Creative City Design / *Vol. 1, No. 2, 2018, 15-19.*

Strengthening the Focus of Autistic Children with an Environmental Psychology Approach

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Submit Date: 2019.04.25, Accepted Date: 2019.12.10

Abstract
Autism spectrum disorder is a neurodegenerative disorder that usually manifests itself in the early years of life and lasts throughout life. Its main features are continuous problems in establishing social interactions, verbal and non-verbal communication abnormalities, and stereotypical patterns of behavior and interest. When discussing the design of space for children in the autism spectrum, it is important to pay attention to the knowledge and understanding of how to experience the environment and objects. Describing the sensory differences of perception, processing, and response are important because children are able to learn in the mainstream of the environment. Particular attention to physical spaces is important in designing the healthcare facilities of patients with autism, because it is directly related to the learning and development of these children. Space architecture, with awareness of environmental psychology, creates an atmosphere in which the child, with regard to ethical and behavioral characteristics, as well as communication weaknesses, can undergo stress-free and stress-free rotation. The key question in this article is how can environmental stressors be reduced to a child with autism? Findings suggest that a range of constructive elements such as the color and light in space can have a significant effect on the elimination of any stimulus and stress. Therefore, the present study uses a descriptive-analytic research method to investigate the architectural features of the health-care spaces of patients with autism with the psychology of the environment. architectural features play an important role in the treatment process and enhance the focus of autistic children.

Keyword: *Autism, Environmental Psychology, Therapeutic Spaces*

Introduction
Autism Spectrum Disorder (ASD) is a Neurodevelopmental Disorder that occurs in early childhood. This disorder causes the brain to fail in relation to social behaviors and communication skills and interferes with learning communication and interactions of the child (Zarrabi Moghadam and Amin Yazdi, 2015). These disabilities are manifested in an inclusive nature in the early stages of growth and affect the life of an individual throughout his life cycle. Cognitive impairment, behavioral problems, disturbed and irritable mood, low adaptive function, lack of self-care ability, language problems, learning disability and the need for lifelong care not only affect the patient but also his care takers, family, teachers and community (Center for Disease Control and Preventio, 2012). The necessity of designing spaces adapted to the needs of children with autism is clearly evident due to the increasing number of people infected with this disease in Iran. Spaces that can provide a suitable place for mental and social development by creating a relaxing atmosphere in addition to meeting the basic needs and needs of patients are required. The most important issue for children with autism is to provide environmental comfort in their health care settings. Considering the importance of the issue of increasing autistic children, necessary trainings, creating health-care spaces and recognizing the necessary spaces that are very low in Iran should be taken into consideration. Moreover, through the design of appropriate health-care centers, the lives of autistic children might be saved in time, and they can be brought back to normal life.

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2. Literature Review
Anan Franklin et al. (2009) investigated the relationship between color perception in autistic children and normal-growth children. Other researchers such as Tofferson (2009) have shown that some environmental factors such as physical, social, and individual factors can disrupt the focus of autistic children, and some other environmental factors might increase children's concentration. In an architectural research, the design and decoration of the nursery show that the amount and type of paint affect the learning (Sultanzadeh and Mirzakhani Araghi, 2007). Since 1943, when the first

symptoms of autism were diagnosed, many studies have been done on people with autism and their characteristics. Most of these studies carried out by psychologists examined autism in terms of pathology, symptoms, interventions and treatments. In recent years, architects have been trying, with the help of humanities specialists and especially the psychology of the environment, to design new attitudes to the relationship between human and his environment. Considering the need to address the psychology of the environment, there has recently been an interdisciplinary research on psychology and architecture for these children in the world, which shows that the design of an appropriate environment for these children and architecture can have a great impact on their health (Tabaiyan, 2015). Some of these studies are referred to in Table 1.

4. Theoretical Framework

4.1 Autism Disease

The characteristic of autism is a severe and fundamental limitation in several important areas of growth: interaction and communication as well as social interaction and the ability to use imagination. To diagnose autism, behavioral symptoms need to be presented in all of the aforementioned areas before the age of three. Even if parents find that there are problems with infancy, diagnosis of autism before the age of eighteen months is very difficult. The reason for this is that the behavioral deviations used to validate the diagnosis have not yet evolved until this age. Most children with autism have growth disorders, although few have normal growth. Epilepsy and hearing and visual impairments are very common in this group.

4.1.1 Communication Problems of Patients with Autism

-They cannot start speaking, or cannot continue to talk;
-They communicate with hand gestures instead of vocabulary;
-Their growth of language and speech is slow or not done at all;
-They have inaccuracies in seeing objects;
-Instead of the word "I", they use "you", for example. Instead of saying "I want water," they say, "You want water";
-They do not pay attention to objects (it is indicated at 11 months);
-They repeat words or sentences;
-They speak without feeling (Humphreys, 2008).

4.1.1.1 Social Interactions of Patients with Autism

-They do not have friendly relations;
-They do not like verbal games;
- They prefer loneliness;
- They do not respond to your smile.

4.2 Children's Autism Therapy Programs

Today's treatment programs for children with autism, such as Discrete Trial Training (DTT), Incidental Teaching (IT), Pivotal Response Training (PRT) and Verbal Behavior (VB), are designed based on ABA applied behavior analysis strategies (Dionne & Martini, 2011). The ABA approach is the first treatment approach for working with ASD children which focuses on learning and conditionalization of the agent and aims to increase the desired behaviors by reinforcing them and decrease undesirable behaviors in order to silence them (Zarrabi Moghadam and Amin Yazdi, 2015). Early reports by Lovass (1987) on the results of these interventions have been encouraging and contributed significantly to enhancing the education and treatment of children with severe developmental challenges, and many studies have proven successful in developing behavioral strategies to enhance cognitive and childhood autonomy (Dionne & Martini, 2011). However, there are many criticisms of this approach. Siegel (1999) believes that behavioral approaches lead to the motivation of children to be socially dependent on non-social reinforcements rather than individuals, and their ability to extend the therapeutic results to real-world environments and establish relationships with peers reduce (Solomon, 2007). Moreover, the lack of spontaneity and initiation, on the one hand, and the emergence of responses on the basis of habit, on the other hand, are also criticized in the behavioral model (Matson et al, 2009). Behavioral approaches to the treatment of children with ASD are disappointing with the belief that these children, due to their biological limitations, suffer from a basic defect in fundamental developmental abilities such as joint attention, emotional and social interaction, emotional references, meaningful and creative use of language and higher levels of reflective and inferential thinking such as empathy and the theory of mind, so there is no possibility of acquiring these abilities. Therefore, they focus solely on the change of behavior and surface signs to increase the adaptation of the child to the surrounding environment. (Zarrabi Moghadam and Amin Yazdi, 2015).

4.2.1 Proposed Model (Florenthem) of Nature-based Therapy Game

Children are active learners. Their best learning happens when they have the opportunity to actively participate and play interactive games, and they can discover the issues themselves, so that one-way flow of information flows from them. Children have intrinsic curiosity, which requires direct sensory experiences, not conceptual generalizations (Zarrabi Moghadam and Amin Yazdi, 2015). The child experiences natural environments in a different way from adults. Adults often look at nature as the background for their activities, which looks like a beautiful visual experience., while children experience nature in general

(Olds, 1989). Nature in most of the history of human evolution has been one of the most important areas in which a child has been dealing with its sensitive and influential years of puberty. The direct and indirect experience of nature is one of the most influential elements of physical, emotional, perceptual, and even moral growth of human beings (Kan & Colet, 2014). Children have an inherent predetermined desire to discover and connect to the natural world, which is called Biofilia or love of nature. Evidences suggest that there is a sense of biologicalism in children even under the age of two. In order to enhance the inherent nature of child biology, it is essential for them to have the appropriate growing opportunities to learn about the natural world, which is in accordance with the principles of child-growth and learning (Kan & Colet, 2014). A study about the effects of animal care and nature on the treatment of children with autism was carried out. The findings showed that such children insist on learning the skills and information necessary to manipulate animals. During the course of interaction with animals, a kind of increase in the amount of attention, reduction in aggressive behaviors, and increased cooperative behaviors were observed. Grandin, Aubrey, QHaire, Carlisle and Bowers (2015) conducted a study on the role of animals in treating people with autism, which showed that animals as a facilitator, as a unique factor in the success of treatment help these children to interact with social services, which ultimately leads to the development of relationships between the person with autism and others (Zarrabi Moghadam and Amin Yazdi, 2015).

4.3 Environmental Psychology

Environmental psychology is a complex study between people and their surroundings. According to Gifford, environmental psychology differs from the mainstream psychology because it deals with everyday physical environment. This science provides a framework for points of view, studies and assumptions that can help us better understand the interactions between humans and the surrounding environment. Environmental psychology might be evaluated before designing, and it could be the best tool for professional designers. If we know what was better in the past, we will be better prepared for future design. Using the Theory of Control, it can be seen that the environment plays an essential role in shaping feelings of values and empowering individuals and groups. Children with autism spectrum disorders have difficulties in understanding their environment due to the inability to process information received through their feelings (Sánchez, Vázquez & Serrano, 2011). Therefore, the use of knowledge of environmental psychology in designing related centers is important.

4.4 Necessity to Address the Architecture of Autism Treatment Centers

It is said that, in the world, of every eleven thousand children under 12, two to five children are diagnosed with autism. If go back again to Title One, of the symptoms of this disease is the spread of the disease 20 children per 10 thousand children. Surveys show that boys with autism are 3 to 5 times more than girls. It is said that any of 10 children or adults with autism have 7 mental problems and problems with functions, responses and brain, and 30 % of these children have seizures. (Shahrvand Newspaper, 2014). With the increase in the number of autistic patients, in addition to demand for them to be maintained at day centers, demand for night care centers is increasing for these patents. According to the experts, no specific drugs for the definitive treatment of autism have been introduced, but according to studies conducted, from among therapeutic methods, educational methods such as work therapy, speech therapy and games play a key role in treatments of these children. The role of constructive elements in these spaces and their impact on the improvement and functioning of children's autism need to considered by Architects (Golabi, 2005). Check it out Field shows in Iran the majority of maintenance centers Children with autism spectrum disorders may have changed the use of other spaces Home Residential and with extra How many partitions are shaped into space? Have. However, S & T Which studies express the environmental impact of very large in the treatment of this Children with D (Ghasemi Sichani et al., 2013). It is worth noting, according to previous studies, some of which are in Table 1, 9 effective factors in designing appropriate training spaces for patients with autism spectrum disorders were extracted. Table 2 shows these factors and their source.

4.5 Effective Tips in Designing Autism Treatment Centers

-The building should have a simple design that reflects the order, calmness and clarity of the journey;

-The child may show different sensitivities to spaces. For example, some may panic large open spaces and may be willing to live in smaller spaces, while some may not like the enclosed spaces. These conditions might affect the child's anxiety;

-Designing an environment with few sensory stimulants reduces stress and anxiety;

-Provide simple, moderate, pleasant spaces with bare walls of decor and color. Simple ones can give teachers the opportunity to provide specific daily program services to meet the needs of these children;

-Classes should be arranged in such a way that teachers can use different methods in teaching, and workspaces should be provided for children

-Using indirect light and avoiding noise that distract children's senses, as well as avoiding other factors in the environment like using no curtain, visible pipes in the

Weber space on the roof and so on are of great importance;
-The use of two door handles at the top and bottom must also ensure the safety of the children to avoid their escape. And children should not be arrested legally because this violates children's rights;
-Because of the presence of children with disabilities, different use of durable and safe materials for doors, windows, tubes, wires and so on are necessity;
-The balance between the security and independence of children is one of the things that should be considered. The use of special equipment for suitable for their security and independence and at the same time far from danger can supply this need;
-Simplicity and reducing the complexities can reduce obsession (Mashhadi Fath Ali, 2016).

Table 1. Studies on the Design of Educational Spaces for Children with Autism Spectrum Disorders (Gen. Z., Ghasemi Sichani and Mujahidi, 2017)

Row	Study Titles	Sources	Findings
1	Special needs	(Young, 2004)	Designing an appropriate environment for the educational spaces of children with autism: enabling more users to control the environmental conditions; the simplicity of decorating; the ability to combine small and large spaces.
2	The effect of building design on children with autism	(WhitehurstT, 2006)	Description of the architecture of the educational spaces of children with autism: building design on one floor; multi-functional use of spatial areas for optimal use of space; use of open spaces, curved walls, high windows, etc.
3	Designing environments for children and adults with autism	(Beaver 2006)	Acoustic spaces, light and ventilation, and suitable colors, open spaces
4	One design for autism	(Mostafa, 2008)	Proposing architectural approaches to design appropriate educational spaces for people with autism such as enclosed spaces, elevation proportions, private spaces and open spaces, orientation of exterior landscapes and absorbent elements, use of space-based visual media, use of sound insulation and... .
5	Preparation of a class for children with autism	(Kabot and Reeve, 2010)	The effect of physical space on the learning of children with autism, gathering experiences from other countries' schools on the types of educational spaces necessary for children with autism spectrum disorders.
6	Designing and architecture	(Humphreys, 2008)	Providing the necessary conditions for designing suitable educational spaces for people with autism: using natural light; limited ability to absorb space.

Table 2. Factors Affecting the Design of Educational Facilities for Children with Autism, According to the Scholars of this domain (Brief Zadeh, Ghasemi Sichani and others Mojahedin, 2017).

Row	Factor Effective on Designing	Source
1	The light	(Beaver, 2006), (Building Bulletin, 2009: 102), (White Hurst, 2006), (White Herrst, 2007), (Mostafa, 2007), (Building Bulletin, 2005: 77), (Humphreys, 2005), (Department of Education, 2005)
2	Color	(Beaver, 2006), (Building Bulletins, 2009: 102), (White Hurst, 2007), (Mostafa, 2007), (Building Bulletin, 2005: 77), (Department of Education, 2005)
3	Space organization	(Beaver, 2006), (White Hurst, 2006), (White Herrst, 2007), (Mostafa, 2007)
4	Predictability of spaces	(Mostafa, 2007), (Thorn and Mollik, 2008)
5	Privacy and personal space	(Department of Education, 2005), (Humphries, 2005)
6	Acoustic condition	(Beaver, 2006), (Building Bulletin, 2009: 102), (White Hurst, 2006), (White Herrst, 2007), (Mostafa, 2007), (Building Bulletin, 2005: 77), (Humphreys, 2005), (Department of Education, 2005)
7	Control and security	(Building Bulletin, 2009: 102), (Building Bulletin, 2005: 77), (Humphries, 2005)
8	Heating and ventilation	(Beaver, 2006), (White Hurst, 2006), (White Herrst, 2007), (Mostafa, 2007)
9	Texture and materials	(White Hirst, 2006), (White Herrst, 2007), (Mostafa, 2007) (building bulletin, 2005: 77)

5. Conclusion

Reviewing the studies on the relationship between autism and architecture shows that significant improvements have been made in different countries in the field of design and development of appropriate educational spaces for children with autism spectrum disorders, and such factors as acoustic space status, light status, altitude proportions, control and security, texture and materials, color and so on should be tailored to the needs of children affected. Also, the findings suggest that the status of educational spaces in Iran for the use of patients with autism has been barely studied so far. Due to the influence of the environment on individuals, especially children with autism, a range of constructive elements such as color and light in space have a significant effect on eliminating any stimulus and stress and play an important role in the treatment process and strengthen the concentration of autistic children. It is proposed that Autism ASPECTSS™ Design Index may further be used to develop designs for other building typologies such as assisted living communities and respite centers. It may also be used as a framework to facilitate inclusion in mainstream facilities and public services. Finally, it may also have applications, in a weighted format, to act as an audit index, to help measure the appropriateness of an environment for autistic users. In this manner this index may help encourage inclusion and integration into society and community by facilitating autistic skill development and creating a healthier more conducive environment for all. Lastly, it is pointed out to the architects that they should design spaces in accordance with the needs of these children, which can help small children with autism and parents of these children.

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