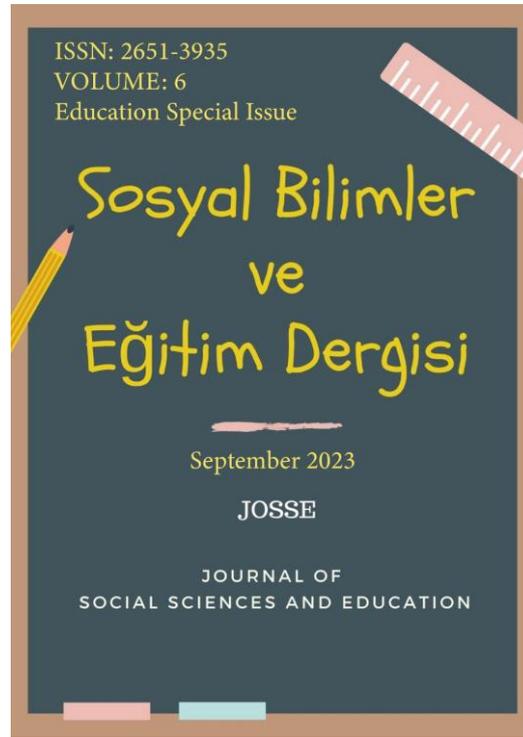# JOURNAL OF SOCIAL SCIENCES AND EDUCATION (JOSSE)

Special Education Master's Students' Metaphorical Perceptions of Children Having High-Functioning Autism Spectrum Disorder

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ABSTRACT	Research Article

In the current study, aimed to determine the metaphorical perceptions of students receiving graduate education in the field of special education about high-functioning autism spectrum disorder. The study employed the phenomenological design, one of the qualitative research techniques, as the research method. The study group consists of 75 students pursuing a master's degree in the Department of Special Education in the Faculty of Education at five different state universities during the spring term of the 2022-2023 academic year. The participants of the study were selected by using the convenience sampling method. The participants' perceptions regarding children with high-functioning autism spectrum disorder were determined using a data collection tool that included the phrase "Children with high-functioning autism spectrum disorder are like... to me; because..." and questions to elicit demographic information of the participants. The data collected from the participants were analyzed using the content analysis method. In this study, the participants, who were master's students in the Special Education Department, generated 75 metaphors regarding children with a high-functioning autism spectrum disorder. The metaphors derived from the data obtained from the participants were grouped and categorized into 6 categories based on their common characteristics as a result of the review of experts. When the generated metaphors were examined, it was seen that the participating students mostly liken children with high-functioning autism spectrum disorder to concepts such as flowers, rainbows, stars, boxes and computers. The study results indicate that the metaphors generated by the participants regarding children with high-functioning autism spectrum disorder are generally expressed through positive and concrete concepts.

Keywords: High-functioning autism spectrum disorder, metaphor, perception, special education

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Introduction

It is essential for individuals with special education needs to continue their lives as integrated into society and respected like other members of community. The teacher plays the most significant role in educating students with special education needs. In addition to being an expert in the field, the special education teacher should be compassionate, have a strong sense of empathy, and understand the other person. This sensitivity of the teacher is fed by their professional competencies and technical knowledge, as well as his/her ethical understanding (Soyer, 2010). Special education teachers in Turkey graduate by completing the Special Education undergraduate program in education faculties. In 2016, the fields of "Teaching Hearing Impaired Students, Teaching Intellectually Disabled Students, Teaching Visually Impaired Students and Teaching Gifted Students" were merged into a single program called Special Education (Yükseköğretim Kurumu [YÖK], 2016). In their study by Çitil, Karakoç and Küçüközyiğit (2018); states that although the theoretical knowledge of teacher candidates taking special education courses has increased in the field of special education, the lack of change in their attitudes towards individuals in need of special education is due to the fact that the content of the course is only theoretical and the weekly lesson hours are insufficient. As a result of this study, a suggestion is made to make an application that ensures that the special education course taken by prospective teachers is intertwined with experience after being covered theoretically. When approached from this perspective; In fact, it can be said that special education teachers must first master the characteristics of the student group they address, in order to provide accurate and effective education due to the large and diverse variety of students with special needs they teach.

Individuals with special education needs continue their education through different educational programs and learning environments tailored to their specific needs. Quality in the education of individuals with special needs can only be achieved when it is delivered by the personnel specialized in special education. One of the groups of individuals in need of special education is people who are diagnosed with autism spectrum disorder (ASD) (Millî Eğitim Bakanlığı [MEB], 2018). Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that typically manifests itself in early childhood with limited social skills and repetitive behaviors (Turhan and Vuran, 2015). Individuals with high-functioning autism spectrum disorder are those who, despite their existing intellectual capacities, struggle to perceive and interpret social situations. They often have low awareness of the rules that

govern social situations, which can adversely affect their quality of life due to associated social skills deficits (Andari et al., 2009). High-functioning autism spectrum disorder is a term used to describe autistic individuals with delayed language development but no intellectual impairment (Montgomery et al., 2016). In various studies conducted using the Rorschach test in individuals with high-functioning autism spectrum disorder, it has been suggested that there are difficulties in perceiving reality accurately, perceptual testing and cognitive functioning (Ghaziuddin et al., 1995). One of the most typical characteristics distinguishing individuals diagnosed with high-functioning autism spectrum disorder from others is social skills deficits (Andanson et al., 2011).

Metaphors are the most important tool in facilitating the interpretation of words. Metaphors enable us to understand individuals' true thoughts more utilitarianly (Youmans, 2004). Metaphors are one of the tools that can be used to express perceptions (Müldür and Çevik, 2017). Metaphors are one of the best tools for expressing a thought with a rich language. Metaphors reveal the perceptions of concepts (Yalçın and Erginer, 2012). Metaphors assist in explaining something with as few words as possible and more emphatically (Ertürk, 2017). Therefore, metaphors are frequently used in educational and conceptual studies. In special education, various metaphor studies have been conducted on different sample groups and specific concepts related to special education. In the literature, studies have been conducted on the perceptions of pre-service teachers, university students, parents, and teachers regarding high-functioning autism spectrum disorder (Akkaya-Yılmaz, 2017; Akoğuz, 2014; Biçimli, 2022; Çandır, 2015; Genç, 2021). These studies generally examine the education of individuals diagnosed with high-functioning autism and how participants perceive autism. It has been found that sample groups tend to perceive autism more negatively, while teachers and pre-service teachers perceive autism more positively. For instance, a study conducted to identify the challenges elementary school students having high-functioning autism spectrum disorder face in inclusive education, the following factors were determined to cause problems: time, support services, priorities, materials, and how personnel perceives them. Individualized support, preliminary preparation, and increasing motivation were among the suggestions to overcome these difficulties (Silveira-Zaldivar and Curtis, 2019). In a study examining the perceptions of primary teachers regarding autism and inclusive practices, it was stated that teachers' most prominent perceptions of autism were social challenges and focused/restricted interests (Bolorian et al., 2022). Eliminating the shortage of teachers who are graduates of different branches and who do not work in schools

as special education teachers through a special education certificate program or master's degree should be addressed by the Ministry of National Education, but rather than ensuring that those working in the field of special education are employed, emphasis should be placed on their mastery of the field or the teacher qualifications they will need in the field (Ünlü, Melekoğlu and Ünlü, 2019). In this context, the fact that low-frequency student groups in need of special education, who graduated from the field or from outside the field and who are doing a master's degree in the field of special education, recognize the characteristic features or have the basic features at the beginning, is in terms of encouraging them to be recognized in latent, unrecognizable activities. It may be important. Relationships in this direction; The forces that are becoming popular in the literature today are family groups, especially for groups diagnosed with high-functioning autism in low-frequency special education.

While attitudes have a function that can lead to changes in individuals' behaviors, they are also effective in developing their self-identity (Kağıtçıbaşı, 1996). Individuals of school age are exposed to different attitudes of teachers regarding their positive and negative behaviors. These teacher approaches they encounter are an effective factor in the psycho-social development of students (Şipal, 2004). In order to destroy the negative social perception towards individuals in need of special education and to ensure the integration of individuals in need of special education into society, the awareness of special education teachers must be high in every field of special education (Akyıldız, 2017). It can be said that the scientific studies conducted have a positive impact on special education pre-service teachers by creating awareness of different subgroups of students with special needs. Bozkuş-Genç (2021) stated that pre-service teachers in the special education teaching department had more negative feelings and thoughts about individuals with High-Functioning Autism and pointed out that the teachers' attitudes changed positively at the end of the study. It is thought that determining the awareness of special education teachers or teachers of other branches about student groups that need special education may help develop lesson plans to be delievered in the undergraduate and graduate education process.

It is observed that there is limited research on determining the perceptions of students pursuing a master's degree in special education in Turkey regarding individuals with special education needs. On the subject of high-functioning autism spectrum disorder, it has been observed that there is limited research in the literature on the perceptions of master's students studying in the field of special education. Furthermore, given that high-functioning autism is a newly emerging topic in Turkey and the scarcity of in-depth qualitative and metaphorical

studies in this regard, this study is considered to be significant. Perceptions of the concept of "high-functioning autism" determined through metaphors and the orientation shown by these perceptions reveal insights on what kind of roles should be adopted by teachers while attending to students in need of special education. It is thought that determining the perceptions of special education teachers regarding the concept of "high-functioning autism" will subsequently contribute to the arrangements needed to shape and develop this perception. Therefore, the purpose of the current study is to determine the metaphorical perceptions of students pursuing a master's degree in the field of special education about high-functioning autism spectrum disorder. The research question of this study is "What are the metaphorical perceptions of master's students in the special education department regarding high-functioning autism spectrum disorder?" Within the context of this question, answers to the following sub-problems will be sought:

1. What are the metaphors created by students pursuing a master's degree in special education regarding children with high-functioning autism spectrum disorder?

2. In terms of common characteristics, within which concept categories are the metaphors created by students pursuing a master's degree in special education regarding children with high-functioning autism spectrum disorder gathered?

3. What are the justifications and explanations behind the metaphors created by students pursuing a master's degree in special education regarding children with high-functioning autism spectrum disorder?

Method

In this section, the design of the study, the study group and the collection and analysis of data will be discussed.

Model

The current study employed the phenomenological design, one of the qualitative research methods. Phenomenological research reveals the meaning and importance of experiences about a concept or phenomenon for individuals (Kıral, 2021). This design is used to reveal participants' perceptions of a situation or event, their way of making sense of it and their personal experiences. In the current study, the phenomenological research design was

chosen because the aim was to reveal the perceptions of students in the special education teaching department regarding children with high-functioning autism spectrum disorder through the use of metaphors.

Population and Study Group

The population of this study consists of students pursuing a master's degree in the field of special education in Turkey. The study group consists of 75 students who are pursuing a master's degree in the Department of Special Education in the Faculty of Education at five different state universities during the spring term of the 2022-2023 academic year. The participants were selected through convenience sampling, one of the purposive sampling methods.

Convenience sampling, which is one of the purposive sampling methods, enables the researcher to easily access a sample for data collection purposes (Büyüköztürk et al., 2008). Demographic characteristics of the study group are presented in Table 1.

Table 1

Demographic Characteristics of the Participants

Characteristic		Frequency(f)	Percentage(%)
Gender	Female	44	58.7
	Male	31	41.3
	Total	75	100
Type of the Master Program	Thesis program		
	Non-thesis program	23	30.7
	Total		
		52	69.3
		75	100
Undergraduate Program Graduated	Special education		
	Other	41	54.7
	Total	34	45.3
		75	100

As seen in Table 1, 44 (58.7%) of the participants are female, and 31 (41.3%) are male. It is also seen that of the students participating in the study and pursuing a master's degree in special education, 23 (30.7%) are enrolled in a thesis program, while 52 (69.3%) are enrolled in a non-thesis program. When the undergraduate programs they graduated from are examined, it is seen that 41 students (54.7%) graduated from special education programs, while 34 students (45.3%) graduated from other departments.

Data Collection

Data regarding the participants' perceptions of children diagnosed with high-functioning autism spectrum disorder were collected using a metaphor method through an open-ended questionnaire. The form used in the study consists of two parts. The first part consists of questions to elicit information about the participants' gender, type of the master program and undergraduate program. The second part, on the other hand, is designed to determine the metaphors related to children diagnosed with high-functioning autism spectrum disorder, using the phrase "Children with high-functioning autism spectrum disorder are like... to me because...". In scientific research, such phrases are used to determine metaphorical perceptions. In such phrases, the preposition "like" is used to make a simile and the conjunction "because" is used to indicate in which sense the simile is used (Saban, 2008).

After the instruction, which contains brief information about the meaning of the metaphor, was read, the form was distributed to the participants. A few sample applications were made in order to demonstrate how to fill out the form. Afterwards, they were asked to complete the sentence in the form based on their ideas about children with high-functioning autism spectrum disorder. The purpose of the study is to determine the metaphorical perceptions of the students who receive graduate education in the field of special education about children with high-functioning autism spectrum disorder. This form, which includes written explanations, constitutes the main data source of the study.

Analysis of Data

In this qualitative study, descriptive survey model were used. In this study, the information collected from the participants was analyzed by using the content and descriptive analyzes methods. The descriptive content analysis method means determining the general trends on the subject by examining the qualitative data in detail (Ültay et al., 2021). The main purpose of content analysis is to reach the concepts and relationships that can explain the collected data. Concepts lead us to themes, and through themes we can organize things better and make them more understandable. In this framework, it is tried to define the data through content analysis and to reveal the truths that may be hidden in the data (Yıldırım and Şimşek, 2013). Qualitative data collected in this study were analyzed in four stages: (1) Coding the data, (2) finding the themes, (3) organizing the codes and themes, and (4) defining and interpreting the findings.

Establishing Validity and Reliability

As in other research studies, the reliability and validity of the measurement results in metaphorical studies should be tested. This is accepted as the most important indicator of increasing the credibility of the findings obtained in a qualitative study (Lincoln and Guba, 1986). A sufficiently large sample was selected to demonstrate the credibility of this qualitative study. The research data and process were described in detail. Providing sufficient time during the data collection process of the current study allowed the study group to express their opinions more comfortably. Thus, the validity of the collected data was increased. In qualitative studies, situations such as misinterpretation of data obtained, categories formed based on closed-ended responses or reaching conclusions on the basis of insufficient data jeopardize the credibility of the study. Therefore, the examination of the study by experts specialized in qualitative research methods and who possess sufficient knowledge and experience in the field is one of the most important issues in terms of credibility (Creswell, 2003). In this study, which examines the metaphorical perceptions of graduate students in the special education department about children with high-functioning autism spectrum disorder, the expertise of two experts specialized in qualitative approaches was drawn on. The two experts contributed with a critical perspective throughout all the stages of the study and provided feedback to the researchers.

The results of a study should be transferable to similar study groups and settings (Houser, 2015). The selection of the sample, the characteristics of the study group and the setting are used to demonstrate transferability in qualitative research (Sharts-Hopko, 2002). In this study, the categorization, grouping and analysis of the metaphors obtained about children with high-functioning autism spectrum disorder, explanations made about the metaphors in the findings section and conducting a comprehensive literature review increased the transferability.

During the data collection stage of the study, allowing the study group to express their own thoughts, avoiding any form of guidance, and presenting a detailed report on how the data analysis is conducted positively influence the validity of the study (Creswell and Poth, 2016). The researchers, who conducted the study, grouped 75 independently produced metaphors into six categories, taking into account the explanations. Afterwards, the list of 75 metaphors and six categories produced for children with high-functioning autism spectrum disorder was given to two experts and they were asked to match the metaphors with the categories. As a result of the comparison, the reliability of the study was determined by using

the formula of Miles and Hubermann (1994): "(Reliability = (agreement/agreement + disagreement) x 100)". In qualitative studies, if the consistency between the evaluations of the researcher and the expert is 90% and above, it means that reliability is achieved (Saban, 2008). In the reliability study, two experts whose opinions were consulted included three metaphors (those stuck in between, snowball, diamond) in different categories than the researchers did. As a result, the reliability was calculated to be (72 / 72+3) x 100 = 96%.

Compliance with Ethical Standard

At all the stages of this study, a great care was taken not to violate the ethical rules and ethical rules were precisely followed. Ethical approval for the study was obtained as a result of the decision numbered 01-54 and taken in the session numbered 08 on May 16, 2023 by the Ethics Committee of Tokat Gaziosmanpaşa University.

Findings

In this section, the findings regarding the metaphors developed by the graduate students in the special education department toward children with high-functioning autism spectrum disorder are presented sequentially using tables and explanations.

Metaphorical Perceptions of Graduate Students in the Department of Special Education about Children with High-Functioning Autism Spectrum Disorder

The study employed a form consisting of an open-ended question and used the metaphor technique to determine the perceptions of graduate students in the Department of Special Education about children with a high-functioning autism spectrum disorder. The views of the participants were collected digitally using Google Forms. Any tool that adds different meanings to a concept or situation beyond its dictionary definition; allowing the depiction of another entity, concept, or situation, is called a metaphor (Deant-Szokolszky, 1993).

A person's cognitive approach to any subject and how he/she sees this subject can be determined through metaphors (Short, 2000). It should not be overlooked that metaphors have disadvantages as well as advantages. In this sense, it is impossible to find a single metaphor that clearly expresses a phenomenon. It is important not to forget the power of metaphors to reveal different aspects of a phenomenon (Morgan, 1998). Metaphors are one of the most

powerful mental tools that shape, direct, and control our ideas about the occurrence and functioning of events (Saban, 2004). Metaphor studies are used in many different disciplines in education. When the relevant literature is reviewed, it is seen that there are metaphor studies on education administrators (Cerit, 2008; Çobanoğlu and Gökalp, 2015; Singh, 2010), teaching (Ben-Peretz et al., 2003; Çelikkaya and Seyhan, 2017; Çelikten, 2006; Er-Tuna, 2019; Göçer and Aktürk, 2015; Impecoven Lind, 2004), student (Alım et al., 2018; Kahyaoğlu, 2015; Koçak, 2011), school culture and class rules (Ha and Kim, 2021), educational sciences (Saban, 2006), teachers' metaphorical perceptions of classroom and classroom management (Örücü, 2012), spoken language (Tompkins and Lavley, 2002), child (Demirbaş, 2015; Kuyucu et al., 2013), applications in the field of education and instruction (Lakoff and Johnson, 1980).

According to the findings of the current study, the participants, who are graduate students at the Department of Special Education, produced 75 metaphors for children with high-functioning autism spectrum disorder (Table 2). The generated metaphors and their frequencies (f) are shown in Table 2. When Table 2 is examined, it is seen that 75 metaphors obtained were grouped into six categories in line with expert opinions. In the study, "flower (N=6)" was found to be the most used metaphor. It is seen that the metaphors produced by the participants about children with high-functioning autism spectrum disorder are generally expressed with positive and concrete concepts (Table 2).

Table 2

Metaphors Developed by the Graduate Students at the Department of Special Education Regarding Children with High Functioning Autism Spectrum Disorder

Number	Metaphor	*f*	%	Number	Metaphor	*f*	%
1	Tree	1	1.33	26	Snowball	1	1.33
2	Alarm Clock	1	1.33	27	Rock	1	1.33
3	Those Stuck in Between	1	1.33	28	Uncharted Land	1	1.33
4	Gift	2	2.66	29	Book	2	2.66
5	Workshop	1	1.33	30	Box	3	4.00
6	Mirror	1	1.33	31	Moneybox	1	1.33
7	Spring	1	1.33	32	Labyrinth	2	2.66
8	Computer	3	4.00	33	Mineral	1	1.33
9	Blank Notebook	2	2.66	34	Matryoshka Doll	1	1.33
10	Blank Canvas	1	1.33	35	Angel	1	1.33
11	Glass	1	1.33	36	Special	2	2.66
12	Flower	6	8.00	37	Ocean	2	2.66
13	Rough Sea	1	1.33	38	Shortcut	1	1.33
14	Decorative Flower Pot	1	1.33	39	Precious Stone	1	1.33

15	Diamond	2	2.66	**40**	Puzzle	2	2.66
16	A Book in a Different Language	1	1.33	**41**	Robot	1	1.33
17	Sapling	2	2.66	**42**	Surprise Egg	2	2.66
18	Rainbow	5	6.66	**43**	Peg Top	1	1.33
19	Raw Material	1	1.33	**44**	Messenger	1	1.33
20	Dough	1	1.33	**45**	Source of Life	1	1.33
21	Gift Box	1	1.33	**46**	Toddler	1	1.33
22	Gift Pack	1	1.33	**47**	Star	3	4.00
23	Superhuman Being	1	1.33	**48**	Road	1	1.33
24	Cactus	1	1.33	**49**	Rubik's Cube	1	1.33
25	Wingless Bird	2	2.66				
					Total	**75**	**100**

Of the total of 75 metaphors produced in the current study, 16 (diamond, sapling, labyrinth, blank notebook, special, computer, wingless bird, puzzle, flower, box, ocean, surprise egg, book, gift, rainbow, star) were used by 2 to 6 participants while 59 of them were developed by only one participant.

Categories for the Metaphors Developed by the Graduate Students at the Special Education Department Regarding Children with High Functioning Autism Spectrum Disorder

The metaphors derived from the data obtained were grouped according to their common features and gathered into 6 categories by taking expert opinions. The metaphors collected in 6 categories are listed and shown in Table 3.

Table 3

Categories of the Metaphors Developed by the Graduate Students at the Special Education Department Regarding Children with High Functioning Autism Spectrum Disorder

No	Categories	Metaphors	f	%	NoM	%
1	**Patience**	Diamond (2), decorative flower pot (1), cactus (1), dough (1), sapling (2), labyrinth (2), road (1).	10	13.33	7	14.28
2	**Unique**	Blank notebook (2), special (2), messenger (1), mirror (1), computer (3), rock (1), shortcut (1), Rubik's Cube (1)	12	16.00	8	16.32
3	**Attention**	Toddler (1), wingless bird (2), tree (1), puzzle (2), flower (6), raw material (1), source of life (1), glass (1)	15	20.00	8	16.32
4	**Mysterious**	Gift pack (1), box (3), uncharted land (1), ocean (2), surprise egg (2), blank canvas (1), matryoshka doll (1), book (2), moneybox (1)	14	18.66	9	18.36
5	**Valuable**	Workshop (1), precious stone (1), rough sea (1), gift (2), angel (1), mineral (1)	7	9.33	6	12.24

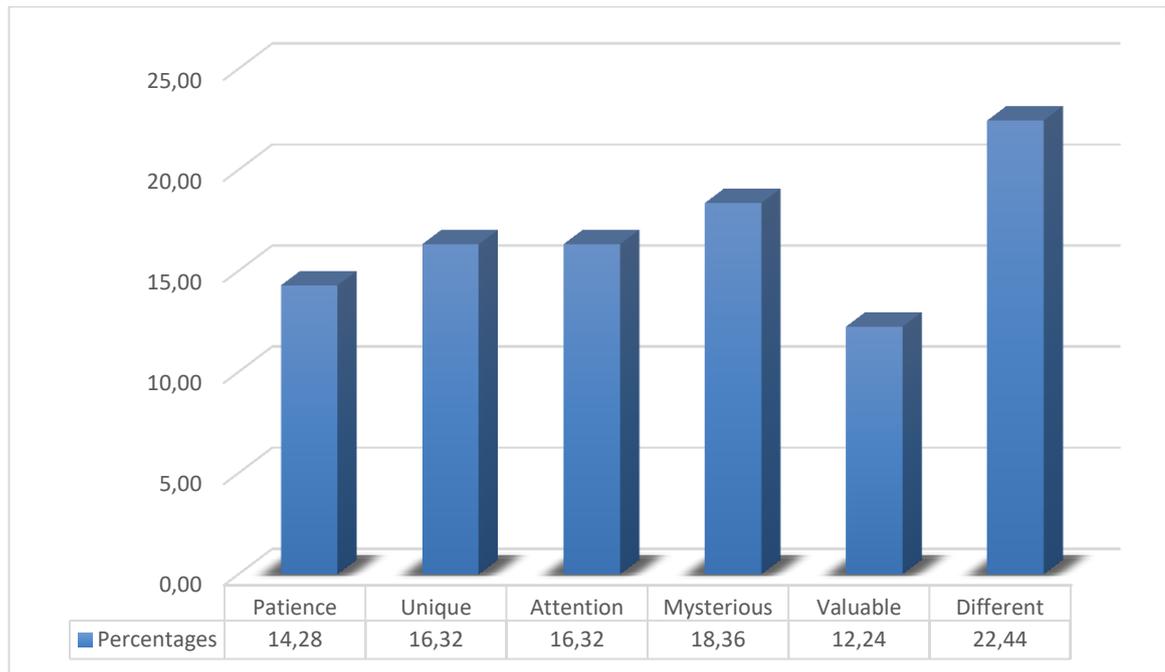| 6	Different	A book in a different language (1), rainbow (5), gift box (1), star (3), snowball (1), peg-top (1), alarm clock (1), superhuman being (1), spring (1), robot (1), those stuck in between (1)	17	22.66	11	22.44
	Total		**75**	**100**	**49**	**100**

Note: NoM: Number of Metaphors

A total of 75 metaphors developed by the graduate students at the Special Education Department regarding children with high-functioning autism spectrum disorder were grouped into six categories (Figure 1).

Figure 1

Percentages of the Categories of the Metaphors Developed by the Graduate Students at the Special Education Department regarding Children with High Functioning Autism Spectrum Disorder

When the frequency and number of the metaphors created in the study are examined, it is seen that 7 (f=10) metaphors were created in the category of patience, 8 (f=12) in the category unique, 8 (f=15) in the category of attention, 9 (f=14) in the category of mysterious, 6 (f=7) in the category of valuable and 11 (f=17) in the category of different. Thus, a total of 49 metaphors (f=75) were created.

Conceptual Categories

The metaphors produced by the participants and classified into six categories and validated through expert opinions are presented in tables together with their accompanying explanations.

1. **Explanations in the Category of Patience**

Sample explanations for the metaphors in the category of patience are given in Table 4.

Table 4

Metaphors in the Category of Patience and Sample Explanations

Metaphor	Sample Explanation
Decorative Flowerpot	*"If necessary, care is taken, flowers will grow inside. Remains as an ornament if proper care is not taken (S54)."*
Diamond	*"Making a diamond is difficult. It requires patience. Similarly, assisting children with high-functioning autism to bring out their existing performance also works the same way. It requires patience. But the result is highly valuable, like a diamond (S14)."*
Diamond	*"Because it needs to be carefully crafted and nurtured (S51)."*
Sapling	*"Because it grows and flourishes as you keep nurturing it. It blooms, bears fruit (S68)."*
Sapling	*"Because they require attention and care. They are sensitive, delicate, and not prone to being hurt (S38)."*
Dough	*"If you dedicate enough time and effort, and work in a disciplined manner, it is impossible not to achieve results. You can shape it as you desire (S58)."*
Cactus	*"Because I cannot predict what kind of flower will bloom in the end (S55)."*
Labyrinth	*"Because there are multiple and complex paths to reach the goal (S75)".*
Labyrinth	*"Because in order to understand children with high-functioning autism spectrum disorder, different approaches should be tried (S25)."*
Road	*"We need to carefully understand children with high-functioning autism spectrum disorder and then follow up with proper monitoring. Collaborative efforts between school and family are required to facilitate the child's integration into society (S63)."*

This category includes the statements of students who think that children with high-functioning autism spectrum disorder require patience. This category is represented by 10 special education graduate students and 7 metaphors (Table 4). In the category of patience, there are diamond (N=2), decorative flowerpot (N=1), cactus (N=1), dough (N=1), sapling (N=2), labyrinth (N=2), and road (N=1) metaphors. Among the total of 6 categories included in the study, the category of patience accounts for 13.33%.

2. Explanations in the Category of Unique

This category is represented by 12 graduate students from the Department of Special Education and 8 metaphors. Sample explanations for the metaphors in the category of unique are given in Table 5.

Table 5

Metaphors in the Category of Unique and Sample Explanations

Metaphor	Sample Explanation
Mirror	*"Because it reflects what it sees from the other person (S67)."*
Computer	*"Because they have a very high memory (S18)."*
Computer	*"Because they are fast and clear in understanding and analyzing (S61)."*
Computer	*"Because the brains of children with high-functioning autism spectrum disorder are unique. If given the opportunity, great talents emerge (S30)."*
Blank Notebook	*"Because if we can understand them and provide proper guidance without delay, we can fill that notebook beautifully. Otherwise, there will be many gaps in that notebook. This, in turn, will lead to many problems in later years (S7)."*
Blank Notebook	*"Because their memory is as clean as the page of a blank notebook. This notebook must be filled in correctly so that they can be prepared for life, live without needing anyone, and be useful to others (S31)."*
Rock	*"Because they are very strong emotionally, they are not easily affected by external influences (S19)."*
Special	*"Because these individuals exhibit similar characteristics to typically developing children in terms of IQ, they show significantly different traits in areas such as science, mathematics, and art. I am aware that their diagnosis is quite challenging. I have heard that this disorder is believed to be present in individuals who have excelled and stood out in society in these fields. They are said to experience more difficulties in social and emotional aspects. I believe these children are special (S8)."*
Special	*"Because their education is given more intensively and individually (S10)."*
Messenger	*"Because they inform us from a different domain of consciousness (S53)."*
Shortcut	*"Because you cannot see the crowded masses there; you walk alone on that path full of ups and downs, but at the end of the road, you may surpass others (S21)."*
Rubik's Cube	*"Because they are active, curious and learning creatures (S37)."*

In the category of unique, there are blank notebook (N=2), special (N=2), messenger (N=1), mirror (N=1), computer (N=3), rock (N=1), shortcut (N) =1), Rubik's Cube (N=1) metaphors. Among the total of 6 categories included in the study, the category of unique accounts for 16%.

3. Explanations in the Category of Attention

The category of attention is represented by 15 graduate students from the Department of Special Education and 8 metaphors. Sample explanations for the metaphors in the category of attention are given in Table 6.

This category includes the statements of students who think that the education of children with high-functioning autism spectrum disorder requires attention.

Table 6

Metaphors in the Category of Attention and Sample Explanations

Metaphor	Sample Explanation
Tree	*"Because if they are supported according to their interests and talents, they can achieve much better development and produce remarkable outcomes (S12)."*
Glass	*"Because just like glass can shatter with a small impact, the hearts of children with high-functioning autism spectrum disorder can be easily broken (S27)."*
Flower	*"Due to their differences from typical individuals, they experience limitations and challenges. Therefore, they are in need of special attention and support (S43)."*
Flower	*"They are like a section of a flower that has bloomed in a different color, as they are valuable flowers with distinct characteristics that set them apart from the majority in terms of their creation (S47)."*
Flower	*"Because they are like precious flowers (S20)."*
Flower	*"Because they do not exhibit typical development compared to their peers, their care and attention needs should be met (S36)."*
Flower	*"Because if you don't show them attention, they wither, fail to thrive, and eventually wilt (S69)."*
Flower	*"Because they are as delicate and graceful as a flower. They require guidance and direction. Just like a flower, they blossom and develop in the direction they are guided (S39)."*
Raw Material	*"Because they are malleable raw materials. They vary depending on the shape given to them, much like how raw materials can be molded into different forms (S40)."*
Wingless Bird	*"Because they need the help of others (S32)."*
Wingless Bird	*"Because they need love. Feeding them with love makes them free (S28)."*
Puzzle	*"Because we need to find the pieces that will correctly complete a whole, like the pieces of the puzzle, and create the picture (S2)."*
Puzzle	*"Because initially, when you first take them out of the box, they are disordered and chaotic. However, as we start organizing and placing the pieces in their respective positions, they begin to make sense and each small piece placed brings excitement and contributes to the overall meaning. When the puzzle is completed, a stunningly beautiful product emerges (S42)."*
Source of Life	*"Because if approached correctly, they can become a source of happiness, joy, and hope (S29)."*
Toddler	*"Because both of them rely on others to exist and succeed (S9)."*

In the category of attention, there are toddler (N=1), wingless bird (N=2), tree (N=1), puzzle (N=2), flower (N=6), raw material (N=1), a source of life (N=1) and glass (N=1) metaphors. Among the total of 6 categories included in the study, the category of attention accounts for 20%.

4. Explanations in the Category of Mysterious

The metaphors and sample explanations in the category of mysterious are shown in Table 7. The category of mysterious is represented by 14 graduate students from the Department of Special Education and 9 metaphors. This category includes student sentences

that try to reveal the unknown and mysterious aspects of children with high-functioning autism spectrum disorder (Table 7).

Table 7

Metaphors in the Category of Mysterious and Sample Explanations

Metaphor	Sample Explanation
Blank Canvas	*"Because it is unpredictable what kind of picture will emerge in the end (S56)."*
Gift Pack	*"You don't know what surprise will come out of it (S11)."*
Uncharted Land	*"Because no one knows what it might do when it's discovered further (S15)."*
Book	*"Because he/she has the intelligence to know everything in his/her fields of interest (S49)."*
Book	*"Because it contains a lot of information in itself (S70)."*
Money Box	*"Because the money box is often locked. We can see the value inside when we unlock it (S59)."*
Box	*"Because we don't know what's in it. It should be researched, studied, and explored (S4).*
Box	*It is not clear what will come out of it (S13)."*
Box	*"Because they have unique personalities. How we approach them, how we treat them with kindness, the empty box becomes the most beautiful entity (S26)."*
Matryoshka Doll	*"Because children with high-functioning autism spectrum disorder differentiate in cognitive, social, linguistic, and other areas, and reaching them fully requires time and a continuous effort. Therefore, they can be likened to matryoshka dolls (S60)."*
Ocean	*"Because it contains many ores in its depths that we need to figure out what it is and how it happened (S22)."*
Ocean	*"Because as we go deeper into the ocean, we discover more mysterious aspects of it (S74)."*
Surprise Egg	*"Because it is not clear what is outside, but you can open the inside and see the gift (S35)."*
Surprise Egg	*"Because you never know what will come out of it (S72)."*

In the category of mysterious, there are gift box (N=1), box (N=3), uncharted land (N=1), ocean (N=2), surprise egg (N=2), blank canvas (N=1), matryoshka doll (N=1), book (N=2), money box (N=1) metaphors. Among the total of 6 categories included in the study, the category of mysterious accounts for 18.66%.

5. Explanations in the Category of Valuable

The metaphors and sample explanations in the category of valuable are shown in Table 8. This category is represented by seven graduate students from the Department of Special Education and six metaphors. This category includes student statements that try to reveal the valuable aspects of children with high-functioning autism spectrum disorder (Table 8).

Table 8

Metaphors in the Category of Valuable and Sample Explanations

Metaphor	Sample Explanation
Gift	*"Because they have a value that will add a lot to this world with their differences (S65).*
Gift	*Because within children with high-functioning autism spectrum disorder, whom we perceive as challenges in our lives, there are hidden different beauties and gifts for us (S23)."*
Workshop	*"Because experience is gained through working in the workshop. Similarly, working with children with high-functioning autism spectrum disorder also leads to gaining new experiences (S24)."*
Rough Sea	*Because they contain a thousand kinds of beauty in them (S57)."*
Angel	*"Because children with high-functioning autism spectrum disorder don't lie, judge or play mind games (S66)."*
Mineral	*"Because they gain value when they are processed (S71)."*
Precious Stone	*"Because they are like raw ore (S46)."*

In the category of valuable, there are workshop (N=1), precious stone (N=1), rough sea (N=1), gift (N=2), angel (N=1), and mineral (N=1) metaphors. Among the total of 6 categories included in the study, the category of valuable accounts for 9.33%.

6. Explanations in the Category of Different

In the current study, the category with the highest number of metaphors is the category of different. The category of different includes student statements that try to reveal the unknown and different aspects of children with high-functioning autism spectrum disorder. The metaphors and sample explanations in the category of different are shown in Table 9. This category is represented by 17 graduate students from the Department of Special Education and 11 metaphors.

Table 9

Metaphors in the Category of Different and Sample Explanations

Metaphor	Sample Explanation
Alarm Clock	*"Because they stick to their routine and keep insisting until their routine is fulfilled (S34)."*
Those Stuck in Between	*"Because children with high-functioning autism spectrum disorder, who are not easily diagnosed, as far as I know, do not typically experience difficulties in verbal expression. Due to the challenging nature of labeling this condition as an illness, I believe these children often find themselves in a gray area (S50)."*
Spring	*"Because in the spring season, nature becomes vibrant and adorned with beautiful colors. Similarly, children with high-functioning autism spectrum disorder are diverse and colorful, each possessing unique qualities (S64)."*
A Book in a Different Language	*"Because they are the people who have difficulties in communicating and having difficulty in empathizing (S62)."*

Rainbow	*"High functioning autism spectrum disorder is the difference. There are various types of autism (S1)."*
Rainbow	*"Because personality traits such as the colors in the rainbow show different characteristics from each other (S3)."*
Rainbow	*"Because their personality traits are different from each other and they are colorful (S16)."*
Rainbow	*"Each child has different colors and features (S52)."*
Rainbow	*"Because high-functioning autism spectrum disorder is not a disability, but a difference. Each child is a different color. Every color represents diversity. Regardless of what the color is, they become more beautiful when they are together with other colors (S41)."*
Gift Box	*"Because in every gift box, there is a different gift, and they are like two completely different children with unique characteristics (S5)."*
Superhuman Being	*"Because their approaches and perspectives on events are very different and surprising (S48)."*
Snowball	*"Because where they will go, how much they will grow, when they break, their benefits, and their harms cannot be fully known and predicted. It always takes time to understand them (S17)."*
Robot	*"Because children with high-functioning autism spectrum disorder often experience difficulties in expressing their emotions or understanding emotions, similar to robots (S45)."*
Peg Top	*"Because they are in an independent movement within themselves (S73)."*
Star	*"Despite the presence of numerous stars, planets, and celestial bodies in the surroundings, they remain unique and different from everyone else. Similarly, children with high-functioning autism spectrum disorder are the same. Despite the presence of many people around them, they remain solitary due to difficulties in socializing (S6)."*
Star	*"When they receive attentive education, they can be like stars shining in the night sky (S44)."*
Star	*"Because every child shines as recognized (S33)."*

In the category of different, there are book (N=1), rainbow (N=5), gift box (N=1), star (N=3), snowball (N=1), peg-top (N=1), alarm clock (N=1), superhuman being (N=1), spring (N=1), robot (N=1), those stuck in between (N=1) metaphors. Among the total of 6 categories included in the study, the category of different accounts for 22.66%.

Discussion and Results

When the studies on high-functioning autism spectrum disorder and metaphors are examined, it can be seen that in the international literature, research has predominantly focused on the metaphorical understanding of students with high-functioning autism spectrum disorder. Melogni et al. (2012) compared the metaphorical understanding levels of 24 students with high-functioning autism spectrum disorder, with an average age of 8.5, to typically developing children aged 5 and 6. The study found that students with high-functioning autism disorder exhibited partial delays in metaphorical understanding. In a similar study, Soltani et al. (2023) examined the understanding of abstract concepts and concrete metaphors in children with autism and typically developing children with normal language skills. The study

concluded that children with autism had difficulties comprehending visual and auditory metaphors, indicating their weaker performance in metaphorical understanding. In the national literature, only one study has been found on high-functioning autism spectrum disorder and metaphors (Genç, 2021). The study found that the pre-service teachers had a positive metaphorical perception of individuals with high-functioning autism spectrum disorder.

In studies on gifted individuals, it has been observed that metaphors emphasize both general and specific abilities such as being different from peers, being valuable, being versatile, having a wide capacity, being mysterious and having high performance (Akgül, 2021; Neumeister et al., 2007; Özsoy, 2014).

The current study aimed to determine the metaphors used by graduate students studying in the field of special education to describe individuals with high-functioning autism spectrum disorder.

Within the scope of the first sub-problem of this study, it was aimed to find an answer to the question "What metaphors do graduate students studying in the field of special education create for children with high-functioning autism spectrum disorder?" As a result of the analysis conducted in this regard, a total of 75 metaphors were obtained, and based on expert opinions, 6 categories were created. When the metaphors developed by the graduate students at the Special Education Department for children with high-functioning autism spectrum disorder were examined, it was found that the most commonly used metaphors were flower (6), rainbow (5), computer, star and box (3). Similarly, in their study, Dayı et al. (2020) found that pre-service teachers frequently used the flower metaphor to describe students with disabilities. In the current study, most metaphors (N=33) were expressed only once. This is thought to be due to the graduate students' intimate knowledge, experience, attitudes and emotional differences. In this regard, studies can also be conducted with the participation of teachers, doctoral students and parents on high-functioning autism spectrum disorder.

In line with the second sub-problem of the study, the metaphors used by the graduate students for children with high-functioning autism spectrum disorder were categorized into 6 categories. These categories are; "patience", "unique", "attention", "mysterious", "valuable" and "different". Karahan and Sezer, (2023) in their study examining the perceptions of associate degree students in the department of civil aviation and cabin services towards autism with the help of metaphor, found that associate degree students could not recognize

individuals with autism among individuals in need of special education and that they needed training to communicate in order to help individuals with autism. Mermercoğlu, (2018) found that teacher proficiency level is important for gifted individuals to meet their educational needs. Thus, there should be compulsory courses to be given on special education in undergraduate level.

Within the context of the third sub-problem of the study, the justifications and explanations accompanying the metaphors created by the graduate students were examined. It is understood that the metaphors produced by the participants regarding children with high-functioning autism spectrum disorder are generally expressed with positive and concrete concepts. The category having the highest number of metaphors is the category of different. When the explanations made for the metaphors in this category were examined, it was seen that it was emphasized in the reasons that these individuals should be carefully trained as they require special attention, that they are like a mysterious ore, that they are precious and that they have special qualifications. Furthermore, it was noted that with sufficient time and care, it is possible to achieve positive outcomes. In this regard, it can be said that the participants used highly descriptive expressions about individuals with high-functioning autism spectrum disorder and demonstrated knowledge in this field. According to this finding, future studies in the field of special education can include not only metaphorical but also analogical investigations.

In general, the participants expressed positive views regarding individuals with high-functioning autism spectrum disorder, demonstrating awareness of the qualities and unique needs of these individuals. Similarly, studies on autism (Genç, 2021) and students with disabilities (Dayı et al., 2020) revealed positive metaphorical perceptions of individuals with high-functioning autism disorder. Akgül (2022), contrary to the findings of the current study, concluded that autism evokes negative emotions for most parents. Another dimension of the current study is that it provides an exemplary case of the perceptions of graduate students in the Special Education Department regarding individuals with high-functioning autism spectrum disorder. These graduate students are striving to become more professionally adept in special education by pursuing a master's degree. In addition, it can be said that the participation of pre-service teachers and teachers in studies on groups of children with special education needs and conducting different studies in this field can have an important contribution to special education. Dereli, (2020) determined the metaphor perceptions of university students who took the barrier-free life course towards individuals in need of special

education before and after reading the book titled 'Disabled Port'. As a result of the study, it was found that pre-service teachers' positive metaphors increased after reading the book.

Recommendations

The study aimed to shed light on metaphorical perceptions of high-functioning autism spectrum disorder. This study also provided insights into the participants' content knowledge and experience regarding high-functioning autism spectrum disorder. In this regard, further metaphorical perception studies can be conducted in this field to depict the current situation; using different samples.

This research reveals how graduate students perceive children with a high-functioning autism spectrum disorder. In this context, it is believed that the metaphors that emerged from the study will provide insights into how pre-service teachers in the Special Education Department should be guided in the education of children with high-functioning autism spectrum disorder. The current study can be supported by mixed-method studies that allow for in-depth examination with a broader sample, including pre-service teachers from other teaching fields in universities. Thus, an opportunity for a more comprehensive investigation can be provided. In this study, the thoughts of graduate students regarding high-functioning autism were investigated through metaphors. However, it was not examined whether there was a difference between teachers of different branches and teachers who graduated from the special education department. For this purpose, considering that every branch teacher will encounter special education students and that they take courses on specail education during their undergraduate education, comparative studies can be planned to investigate the differences between these two different groups in the future.

Compliance with Ethical Standard

At all the stages of this study, a great care was taken not to violate the ethical rules and ethical rules were precisely followed. Ethical approval for the study was obtained as a result of the decision numbered 01-54 and taken in the session numbered 08 on May 16, 2023 by the Ethics Committee of Tokat Gaziosmanpaşa University.

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