in perception between participants who took the 2E course and those who did not, and underscoring the importance of education and awareness efforts. Since the concepts of giftedness and disability are covered in courses throughout teacher candidates' undergraduate education, the factor of having taken a course or not was not considered when addressing these concepts. However, as 2E is an optional subject, whether or not participants took this course was considered an important factor for comparing their perceptions on 2E.

The study's findings indicate the existence of a hierarchy between giftedness and disability as a result of societal norms. While metaphors for disability generally reveal a perception of disability as a deficiency and inadequacy, an examination of metaphors related to giftedness suggests that giftedness is viewed as an innate, rare, and raw potential requiring cultivation. This perception aligns with the general acceptance that gifted individuals are valuable assets to be discovered and developed. However, instead of viewing disability and giftedness merely as differences (Deleuze and Guattari, 1987), these metaphors support Foucault's (1977) theory of power relations, where societal norms prioritize giftedness and marginalize disability.

The differences between participants who took the 2E course and those who did not highlight the importance of awareness and

education in this field. Participants who did not take the 2E course perceived 2E more through metaphors like 'cracked diamond' or 'broken light bulb,' indicating a situation that holds potential but also contains flaws and dysfunction. This suggests that they approached giftedness and disability in a more hierarchical and opposing manner. This finding supports the risk that the disabilities of 2E individuals may mask their talents and lead to misdiagnoses (Reis et al., 2014). Participants who took the 2E course emphasized complexity, functionality, wholeness, and versatility in their metaphors for 2E, using terms like 'matryoshka doll,' 'music box,' and 'double-sided tape.' This finding aligns with Deleuze and Guattari's (1987) rhizomatic thinking, revealing that both giftedness and disability are fundamentally differences that create value and are holistically and complexly interconnected. This situation clearly demonstrates the awareness-raising effect of 2E education, contributing to teachers candidates' development of a more inclusive and holistic perspective on twice-exceptionality. Considering that special education teachers are responsible for maximizing the talents of 2E children and developing appropriate interventions for their disabilities, the importance of such education further increases.

Şakar and Köksal (2021), in their study examining the metaphorical perceptions of special education teacher candidates towards 2E, reached similar findings by focusing on the contradictory and challenging nature of 2E, revealing that the concept was largely perceived as a contradictory structure by teacher candidates. This study, however, distinctly demonstrates the transformative effect of education on perceptions between those who took the 2E course and those who did not, while also reflecting the existence of a normative hierarchy between disability and giftedness. In their quantitative study with 138 teachers, Çolak and Çetin (2014) concluded that demographic characteristics (marital status, educational background, presence of a disabled individual in the family) influenced teachers' perceptions and attitudes towards disability. They also revealed

that societal prejudices were seen as the biggest barrier to the participation of disabled individuals in society. Therefore, the findings of the related study indirectly point to the need for awareness and education, similar to the findings in this research.

Bulut (2018), in a study examining the metaphorical perceptions of classroom teacher candidates regarding gifted individuals and special education concepts, revealed that participants emphasized the intelligence and performance of gifted individuals, believing they possessed supernatural powers and were individuals waiting to be discovered. However, when examining participants' perceptions of special education, a belief was identified among participants that the scope of special education only included intellectual disabilities or other disabilities. The research states that this situation was thought to stem from a lack of knowledge and experience. Therefore, similar to the findings in this study, the related study also emphasized the hierarchy between disability and giftedness and highlighted the importance of education.

In their research, Özbey Gökçe and Çakmakçı (2021) examined the metaphorical perceptions of 137 special education, preschool, and psychological counseling and guidance (PCG) teacher candidates regarding gifted children. The findings reveal that participants interpreted giftedness through main themes such as productivity, power, value, extraordinariness, complexity, infinity, and universe. Among these themes symbolizing the participants' metaphors, the 'value' theme stands out, emphasizing giftedness as a hidden mine waiting to be discovered. Therefore, the findings of the current study are consistent with those of Özbey Gökçe and Çakmakçı (2021). The attribution of superiority and extraordinariness to giftedness, as well as its positioning as an undiscovered or hidden resource, indicates that teacher candidates evaluate giftedness as both a great potential and a dimension encompassing uncertainty and duality.

5. References

Studies examining perceptions of twice-exceptionality (2E) have been observed to be very limited in the literature. This study examined the perceptions of teacher candidates regarding 2E; however, future research should focus more on the perceptions, attitudes, and experiences of families and teachers regarding 2E. This will better fill the gaps in the field and facilitate the identification of situations requiring collaboration. Based on the research results, it can be said that education and awareness are effective on 2E perception; however, societal norms and prejudices have a negative impact on the development of perceptions. Therefore, the identification and assessment of 2E individuals and their receipt of appropriate education is the ultimate goal of the 2E field. However, before this goal, it is important to develop awareness about the concept of difference. Within the 2E framework, disability and giftedness are understood as forms of difference rather than deficits or advantages; therefore, a normative hierarchy between these two seemingly paradoxical conditions is rejected. Accordingly, the topic of 2E should be given more prominence in special education teacher undergraduate programs, and the content of courses in this area should be enriched to enable teacher candidates to develop a more inclusive and holistic perspective on 2E individuals. Interdisciplinary collaboration should be encouraged among special educators, psychologists, guidance counselors, families, and other relevant specialists in the process of educating and supporting 2E individuals. This collaboration will offer a comprehensive approach that supports the individual's holistic development.

Acknowledgments

The authors acknowledge.

Conflict of interests and authorship of the article

The authors declare that there is no conflict of interest.

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