



**Yazar/Author**

CebraİL AÇIK\*

**Makale Adı/Article Name**

The effect of wooden toy differences on the perceptions of children with special education needs over time

*Ahşap oyuncak farklılıklarının zaman sürecinde özel eğitim gereksinimli çocukların algılarına etkisi*

**ÖZ**

Özel eğitime gereksinim duyan çocuklar, doğumdan sonraki süreçte normal gelişim gösteren çocuklardan farklı bazı özellikleri sahiptirler. Normal çocuklarla ortak özelliklerinden biri, onların da oyun oynamaya gereksinim duymalarıdır. Oyun, onların içsel enerjilerini boşaltmaları, deneyim kazanmaları ve genel olarak gelişimlerinin desteklenmesinde önemli bir role sahiptir. Çocukların tercihlerini etkileyecek birçok faktörün içinde en geniş pay genellikle, oyuncakın dış görünüşünü belirleyen özelliklere ait olmaktadır. Oyuncakların görünüş özelliklerini belirleyen en önemli kriter ise malzemedir. Zihinsel engellilerin, eğitilebilir engel grupları içinde en fazla sayıya sahip olması, oyuncakların bu hedef kitlede aynı zamanda eğitim materyali olarak da kullanılması ve zihinsel engel türüne yönelik akademik çalışmaların oldukça kısıtlı olması bu çalışmanın dinamiğini oluşturmuştur. Bu çalışmada eğitilebilir özel eğitim ihtiyacı olan çocukların farklı ahşap oyuncak tercihlerinin zaman içinde değişip değişmediği belirlenmeye çalışılmıştır. Gruplardaki kişi sayısı ile tekrar sayısı çarpılarak elde edilen verilerden bireylerin cinsiyet, yaş ve engel oranı farklılıkları ile ahşap oyuncak tercih sayıları arasında bir ilişki olup olmadığı belirlenmeye çalışılmıştır. Sonuç olarak kızlarda ahşap oyuncak tercihlerinin zaman içinde erkeklere göre daha fazla değiştiği, tercih sayısının hem yaş düzeyleri hem de engel oranları ile ters orantılı olduğu tespit edilmiştir.

**Anahtar Kelimeler:** Ahşap oyuncak, oyuncak seçimi, zihinsel yetersizlikler

**ABSTRACT**

Children who need special education have some characteristics different from those with normal development in the postnatal period. One of the common features with normal children is that they also need to play. The game has an important role in draining their inner energies, gaining experience and supporting their development in general. Among the many factors that will affect children's preferences, the largest share generally belongs to the features that determine the appearance of the toy. The most important criterion that determines the appearance characteristics of toys is the material. The dynamics of this study are that the mentally handicapped have the highest number among the educable disability groups, toys are also used as educational materials in this target group, and academic studies on the type of intellectual disability are quite limited. In this study, it was tried to determine whether the different wooden toy preferences of children with educable special education needs changed over time. From the data obtained by multiplying the number of people in the groups with the number of repetitions, it was tried to determine whether there is a relationship between the gender, age and disability ratio differences of the individuals and the number of wooden toy preferences. As a result, it has been determined that wooden toy preferences have changed more in girls than boys over time, and the number of preferences is inversely proportional to both age levels and disability rates.

**Keywords:** Wooden toy, toy choice, intellectual disabilities

## Introduction

Visual perception is of great importance in understanding mental development. Perception of the world occurs through the interaction of all senses. However, visual perception is the most effective and strongest among other perceptions. In visual perceptions, the individual organizes, classifies and generalizes the visual stimuli in a meaningful way in order to understand the information he receives with his sense of sight. Visual perception is not just the ability to see well. It takes place in the brain, not with the interpretation of the visual stimulus. Seeing the ball is a sensory action, but grasping and recognizing that it is a ball is a thinking process and the result of a series of mental processes (Akdemir, 2006).

Another point to consider when working with intellectual disabilities children is to attract attention and constantly change the stimulus. Because something interesting and new for that day may have lost its appeal for the next day. Changing stimuli can be used as a useful method to concentrate attention for a longer time (Çelik, 2009). It should be examined whether the material preferences used in the education methods of children with special education needs are random or not and the effect of the timeout tendency.

Children with intellectual disabilities are children who differ by two standard deviations from the average compared to their normally developing peers in terms of mental functions, and accordingly have deficiencies or limitations in conceptual, social and practical adaptation skills and need special education and support education services. Children with intellectual disabilities who need special education have some characteristics different from those with normal development after birth. One of the common features with normal children is that they also need to play. Play has an important role in discharging their inner energies, gaining experience and supporting their development in general (Özyürek & Akça, 2015).

Among the many factors that will affect children's preferences, the largest share generally belongs to the features that determine the appearance of the toy. The most important criteria that determine the appearance properties of game materials are material and color. During physical and mental development, children's opinions and understandings about color begin to emerge as their tastes and preferences become clear. The colors they want to be around reflect their inner world and reveal the psychological state of the child. Age is an important factor in color preference and color preference changes with age and maturity. There is no consistency in color preference in children before the age of three. Color is an element that should be emphasized in design because of its psychological effect on people. This effect is also very important in toys and space equipment that children will use (Elibol et al. 2006).

Wood is a natural and readily available material. Wood has been one of the basic raw materials used in toy making since ancient times. Wood is also an indispensable material in meeting many needs of human beings. One of the biggest reasons for this is that wood is a renewable and sustainable material. Due to the fact that it is produced from wood, which is a natural material, wood is also used as manufacturing and building materials, which have a great importance in all areas of life. Wood; It is among the most used materials in the toy industry, as it can be easily shaped, its chemical composition and anatomical structure, the advantage of its mechanical and physical properties, and it can be used in harmony with different materials (Onur and Öndoğan, 2020). PVC toys are extremely harmful to the environment. Low quality PVC is also harmful to baby's health. In particular, low-cost PVC Toys contain toxic chemicals that harm children in

larger than allowable quantities. All these factors indicate that PVC toys cause irreversible damage to the environment and human health (Biswas, 2021).

According to OECD (Economic Development and Cooperation Organization) - EU (European Union) and Turkey data, approximately 15% of the world's population consists of individuals with disabilities. In other words, there are 1 billion disabled people in the world. According to the Disabled and Elderly Statistics Bulletin in Turkey, the number of disabled people in 2021 is 2,511,950, of which 1,414,643 are men and 1,097,307 are women. 40.63% of the total disabled population is chronically ill, 17.07% is mental, 13.78% is orthopedic, 9.53% is vision, 7.97% is hearing, 7.57% is mental and emotional 1.49% language and speech and 1.96% other disabilities. (URL-1, 2022). According to the educable groups excluding chronic disease, the type of disability with the highest number of disabilities among the types of mental, orthopedic, speech and visual disabilities is the type of mental disability. On the other hand, it has been reported that 90% of the intellectual disabilities have mild mental retardation at the trainable level (Güller, 2014). Thus, since the most crowded group among disability types is mild intellectual disabilities, it can be said that it is the group that needs the most academic study.

In the literature, many studies on toys or wooden toys have been made. However, a very limited number of studies have been conducted on the toy preferences of children with disabilities. Beşirik and Türkmen (2021) examined the factors affecting the toy selection of children with physical disabilities. They determined that being physically disabled affects the toy selection of children and especially mothers. Özyürek and Akça (2015) examined the types of toys most and least owned by individuals and families affected by intellectual disability. They also stated that these children preferred cars and baby toys first. Patrizia et. al (2009) designed a robot to meet heterogeneous needs for autistic children, children with moderate intellectual disability and children with severe motor disabilities. In the experiments, they stated that the robot can be used for special training and guidance. Er and illik (2022) examined the relationships between the variables of disability type for children with intellectual disabilities and learning difficulties, the mother's right to choose when buying toys for the child, and the type of toy. Arai et. al (2017) created a toy model for disabled children with three-dimensional computer graphics. Experiments have confirmed that children with disabilities have significantly improved their spatial cognition. Deshpande and Ranavaade (2021) studied the importance of toy play in the education of the disabled.

In the literature, it has been determined that visual perceptions are more effective in the product perceptions of intellectual disabilities individuals. Toys are also used in many educational methods for the special education needs. Toys for educational material purposes are quite common. Research on the effects of visual features on humans, their use in education and treatment, and their use in the design of games and educational materials is increasing day by day. However, studies in this field have not focused enough on wood materials with sustainable, healthy, ecological and economic properties. On the other hand, one of the most distinctive features of individuals with intellectual disabilities is how their cognitive perception preferences tend to be affected by the statute of limitations.

The aim of this study is to investigate whether there is a relationship between the demographic characteristics of individuals and the continuity of their toy visual perceptions in the wooden toy concentration of educable special education needs children. Within the scope of the study, it is expected that the continuity of wooden toy preference in different visuals preferred by the child

can be used as a product design criterion. In addition, it is thought that it will contribute to determining the right education method in terms of increasing the concentration of play and education of children with the same characteristics.

## Material

In this study, it was tried to determine whether the visual features of break change the perception of different toys in mentally retarded children. In terms of the reliability of the findings, it was tried not to choose the type of toy directly according to gender. For this, three different wooden toys were produced from pine wood. These toys are; The rammer is car toy, walking bird toy and basketball toy. The toys produced are shown in Figure 1.



**Figure 1.** Toys used in the study

## 1. Method

The research is in the descriptive survey model and aims to reflect a situation as it is. In the determination of the study group, the easily accessible sampling method was used, in which the sample consisted of participants that the researcher could easily reach.

The data on the age, gender and disability rates of the individuals were obtained from the reports of the classroom teachers. In accordance with the provisions of the Regulation on “Determination of Special Needs of Children”, which is carried out jointly by the Ministry of Labor and Social Services of the Republic of Turkey and the Ministry of Health and published in the Official Gazette, groups of persons with disabilities have been formed. According to these provisions, the cognitive disability rate of the individual was evaluated as “20-39% with special needs, 40-49% with mild special needs, 50-59% with moderate special needs.” Age groups of the individuals were determined according to their individual development levels, taking into account the distribution of the number of individuals in each age group. It was formed as 7-12 and 13-15 age groups. The experimental method was approved by the guidance and special education teachers who are experts at the school during the experimental design phase and the implementation phase of the experiment.

### 1.1 Participants

The study group consists of 58 mentally handicapped children studying at the 125th Year Special Education Vocational School Special Education Primary and Secondary School in Onikisubat, Kahramanmaraş, Turkey.

## 1.2 Data collecting

In the study, each toy was presented to the preference of individuals for a period of two weeks. The individual was first shown how to play with the toy. The individual was then allowed to play in the same way. In the next step, the following questions were asked respectively. When a reliable answer was received, the next question was not moved on.

1- Which of these toys is better?

2- Which of these toys would you like to have?

3- If these toys were sold in the market, which one would you buy?

At this stage, the individual's special education teacher was also present. This stage was carried out in a separate environment so that other individuals were not affected by the individual's response. The special education teacher helped the process go smoothly when needed.

The data consisting of the perceptions obtained from the questions asked to the individuals for the purpose and sub-objectives of the research were recorded in the computer environment. These toys were presented to individuals with special educational needs three times at two-week intervals. Three different repetition groups were formed: those who liked the same toy three times, those who liked the same toy twice, and those who liked a different toy each time. From the data obtained by multiplying the number of people in the groups with the number of repetitions, it was tried to determine whether there is a relationship between the differences in the perception of wooden toys of individuals, gender, age and disability ratio, and the effect of the timeout factor on the number of repetitions. In the analysis of the data, the frequency and percentage values were calculated in the excel program.

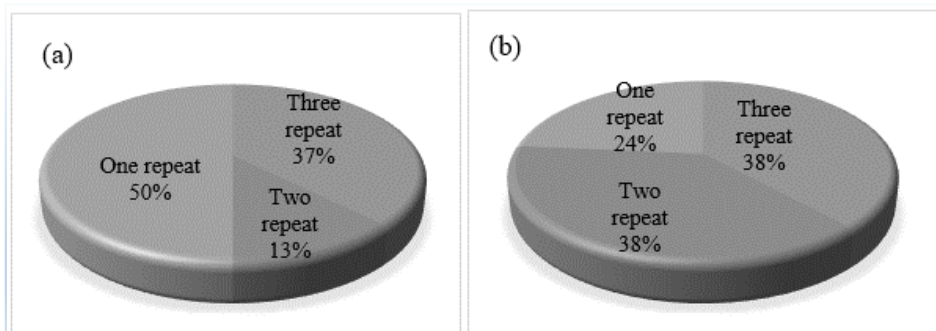
## Results

In order to determine the relationship between the wooden toy preferences of children with intellectual disability and the timeout, the demographic characteristics of the individuals and the repetition data on their preferences for different toy types were investigated. The study group consisted of 58 individuals, 24 girls and 34 boys. Among these children, the intellectual disability rate of 15 people is 20-39%, the rate of mental disability of 23 people is 40-49%, and the rate of mental disability of 20 people is 50-59%. 29 individuals are in the 7-12 age group and 29 individuals are in the 13-15 age group. Three responses (repetitions) were received from each individual. A total of 174 data were obtained. In total data, three replicates were repeated 58 times, two replicates 55 times, and one choice 41 times. In Table 1 below, the demographic information of the study group and the number of option preference repetitions are given.

**Table 1.** Demographic information and toy preference numbers of individuals in the study group

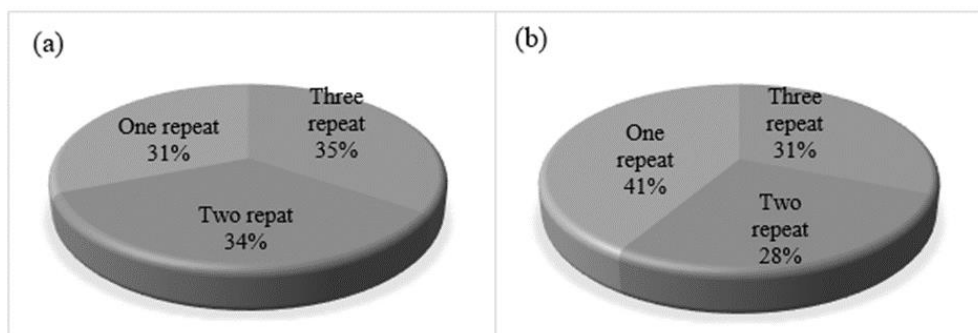
Group		Three repeat	Two repeat	One repeat	Total
Gender	Girl	9	3	12	24
	Boy	13	13	8	34
Age	7-12	10	10	9	29
	13-15	9	8	12	29
Hurdle rate %	20-39	6	5	4	15
	40-49	6	9	8	23
	50-59	5	7	8	20
Total		58	55	61	174

The effect of gender characteristics on the continuity of individuals' wooden toy preference repetition was investigated. While 37% of girls repeated three choices, 38% of boys repeated three choices. While 13% of the girls repeated two choices, 38% of the boys repeated two choices. On the other hand, 50% of the girls made one choice, while 24% of the boys made one choice. The least difference in the color preference repetition of the gender characteristics of the individuals formed the preferences with three repetitions. Regardless of gender, 33% of the individuals preferred three repetitions, 32% preferred two repetitions, and 35% preferred one. Below, Figure 2.a shows the toy re-preference rates of girls, and Figure 2.b shows the toy re-preference rates of boys.



**Figure 2.** (a) re-prefering the toy by girls (b) re-prefering the toy by boys

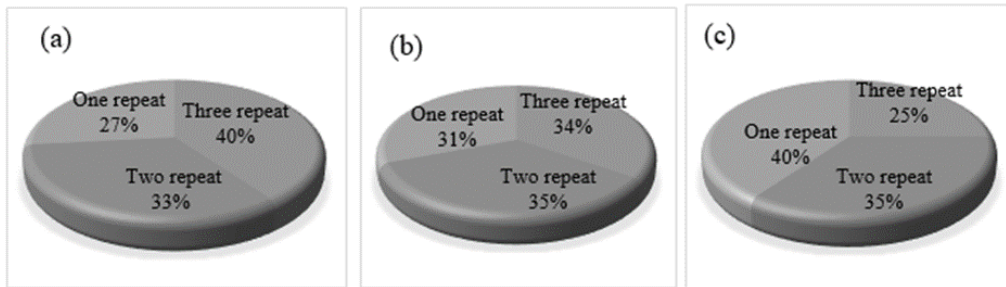
The effect of 7-12 age groups and 13-15 age groups on individuals' wooden toy preference repetition was investigated. While 35% of the 7-12 age group repeated three choices, 38% of the 13-15 age group repeated three choices. While 34% of the 7-12 age group repeated two choices, 28% of the age group repeated two choices. On the other hand, 31% of the 7-12 age group made a single choice, while 41% of the 13-15 age group made a single choice. The least difference in the color preference repetition of the age characteristics of the individuals formed the preferences with three repetitions. Figure 3 below shows the ratios of the number of individuals in age groups and the number of repetitions of toy preference.



**Figure 3.** (a) 7-12 age toy re-preference rates (b) 12-15 age toy re-preference rates

The effects of 20-39%, 40-49% and 50-59% mental disability rates on individuals' repetition of different wooden toys were investigated. 40% of the 20-39% disability group, 34% of the 40-49% disability group, and 25% of the 50-59% disability group repeated three choices. 33% of the 20-39% disability group, 35% of the 40-49% disability group, and 35% of the 50-59% disability group repeated two choices. On the other hand, 27% of the 20-39% disability group, 31% of the 40-49% disability group and 40% of the 50-59% disability group made a single choice. The least difference in the color preference repetition of the disability characteristics of the individuals

formed the preferences with two repetitions. Figure 4 below shows the trend of disability ratios, number of individuals and toy preferences.



**Figure 4.** (a) 20-39% disability re-preference rates, (b) 40-49% disability re-preference rates, c) 50-59% disability re-preference rates

In order to determine the relationship between the wooden toy preferences of the children with intellectual disability and the timeout, the demographic characteristics of the individuals and the repetition data on the preferences of the wooden toy types in different visuals were investigated. From the findings obtained by multiplying the number of people in the groups and the number of repetitions, the relationship levels between the gender, age and disability ratio differences of the individuals and the effect of the timeout factor on their wooden toy preferences were tried to be determined. So the same material of intellectual disabilities children consciously? Or is it by chance? preferred to be determined. In the data obtained, 696 points for three repetitions, 440 points for two repetitions, and 248 points for one choice, a total of 1384 points were provided. Table 2 below shows the data of the study group.

**Table 2.** Repetition of toy preference data distributions of the study groups

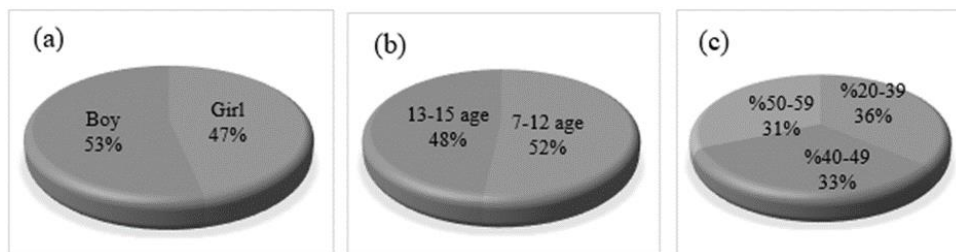
Group		Three repeat%*2	Two repeat % *	One repeat % *	Total
Gender	Girl	111	26	50	187
	Boy	114	76	24	214
Age	7-12	105	68	31	204
	13-15	93	56	41	190
Hurdle rate %	20-39	120	66	27	213
	40-49	78	78	35	191
	50-59	75	70	40	185
Total		696	440	248	1384

According to the data in Table 2 above, 53% of the total 401 points in the gender group were boys and 47% were girls. In other words, with the statute of limitations, boys made a more stable choice than girls at a rate of 6% in choosing wooden toys. İnce et al. (2016) observed that the arithmetic mean of the visual discrimination time of intellectual disabilities female students was lower than that of male students. The visual discrimination time factor in the literature can be considered equivalent in terms of the effect of the timeout factor on visual perception in this study. In other words, it can be predicted that the individual with longer visual discrimination time will be less affected by the timeout. In terms of the gender variable in these two studies, the results overlap with each other. The reason for this can be interpreted as the fact that girls tend to make puberty earlier and their decisions tend to change very frequently, so they can make more different choices during the time period. As a matter of fact, Gülsoy and Memiş (2019) stated that the general visual perception averages of 8-year-old female students without disabilities are above the perception

scores of 8-year-old male students. On the other hand, Beşirik and Türkmen (2021), in their study to determine the factors affecting the toy selection of physically disabled children, stated that children's toy preferences are gender-specific. However, in the same study, it was explained that parents and teachers expressed a preference for toys not to be gender-specific.

Of the total 394 points in the age group, 48% were 13-15 years old and 52% were 7-12 years old. Repetition of wooden toy preferences affected the 13-15 age group by 4% more than the 7-12 age group. In other words, as the ages of the individuals increased, they made more different choices in the timeout. İnce et al. (2016) observed that the arithmetic mean of the visual discrimination time of students aged 6-9 with intellectual disabilities is higher than students aged 10-12. When it is predicted that the individual with longer visual discrimination time will be more affected by the statute of limitations, the results in the literature and the results of this study overlap with each other. In addition, Özyürek and Akça (2015) stated that gender and age factors are primarily effective in children's toy preference, and other factors such as the function of the toy, the child's siblings, friends, communication tools and parental attitudes come later.

In the disability rate group, 39% of the total 589 points consisted of 20-39% disability group, 33% 40-49% disability group, and 31% 50-59% disability group. In other words, the statute of limitations in choosing wooden toys caused the 50-59% disability group to make different choices 2% more than the 40-49% disability group. In addition, the statute of limitations in choosing wooden toys caused the disabled group 40-49% to make different choices 3% more than the disabled group 20-39%. In other words, as the disability rate of the individuals increased, they made more different choices in the repetition of wooden toys. Since preference repetition is a cognitive use of will, it can be said that this result is an expected result. Akdemir (2006) on the other hand, the effect of the completion time of the students with mental retardation on the development of visual perception of the tools-equipment and toys developed for the figure-ground relationship, visual matching, visual discrimination and space relations between objects; When examined in terms of age, gender and type of disability variables, it was stated that age and gender variables did not have a significant effect on the completion time of equipment and toys. In addition, in the variable of disability type, there was no significant difference between the completion time of the tools-tools and toys developed for the figure-ground relationship, visual discrimination and space relations between objects, while there was a significant difference between the completion time of the tools-to-equipment and the toy developed for the visual matching skill. Çelik (2009) also reported that the degree of randomness in the visual preferences of mentally disabled students was low, depending on their gender and disability. explained. Figure 5 below shows the rates of disability groups being affected by statute of limitations.



**Figure 5.** (a) Gender group ratios, (b) Age group ratios, (c) Disability level ratios

## Conclusion

In this study, it was tried to determine whether the mentally retarded children made their choice of wooden toys in different visuals by chance during the break period or how they were affected



by the break time. In terms of wooden toy preference perception, girls were affected more than boys during the statute of limitations. In other words, more different perceptions emerged in girls. The statute of limitations factor caused children to make more different choices as their age and disability rate increased. The results obtained here can be evaluated in terms of the design and production criteria of wooden toys or course materials to be produced or used for mentally retarded children in the 7-15 age group. It is recommended that products for girls, products for children over 12 years of age and products to be produced or used for children with a disability level below 40% are selected from a wider range of images.

## References

- Akdemir B.,(2006). *Evaluation of visual perception skills of mentally handicapped children aged 6-12*. Selcuk University Institute of Social Sciences, Department of Child Development and Home Management. Master Thesis. pp.113. <https://tez.yok.gov.tr>
- Arai, K., Ishigaki, T., & Oda, M., (2017). *Spatial comprehension exercise system with 3d cg of toy model for disabled children*. International Journal of Advanced Computer Science and Applications, Vol. 8, No. 4. Doi: [www.ijacsa.thesai.org](http://www.ijacsa.thesai.org)
- ASPB, (2022). Republic of Turkey Ministry of Family and Social Policies statistical bulletin [https://www.aile.gov.tr/media/98625/eyhgm\\_istatistik\\_bulteni\\_ocak\\_2022.pdf](https://www.aile.gov.tr/media/98625/eyhgm_istatistik_bulteni_ocak_2022.pdf)
- Beşirik, S. A., & Türkmen, A. S., (2021). *Does Physical Disability Affect Children's Choice of Toys?* *Pediatr Pract Res* 2021; 9(3): 130-136. DOI: 10.21765/pprjournal.1036324
- Biswas, P., (2021). *Wooden toy of chennapatna, india: beauty of form & socio cultural reflection on the characterization of toy*. Shanlax International Journal of Arts, Science and Humanities, vol. 9, no. 2, pp. 21–25. DOI: <https://doi.org/10.34293/sijash.v9i2.4153>
- Çelik, A., (2009). *Priority Color preferences of mentally handicapped students in visual arts lesson*. Abant İzzet Baysal University Social Sciences Institute. Fine Arts Education Department. Master Thesis. pp.124. <https://tez.yok.gov.tr>
- Deshpande, A., & Ranavaade, V., (2021). *Importance of toy play in special education for young children: perspectives and approaches*. ISSN: 2237-0722 Vol. 11 No. 4. p:5218-5229. DOI:10.18137/cardiometry.2022.23.337343
- Elibol, C., Kılıç, Y., & Burdurlu, E., (2006). *Material use in preschool children's toys and color preferences of 4-6 years-old children*. Journal of Family and Society Year: 8 Volume: 3 Issue: 9.
- Güller, E., (2014). The effect of color in rehabilitation spaces. *Dokuz Eylul University Graduate School of Natural and Applied Sciences, Department of Architecture, Ph.D. Thesis* pp. 169. <https://tez.yok.gov.tr>
- Gülsoy, Y. & Demiroğlu Memiş, A. (2019). *Examination of visual perception levels of primary school students*. The Journal of International Education Science, 21 (6), 1-19. <https://doi.org/10.14582/DUZGEF.1808>
- İnce, H., Akdemir, B., Yıldırım Doğru, S. S., (2017). *Evaluation of visual perception skills in children with intellectual disabilities aged 6-12*. Journal of Dicle University Ziya Gökalp Faculty of Education. Issue 31, 687-704.

- Konuk Er, R., & İlik, Ş. (2022). *Play skill levels and toy preferences of disabled children according to their mothers*. Cypriot Journal of Educational Science. 17(2), 384-395  
<https://doi.org/10.18844/cjes.v17i2.6821>
- Onur Ş., & Öndoğan E.N., (2020). *A study in modular wooden kids playhouse design and development*. TJFMD, 3 (2): 97-110.
- Özyürek, A. & Akça, F., (2015). *Examination of toy profiles of children with intellectual disabilities*. Bartın University Journal of Faculty of Education 4(2) p. 516–529. Doi: 10.14686/buefad.v4i2.5000142122
- Patrizia, M., Claudio, M., Leonardo, G., & Alessandro, P., (2009). *A robotic toy for children with special needs: from requirements to design*. 11th international conferanca on rehabilitation robotics, Kyoto, Japan. DOI:10.1109/ICORR.2009.5209500

### **Financial disclosures**

The author declared that this study did not receive any financial support.

### **Acknowledgements**

The author have nothing to acknowledge of any persons, grants, funds, institutions.