

University as Perceived by Neurodiverse Individuals: A Photovoice Study^Δ

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ABSTRACT

This is a part of paper series developed by neurodiversity and learning lab researchers. Special needs individuals' perceptions and definitions of financial literacy, money use, friendship are among the research focus of the lab. The lab researchers believe neurodiversity approach to autism and focus on how neurodiverse people make meaning of their everyday experiences. Therefore, this paper examines four young boys', three autistic and one with down syndrome, perceptions of university with photovoice method. Photovoice is a way of communication by pictures. At the very beginning of the research, all participants attended to a 1-hour workshop in which they learned basic principles of taking pictures. One of the researchers was leading the workshop and she let participants practice picture taking with mobile phones. The research was designed as two consecutive sessions. In the first session, the participants were asked to explain their perceptions about university by taking pictures. Each of the participants took at least 10 pictures and they were asked to choose the best 4 ones to explain what university is. Then the researchers interviewed each participant in an unstructured form. In the second session, the researchers used the pictures of different old universities like İstanbul and Bogazici Universities along with the picture of FSMVU, where all participants attended, and asked them to look at the pictures and define what university is. Data collected through two sessions were analyzed by coding pictures and transcripts of interviews. Data displays that although participants highlighted different aspects of the university, mostly social aspects and spatial properties of it were visible in their photographs.

Keywords: Neurodiversity, autism, perception, photovoice, qualitative analysis

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1. Introduction

Although Education is a system in which individuals acquire targeted behaviors. The most important component of this system, which operates in a planned manner under the name of education and instruction, facilitated by experts within a structured program, is schools. The foundation of the knowledge and skills that individuals can acquire throughout their lives is laid during the experiential

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process in these institutions. When the term “school” is mentioned, the first thing that comes to mind is a place where knowledge and skills are transmitted. However, “School is one of the most important contexts for socialization and self-actualization among adolescents.” (Hrbackova & Hrcirikova, 2022, p. 16). In this regard, school holds an important place for people.

“The process of teaching and learning is more than a process of transmitting information. Both the schooling process itself and the perceptions and expectations of each group participating in this process have an influence on the process of education and learning taking place in schools. Therefore, in order to better understand the multidimensional aspects of schooling, there is a need to understand the “school” that real actors—students, teachers, principals, and parents—have in their minds when they reflect on their school experiences.” (Engin Demir, 2007, p. 90). One of the ways to understand a school is to know the “perception” of it.

School perception refers to how students, teachers, and administrative staff, who are regularly present in the school environment, interpret and understand the school (Öztabak, 2017, p. 104). From the perspective of students, school perception encompasses how a student observes the school, how they feel in the school, and their overall thoughts about it (Yüner & Özdemir, 2017, p. 1043). In this regard, understanding students’ perception of school is important, as it also provides insight into many aspects of their school life.

Students’ perception of school is a predictor of many of their behaviors toward school (Özdemir & Kalaycı, 2013; Öztabak, 2017). Research has shown that a positive perception of school has beneficial effects on various aspects, such as school adaptation, school commitment, effective learning, willingness to participate in lessons, academic achievement, investing more effort and time in school, and self-efficacy beliefs (Ford & Ill, 2008; Hoy & Hannum, 1997; Sternberg & Williams, 2009; Vallerand & Bissonnette, 1992).

Students’ perception of school is shaped by the meaning they attribute to the concept of school and their attitudes toward it (Ford & Ill, 2008; Özdemir & Kalaycı, 2013). However, various factors influence this perception, including the physical condition of the school, the rules implemented in the school, the level of development of the region where the school is located, the school climate, the quality of school life, the level of parental interest in school, the quality of the parent-child relationship, the consistency between what is taught at school and at home, socioeconomic status, talent, gender, academic achievement, differences in grade levels, social support, awareness, self-esteem, engaging activities, health, and stress (Çalık, 2008; Öztabak, 2017; Toprakçı & Gülmez, 2018; Voight, Hanson, O’Malley & Adekanye, 2015; Yiğit & Bayrakdar, 2006; Yüner & Özdemir, 2017). One of the factors influencing students’ perception of school is neurodiversity.

School climate includes neurodiverse people among students and teachers. Therefore, neurodiversity, having not only neurotypical friends but getting closer to neurodivergent friends, may also be considered among the factors affecting one’s school perception. Neurodiversity refers to the natural variation in brain types from a developmental perspective. The idea of a “typical mind” is a cultural construct. Being neurodivergent means to be outside of the category of people considered cognitive ‘typical’. Neurodiversity helps us to address the social construction of neurological differences, and the privilege of certain kinds of minds according to dominant ideologies.

Since school perception is shaped with person’s meaning making and attitude, “Perception” refers to an individual’s point of view” (Sudirman, 2023, p. 1676). For this reason, perception varies based on individuals’ impressions, personal experiences, and characteristics including positive and negative experiences or individual characteristics. Understanding students’ school perception involves uncovering how they interpret and experience school. Understanding the school perception of students with diverse strengths, such as neurodiversity, is crucial for better comprehending the school environment. In particular, recognizing the school perception of neurodiverse students is of great importance. Considering the principle of special education that emphasizes providing educational services by taking into account individual differences, developmental characteristics, and educational

needs (MEB, 2018), understanding the school perception of neurodiverse students plays a significant role in revealing how students perceive the concept of school, enhancing the quality of implemented programs, and ensuring that the provided educational services align with students' interests and attitudes (Yaşlı & Yıldız Demirtaş, 2023, p. 2950).

Students' "perception" can be determined in different ways. Photovoice is the method used in this article to determine school perception of participants. "Using photo-elicitation or photovoice approach provides a practical means of presenting points of view and experiences to targeted audiences (like family members, classmates, speakers and professionals, decision-makers, the public). They can also be a source of empowerment, fostering the development of new skills, confidence and self-expression, and a sense of ownership of the research for participants (Courcy & Koniou, 2022, p. 1330). "The Photovoice approach can identify pertinent issues, raise awareness, and suggest programs or policy changes. In addition, participants can be empowered to trigger system changes as it empowers them to advocate for change in their own lives and in the lives of others" (Agarwal, Moya, Yasui & Seymour, 2015, p. 243). The importance of photovoice research, in which visuals are used with a different technique, is becoming increasingly clear.

The use of the photovoice method in revealing the perception about school is especially important for neurodiverse students. Taking a photograph allows students to reflect their emotional, cognitive, and behavioral responses to the concept, making it an effective way to understand their school perception. "Action research paradigm in sensitive population researches aim to improve the living conditions of people" (Courcy & Koniou, 2022, p. 1333). Photo-elicitation and photovoice methods are more favorite than conventional conversational interviews among researchers who investigate the perspectives of neurodiverse individuals, more specifically the autistic ones (Wang & Burris, 1997).

When examining studies that measure school perception, it is evident that some research explores school perception through metaphors and drawings. In their study, Talas, Talas, and Sönmez (2013) examined the metaphorical perceptions of gifted students continuing their education at the Science and Art Center regarding school. Similarly, Kunt and Tortop (2013) investigated the metaphorical perceptions of gifted students about the Science and Art Centers they attend in addition to their regular schools. Ogurlu, Öpengin, and Hızlı (2015) also explored gifted students' metaphorical perceptions of school in their research. Aslan and Doğan (2016) examined the metaphorical perceptions of gifted students regarding both their regular schools and the Science and Art Centers they attended. A review of the literature shows that studies investigating school perception through drawing are limited and those that exist have primarily been conducted with students with intellectual disabilities or cognitive impairments (Pelmik & Deniz, 2017; Yaşlı & Yıldız Demirtaş, 2023). Only one study has been identified that examines the school perception of neurodiverse students with autism spectrum disorder through drawing (Yaşlı & Yıldız Demirtaş, 2023). However, no research has been found specifically investigating the school perception of neurodiverse students using metaphors and drawings. Additionally, no study has been identified that explores the school perception of neurodiverse students through photovoice methodology.

When discussing the "school perception" of neurodiverse students, the first types of schools that come to mind and are most frequently studied in research are preschools, primary schools, middle schools, and high schools. One possible reason for this is that neurodiverse students are generally included in the education system at the compulsory/basic education levels. However, as noted by Atbaşı and Özdemir (2020, pp. 58-69), in addition to preschool, primary, middle, and high school education, institutions providing special education services also include non-formal education and higher education. According to Wasserburg (2002), universities are scientific and rational educational institutions where knowledge is produced and transmitted, and where skills and technology use are taught. They are also one of the most crucial stages of the education process (Korkmaz & Bağçeci, 2013, p. 188). "Universities are means to prosperity of contemporary societies, indicators of social development level, and institutions to provide individuals with education and with possibility to investigate and socialize to help them get a job. Furthermore, university education is the most important

step in determining major field of study and future profession, and it affects individuals' life styles and choices of where to live." (Akgül, 2021, p. 373-374). "It is important to determine the general thoughts and perceptions of the students, their expectations, including their perception of the qualifications that the universities want them to gain, the reasons underlying the students' thoughts about the university, and success meeting these expectations and wishes." (Hayırsever, 2019, p. 109). In this regard, identifying the "university perception" of neurodiverse students is crucial. Considering the relatively small number of neurodiverse students pursuing higher education, revealing their "university perception" becomes even more significant.

When examining studies on "university perception" (Akgül, 2021; Ali, Tariq, & Topping, 2009; Avcı & Doğan, 2020; Doğanay & Sarı, 2006; Eş & Öztürk Geren, 2014; Hayırsever, 2019; Jirásek & Sochor, 2023; Lin, 2010; Sarmiento, Marques, Santos, & Ferreira, 2023; Segura-Mariño, Fernández-Sande, & Paniagua-Rojano, 2021; Xu, 2011), it becomes evident that research has primarily focused on measuring both general perceptions of university and the perceptions of typically developing students regarding university life. These studies have employed techniques such as expressing opinions, using metaphors, and drawing pictures. However, the number of studies on "university perception" is lower compared to those investigating "school perception".

When reviewing studies that utilize the photovoice method to examine "university perception," it becomes evident that there are very few such studies. In their research, Agarwal, Moya, Yasui, and Seymour (2015) used the photovoice method with students who had different disabilities, such as visual, auditory, mobility, and developmental impairments, to explore the concept of an inclusive campus. Similarly, von Sommoggy et al. (2020) investigated how the campus environment influences university students' physical activity perceptions using the photovoice method. Reese, Seitz, Gosling, and Craig (2020) employed the photovoice technique to enhance students' vision of natural environments within the university campus. Yılmazlı Trout and Yıldırım (2021) examined the perceptions of graduate students regarding their campus environment through the photovoice method. Additionally, Korucuk (2023) used photovoice to analyze university students' perceptions of academic, socio-cultural, and economic challenges they encounter in university life. Despite the limited number of studies investigating "university perception" through the photovoice method, no research has been found that specifically examines the "university perception" of neurodiverse students using this method. This gap highlights the need to explore the "university perception" of neurodiverse students through photovoice.

Given these needs and objectives, the present study aims to reveal the "university perceptions" of neurodiverse students using the photovoice method. The research is guided by the primary question: "What is the university perception of neurodiverse students" The sub-questions of the study are as follows:

1. How do participants define university?
2. What are participants' reflections on their university experience?

This research is significant for several reasons. First, instead of focusing on the general "school perception" of students, this study examines "university perception" which has been the subject of fewer studies. Second, the selection of the study group adds importance to this research. Unlike most studies, which focus on typically developing students, this study examines students with neurodiversity. Additionally, these neurodiverse students are currently pursuing university education, which adds further value to the research. The research aims to recognize the experiences of neurodiverse students who are enrolled in a higher education certificate program. These students are participating in a special education program known as "Journey to Self" a transition-to-adulthood program for neurodiverse students that emphasizes independent living and vocational skills. The program spans two or four years and includes social and vocational training, inclusive campus life, independence, arts and sports, culinary arts, and therapy. Details about the program are provided in the methods section

of this paper. It is anticipated that this program will serve as an example for other students with neurodiversity and contribute to the literature on university education for this population.

Another significant aspect of this research is the chosen methodology. The photovoice method, a participatory action research technique, was used to explore the “university perception” of neurodiverse students. Participatory methods enable individuals to collaborate with researchers, exert greater control over the research process, and shape how their experiences are conveyed (Chappell, 2000). Thus, the data collected in this study come from two sources: the interpretation of the study group and the interpretation of the researcher. This dual perspective enhances the validity and reliability of the data collection process and represents another key strength of the research.

2. Methods

The guiding principle of this research is, “you can’t make it for me without me”. Therefore, this study employs community-based participatory action research (CBPR), utilizing the photovoice method. The theoretical foundation of this research is based on critical pedagogy, feminist theory, and community photography (Wang & Burris, 1997). Wang and Burris (1997) explained the development of concept for photovoice first by critical pedagogy. They first related photovoice and critical pedagogy by identifying visual image as a means of enabling people to think critically about their community. Then with this visual image, representing reality, people may start to discuss everyday social and political forces affecting their lives. Secondly, they reported about how feminist theory and practice influenced participatory research by mentioning male bias that makes women invisible. More explicitly, all of us have been learning the world with the images created by men. But with the feminist theory, photovoice went a step further in giving a chance to explain themselves for women, workers, children and to all can learn how to use camera. Thirdly, they underlined that documentary photography informed the photovoice approach by giving cameras to people who might otherwise not have access to such a tool and let them record and catalyze change in their society. Photovoice is often defined as a method within Participatory Action Research (PAR) that empowers underrepresented groups by allowing them to become active researchers, initiating changes needed in their communities (Brake et al., 2012). In simpler terms, photovoice provides an alternative means for participants to express their ideas, specifically through the use of photographs they take or images they create.

In this research, participants used photographs to interpret “what a university means” to them. In other words, participants were active throughout the research process, generating their own data and conducting their own analysis based on critical discussions of the images alongside researchers. The methodology has three notable strengths: highlighting individuals’ strengths, problems, and needs; fostering critical discussions about the photographs; and influencing policymakers, health professionals, and community leaders (Sever & Özdemir, 2023, p. 209). As a result, the Results and Discussion sections of this paper are organized around these three key points.

As a data collection strategy, photovoice shifts the objectivity of the researcher toward subjectivity, emphasizing how the photographer perceives the subject under investigation (Chio & Fandt, 2007; Cooper, Sorensen, & Yarbrough, 2017; McNiff, 2018). By understanding how our participants perceive and define university, we aim to enrich their social, academic, and cultural experiences through the special program they attend.

2.1. Research Participants

Before describing the participants, it is essential to explain the setting and conditions in which the research took place. The research was conducted at a university that houses a Center of Excellence in Education, which offers a social and vocational development certificate program for neurodiverse young individuals. The program lasts between two and four years, depending on the participants’ needs, and includes functional courses such as financial literacy, social skills, and independent vocational skills. All participants were enrolled in this certificate program.

The Center also operates a neurodiversity and learning lab, where researchers evaluate the certificate program to ensure evidence-based practices. This research is part of a series developed by the neurodiversity and learning lab researchers. The lab's research focuses on participants' perceptions and definitions of financial literacy, money management, and friendship, among other topics. The researchers adopt a neurodiversity approach to autism, emphasizing how neurodiverse individuals interpret their everyday experiences.

The common characteristics of the participants in this community-based participatory action research are as follows:

Due to practical constraints four young individuals, three with autism and one with Down syndrome, participated in this research.

All are male and communicate verbally Ages range from 20 to 26 years old

They have been enrolled in the certificate program at the Center for two years They participate in one-day apprenticeships at different university facilities.

At the very beginning of the year for each participant, parents' permissions for every academic research were collected in a written form. Therefore, all parents signed informed consent form for this research specifically.

2.2. Data Collection

Unlike other research models, in this action research, participants collected their own data. Photovoice requires participants to take photographs to express their ideas and perceptions. Therefore, photographs and the critical discussions surrounding them served as the primary data collection tools. The first step of the photovoice process involved designing a workshop to teach participants how to take photographs using their smartphones. One of the researchers conducted a one-hour workshop, providing instructions and allowing participants to practice taking photos with their smartphones.

During the critical discussions about the photographs, one of the researchers showed participants images of several historical universities in Istanbul and asked about their knowledge of these institutions. The data for this research were collected through the photographs taken by the participants, individual interviews, critical discussions about the photographs, and the researchers' field notes, in which they recorded observations about the research process as a whole.

2.3. Data Analysis

Photovoice involves the qualitative analysis of the data collected through the aforementioned methods. One of the strengths of this paper's methodology is that it allows participants to both collect and analyze their own data. As a result, the analysis was twofold, conducted by both researchers and participants.

First, the researchers employed an open coding technique to analyze the photographs by digitizing them. Figure 1 provides an example of the open coding process applied to two photographs.

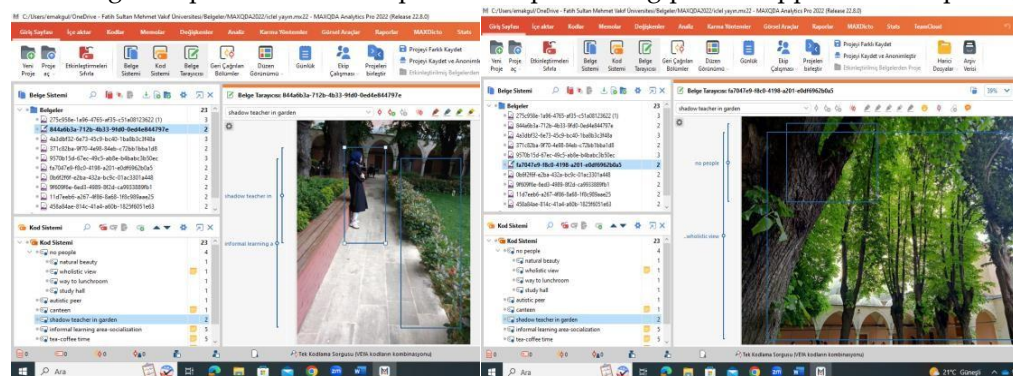


Figure 1. Open coding examples

Three of the researchers individually coded all photos and code book was prepared with 100% agreement. Code book is shown in Figure 2.

Kod Sistemi	Memo
no people	
natural beauty	
wholistic view	university in nature
way to lunchroom	
study hall	
autistic peer	
canteen	where participants buy teaa and coffee
shadow teacher in garden	
informal learning area-socialization	most of participants photos cover garden in which they socialize
tea-coffee time	everyday all participants drink coffee and tea twice a day
prayer's room	2 of the participants use it once a day

Figure 2. Codebook

In the second part of the analysis, each participant was interviewed individually and each of them asked what the university is and how photographs taken by themselves interpret their perceptions about the university. Additionally, each one was shown 3 pictures of the known Turkish universities and asked what they saw in the picture, to understand whether they have a general perception and knowledge about commonly known universities. Therefore, we can say that data analysis and data collection concurrently occurred in this phase of the research. Pictures used in individual interviews are presented in Figure 3.



Figure 3. Interview pictures

Four individual interviews and one final group interview were held, and each one was transcribed and coded by using the same codebook. Figure 4 presents a sample code map of the analysis.

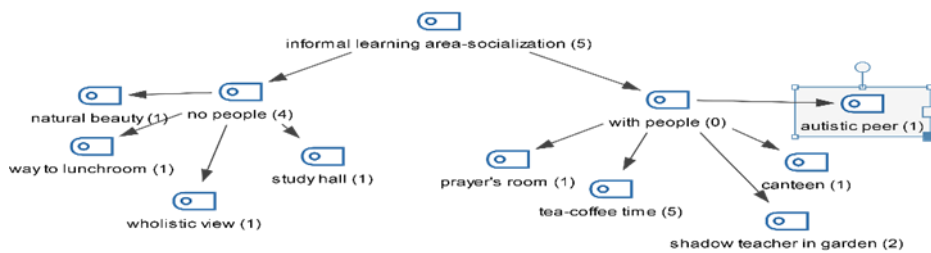


Figure 4. Sample code map of the analysis

3. Results

Data analysis based on the photographs and interviews ended up with three themes displayed below.

Theme 1: Research participants' definitions about the university and who and why go to university reflect their self-perceptions and none feel fully belong to the university.

When they are asked whether they attend a university all four participants said yes and gave the name of the excellence center they attend in the university. But later they do not perceive themselves as big enough to be a student in the university. They define university as a place where “others” and “sisters and brothers” attend. Although the participants are the part of the university, they are not fully aware what university is. Following excerpts from interviews are the samples of these definition.

"[university is] something good..." (P1).

"...school for big sisters and brothers...they are tall and big" (P2).

"...place where we study lessons" (P3).

"...where we learn finance, cooking and others..." (P4).

Even they say that they are attending the university they do not feel belong to. When they are asked why people go to university, they usually emphasize academic side of the university. Here are some excerpts from interviews.

"we [people] go to university to study and learn"

(P1). "we go [to university] to learn" (P4).

"...to make our knowledge duty, we go..." (P3).

And finally, when they are asked who goes to university, participants mentioned all they keep in touch. Only one participant mentioned students and teachers in his answer. Excerpts from others' interviews are as follows.

"...cafeteria workers, security people and instructors [go to university]"

(P1). "...big brothers and sisters [go to university]" (P2).

"...students, I don't know who else [go to university]" (P3).

Participants mostly socialize in garden and attend one day apprenticeship. Therefore, they keep in touch with all groups of people working in the university. Their answers reflect that they have no clear understanding about "who goes to university" and "who works in the university".

Theme2: Research participants' photographs about university, display an experience-limited interpretation and shows a pattern of socialization in an informal learning environment.

Each participant took one or two photographs covering where they socialize every day. Almost all have a photo of garden in which they drink tea and coffee with their peers. There is no classroom or inside photos in their interpretation of the university. This can be explained by the lack of in class experience of the participants. Following excerpts from interviews also support theme 2. The excerpts reflect the answer to the researcher's question of "what the university is?".

" [the university is] where we talk, I took the photo [because]we do cooking there, [we cook] in the university...[this picture] where we go for lunch"(P1).

"...I took this picture [cafeteria]we drink tea there in the university and this picture [prayer's room] where I pray in the university..." (P2).

In both excerpts, participants define the university as a place where they socialize, eat, drink and talk. At the same time, they learn informally during this socialization. The places like cafeteria, lunchroom and prayers' room appeared almost in all participants' photos and these excerpts display how limited experience of the participants effects their perceptions of the university. When participants were asked "what they do in the university?" participants 2 responds that "we took courses in [the university]". Although he is aware of the fact that university has an academic side, there was no reflection of this academic side on the photographs taken by the participants. This is a problem that might be solved with a more inclusive university system. The more they face with academic side, the more they understand what university is and how it functions.

Theme 3: Research participants' photographs about university reflect spatial and social aspects of the university.

All participants took two groups of photographs, first group covers physically beautiful parts of the university, and second group which was covered in theme 2, includes where socialization takes place in the university. For the physically beautiful parts of the university, 6 out of 14 photographs include

the green parts of the garden and big trees. The researcher asked to participants why they choose the photos with trees and following excerpts from interviews reflect participants' reasoning.

"[I took the photo] because it is beautiful" (P2).

"it is interesting and I took the photo...as this is the university [I found] it [is] interesting" (P4).

All participants feel good about being on campus because it is green and have natural big trees. Besides all were happy to talk, drink and eat with friends on campus. Their photographs are mostly spatial, and some have no human. In conclusion, the spatial description of the university is reflected in the photographs taken. Participants' reflections on the pictures of the two well known universities asked in the interview displayed that only one participant generalize the "university" and know them. Other three participants had no idea about these universities.

4. Discussion

According to the findings, although the participants attended university, they could not fully grasp the concept of what a university is. While they recognized that lectures are held at university, their responses about who is present at the university were limited. Although they were aware that the university is an academic institution related to learning, their perceptions leaned more toward social aspects. Additionally, it was observed that participants focused on spatial elements in their photographs, particularly capturing social areas, and they were aware of the university as a large building in the images they selected. As a result, it was concluded that the participants had spatial awareness of the university but lacked a full understanding of its functional purpose and could not provide complex answers. The pictures taken by the participants primarily highlighted social spaces, and the absence or scarcity of human figures in these images conveyed a sense of loneliness. This outcome suggests that the students' perception of university has an emotional dimension.

When examining the literature, there are limited studies on this research topic. Griffin and Pollak (2009) explored the experiences of individuals with neurodiversity in higher education and concluded that individuals diagnosed with conditions such as ADD, Asperger Syndrome, Depression, Dyspraxia, and Dyscalculia felt isolated, lonely, and excluded at university. Yaşlı and Yıldız Demirtaş (2023) attempted to reveal the perception of school in the minds of students with autism spectrum disorder using the directive "Draw what comes to your mind when you think of school." In this study, the category of 'the external appearance of the school' was prominent, followed by 'social activities at school.' The results showed that while students with special needs had generally positive perceptions of school, they also felt lonely and lacked many friends. Similarly, Kaya (2020) found that children with special needs depicted themselves alone or with only one friend in their drawings. In the study by Pemik and Deniz (2017), where the school perception of students with intellectual disabilities was measured through drawings, one student depicted interactions with the principal, vice principal, caretaker, and teacher, but no students appeared in the image. The individuals in the drawing, consisting of adult figures, were portrayed as smiling and conveying positive emotions, but the absence of peers reflected a sense of isolation. Likewise, Girli and Atasoy (2012), in their study with primary school students diagnosed with learning disabilities and autism, noted that these students were often lonely, referred to as "problem children," and faced verbal and physical abuse, especially outside the classroom. These results are consistent with the sense of loneliness observed in our study. When neurodiverse individuals cannot fully integrate with their peers or are not accepted by their peers or the system as a whole, they may feel isolated, and this feeling can manifest in their drawings.

In our research, the participants chose to photograph social spaces in response to the question, "What is a university?" and also selected images of large buildings when shown pictures. While they were aware of the buildings where they studied, their answers regarding the university's functional aspects and the people within were limited to what they could concretely observe. For individuals whose metacognitive skills and abstract thinking abilities are not fully developed, understanding that the whole is more than the sum of its parts is challenging (Köhler, 1967), as outlined in Gestalt theory. Gestalt theory is an

approach to psychology that explains how perception and cognition work. This theory argues that individuals perceive the world holistically, not in parts. According to Gestaltists, a whole is more than a simple sum of its constituent parts; the relationships between the parts determine how the whole is perceived. Among its basic principles are the following: - Figure-Ground Relationship: The human brain makes sense of a visual scene by separating it into the main figure and the background. - Proximity Principle: Objects close to each other are perceived as a group by the mind. - Similarity Principle: Similar objects tend to be seen as a whole. - Principle of Completion: Even incomplete parts are perceived as complete. - Continuity Principle: The human brain tends to perceive continuous and fluid shapes (Wertheimer & Rizler, 1944). In the context of this research, neurodiverse individuals' fragmented perception of the university can be explained from a Gestalt perspective as follows: Participants perceive only certain parts of the university (such as spatial elements) rather than grasping all aspects of it. This may be because their abstract thinking skills are different and they have difficulty in combining the parts into a whole.

The fact that the participants in our study could not provide complex answers to the question of what a university is may be attributed to their lack of abstract cognitive development. Similar results have been observed in studies with children in the concrete operational stage. For example, in Akdemir's (2023) study on primary school students' perceptions of school, metaphors related to "place/space" were the second most common category created from the metaphors produced by the students. The researcher attributed this to the fact that the students were in a concrete operational stage. This finding supports our conclusion. However, the need to expand inclusive education can also be emphasized here. Since children in the concrete operational stage develop more metaphors as they physically interact with and observe their environment, it can be said that the individuals in our study lacked abstract thinking skills. While their selection of socialization spaces as their main subject matter is a positive indicator of inclusiveness, it also suggests that more inclusive practices are needed to foster concept development. Images of social spaces support the idea that education is not the only function of the university. At university, students increase their social networks and self-determination (Grigal & Hart, 2010). It can be thought that the need of individuals with neurodiversity, especially for socialization, causes the pictures of these places to come to the forefront.

While neurodiversity is a natural and valuable form of human diversity, current educational practices often prioritize diagnosis and compliance over embracing differences in thinking and learning. The lack of appropriate environmental and systemic accommodation can hinder the adaptation of teaching methods to meet the needs of diverse learners. As a result, achieving inclusive education is not always straightforward. Individualized learning opportunities that incorporate adaptive teaching methods at all levels of education should lead to a broader understanding of neurodiversity and inclusion. This approach challenges the myth of the 'normal child' and prepares educators to engage effectively with neurodiverse students. It is important to include "peer counseling" practices as one of the ways to increase inclusion in universities. Ensuring that individuals with neurodiversity are supported in both academic and social areas through interaction with their peers can help create an inclusive campus. At University of Rochester (UR), coordinates one such initiative called "Transition Opportunities at University of Rochester (TOUR) (Lewis, 2017). Inclusion for disadvantaged groups can be increased by expanding such programs in all higher education institutions.

In this interdisciplinary study, the researcher who asked the research questions to the participants has also been with the children for two years as the program manager and teacher. Therefore, the natural environment of the participants was preserved during data collection. However, the small sample size and the lack of diversity of the participants are the limitations of this study. The fact that the study was conducted in a single university is also a limitation.

Future Research: Expanding the diversity and count of sample groups in future studies will enrich the literature and provide a broader understanding of university perceptions among neurodiverse students. It may also be recommended to conduct comparison studies with individuals from different universities.

Ethical Statement

The implementation of the study was previously approved by data collected from the participants in this study were conducted in accordance with the ethics policy. Ethical approval to report this case was obtained from Fatih Sultan Mehmet Vakıf University Ethical Committee.

Informed Consent

The consent for the data collection and publication of all legal guardians was obtained.

Declaration of Interest

The authors declare that they have no conflict of interest.

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