

INVESTIGATING THE FACTORS INCREASING PLACE ATTACHMENT OF CHILDREN WITH AUTISM IN OUTDOOR REHABILITATION CENTRES

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ABSTRACT

Autism spectrum disorder is a neurological disorder characterized by impaired social interaction and communication with stereotyped and repetitive behaviours. Due to their different perceptions of the environment, designing a suitable space as a rehabilitation centre that causes place attachment is an important issue for them. The term 'attachment to a place' indicates the emotional impact of a place to which people are emotionally and culturally attracted. The purpose of this study was to investigate the factors that increase attachment to the location of autistic children in outdoor rehabilitation centres. In this study, which was conducted by secondary and primary methods, 200 parents of autistic children were surveyed using a questionnaire made by the researcher. After identifying the factors by performing heuristic factor analysis, the agents were named. Thus, the first factor is determined as the spatial perception caused by sight, the second factor as the use of the sense of smell, the third factor as the use of the sense of taste, the fourth factor as the stimulation and touch pleasure and the fifth factor as the use of the sense of hearing. According to the research findings, it could be suggested that the most important factor in place attachment in these children is the spatial perception factor resulting from the visual activity, which covers 14.30% of the total score of place attachment.

Keywords: *Autism, Open space, Rehabilitation centre, Architecture, Attachment to place.*

1. INTRODUCTION

1.1 Background

Architecture as a profession is responsible to create and arrange a place to fulfil the need of all the clients. People with special needs (exceptional children) shouldn't be denied such fulfilment, although it may happen one way or another. Unfortunately, architects do not have any specific standards and structural and physical principles for rehabilitation centres for autism patients, and there has not been much research done on this area yet. Special treatment and educational places for these children are considered in just a few countries such as the U.S.A and Germany, but in Iran, because of not enough understanding of autism, there are only one or two nonstandard educational centres in Tehran, that are made by changing the usage of buildings. These are not answerable to these children's needs at all, and in the other cities are without any facilitation. Hence, this research aims to analyze the factors that could increase the place attachment of children with autism in outdoor rehabilitation centres. With this same title, the main question of the essay is posed in which one of the first senses can increase the attachment to the location of children with autism in outdoor rehabilitation centres. Our research method in this essay is based on secondary and primary studies during which information about children with autism was sought. To do so, the collection of the data has been done through a questionnaire made by Mode Questionnaire. 200 sample people were randomly chosen from exceptional children's rehabilitation centres.

1.2 Aim and Objectives

Since this research is inter-disciplinary, the need for attachment to the place is defined in its architecture. There is much research on autism and its effective

factors on it in psychology and it is true about the second matter in architecture. But no research focuses on these two aspects, so we can't mention any research advantage or other personal studies. It's the essential point of this research and analyzing these two factors along with each other.

2. LITERATURE REVIEW

2.1 Autism

Autism is in the group of neurodevelopmental disorders that are identified with repetitive behaviours, social interaction and communication disorders. This disorder is seen in social interactions and communications with some stereotyped behaviours. Attention-deficit disorder in autistic children is so extreme that some parents mention it as one of the most important signs of autism. Because of attention deficit problems, autistic children show amnesia or ignore to reaction toward the stimulants or react toward an extreme (Moradi, et al, 2019).

2.2 Autistic children characteristics

Table 1 shows the characteristics of children with autism.

2.3 Rehabilitation

In health science, rehabilitation helps the disabled person to regain his or her loss of ability after an accident, a disease or an injury. Rehabilitation is a vast field in health science and helps people to overcome their problems after some damage due to a brain stroke, spinal cord injury, orthopaedic surgery, concussion, burns, low hearing, central auditory processing disorder (CAP), unbalancing problems and others, and recover functional independence. Rehabilitation means repowering and restoring the abilities of a person to the highest point of independence. There is no medical prescription in rehabilitation, contrary to medicine, and the recovery is gradual. Motor Control Theories are the basic points of rehabilitation (Ganji, 2020).

2.4 Place Attachment (Topophilia)

Place attachment refers to the emotional effect of an area, not the people, despite the feelings or culture that they are attracted to. The emotional sensory and internal effect on the place on a person is the centre of thought of place attachment since people can be attracted to an object, house, building, area or natural environment. Place attachment is a typical relationship with the place which is made by giving special cultural common emotional and sensory meanings to a special place or land by people and will be the basis of a group or individual's understanding of the place and the way of relating to it (Magda, 2014).

The place is not considered a shelter for human activities, but a phenomenon that a person by interaction gives meaning and is attached to it so much that sometimes recognizes himself in it. Considering this subject through human needs, the demand for emotional interaction with the place that he/she lives in, or in other words, 'place attachment' is one of the most essential factors in the relationship between humans and places that should be considered by architects,

designers and urban planners. Previous studies have demonstrated that place attachment has different emotional, cognitive, functional and behavioural dimensions. This quality is formed based on five key elements: human, place, participation in the place designing process, and the interaction between humans and place and time (Pourjafar, et al, 2016).

To define the concept of place in childhood, Chawla (1992) says: 'Children show their place attachment when they feel happy being there and feel sad and regretful to leave there. In a way, they prefer that place not just for physical satisfaction but also for intrinsic qualities.' According to his studies since the middle childhood era when deep social attachment to the family decreases, the child's experience of the physical environment and therefore place attachment appears. Place attachment is internal traction to supply security and help the child to overcome stress and anxiety. A child is in relation to a place where it is a safe centre and provider of security qualities or learning that place is stressful for him/ her. In fact, the place is where he/ she is connected and an immune centre for him/ her. When he/ she leaves it to find out a new environment and location, in the case of anxiety or fear goes back there (Mostaghni & Etemadi, 2017).

The other important point in place attachment is the effect of nature on it. Direct and indirect nature is one of the most effective factors in physical, emotional, perceptual and even moral human growth. In fact, based on some of the sources, the importance of nature and animals is determinant and may be completely outstanding in the first and middle eras of childhood. Many reasons can justify this major effect, such as similarities and familiarities between some of the animals with us, the thesis of having sense and perception, the ability of movement, similar body functions with us, and similar ancestral and morphology between human and vertebrate animals. Children have an intrinsic desire to predetermined hereditary discovery and connect to the natural world which is called biophilia or love of nature. There is evidence that vitalism exists in children even the ages below two years old. To develop the intrinsic property, and vitalism in children it is essential to give them suitable ongoing opportunities to learn about the world around them, that complies with the children's main rules of growth and learning (Zarabi, 2015).

As mentioned later, the main purpose of this study is to recognize the factor increasing place attachment of autistic children. In order to achieve valid results, the questionnaire made by the researcher is used, consisting of 30 questions with 5 effective semi-factors of place attachment in autistic children. Semi-factors include spatial perception caused by vision utilization of olfactory gustatory, hearing stimulation and touch (tactile) pleasure. The questionnaire is collected from parents of 200 autistic children. The samples are chosen from rehabilitation centres for exceptional children, and the methods of sampling and choosing sample ones randomly and from autistic children's parents in these centres.

3. METHODOLOGY

To analyze the validity of instrument structures exploratory factors analysis methods are used. The outcome of the review is explained in the report and approves the structural validity of the instrument KMO [1] indicator in this research is 79, which is an acceptable number and implies that the chosen sample of 200 people suffices for factor analysis. In analyzing the matrix adequacy, the Bartlett indicator is 2946.51 which is meaningful at the level of $p \leq 0.01$. So the gained matrix is good enough and the data of this research can be factors that allow us to continue the factor analysis.

Studying the correlation matrix represented that the KMO for each element of the questionnaire was higher than 0.7 which proves the sufficiency of this factor for all the questions on the questionnaire. Furthermore, the study of reproducing and remaining correlations, shows that the number related to the remaining correlation of all the questions is very small and it means the factor analysis ends with good outcome of data. So the possibility that the recognized factors show the real situation of things in the real world, becomes stronger. The following data is considered by factor analysis using varimax rotation. According to this rotation, 5 factors had a special amount higher than 2, the related numbers to the special value, variance percentage and compression variance are presented in Table 2.

According to the numbers on the tables, the specific value (the sum of the squares of the factor load) of the 5 first factors is higher than 2. This means that after applying varimax rotation, 5 acceptable hidden factors have been found out in the questionnaire. These 5 factors could explain 52.58 percent of the variance (see Figure 1).

In the next step varimax rotation is applied to achieve a simpler factor structure, as shown in Table 3.

After recognizing the factors by exploratory factor analysis the questions about each of the recognized factors were analyzed and the factors were named. So, the first factor is spatial perception caused by vision, the second one is utilization olfactory. The third one is utilization gustatory, the fourth one is stimulation and touch pleaser and the fifth factor is utilization hearing. Although questions 1-4-11-18-22 had a factor load higher than 3 in more than one factor and were put aside from the questionnaire.

4. RESULTS AND DISCUSSION

Regarding the outcomes of the research, it can be said that the most important factor in attachment to the place in autistic children, is the spatial perception caused by vision. This factor covers 14.30 per cent of the whole score of place attachment. Utilization of olfactory stands on the next grade covering 13.67 per cent of the whole variance score of place attachment. Utilization of gustatory with 9.29 per cent variance, stimulation and touch pleaser with 8.43 per cent, and auditory stimulation with 6.86 variances are in the next ranks. For this reason, it is advised that in designing the open space

of rehabilitation centres for autistic children, the spatial perception factor resulting from visual activity be used more. This means that the materials used are varied and with different textures to help the child recognize their position by seeing them. Also, in designing the green space of the area, different flowers and plants should be used, which include edible vegetables and fruit trees.

Furthermore, in the plan of micro-spaces of external spaces, items such as various spaces of different types of shadow space, low-shadow, and divisions of fields with different uses (such as designing playgrounds, pools, and water) should be considered.

[1] Kaiser-Meyer-Olkin Measure of sampling adequacy

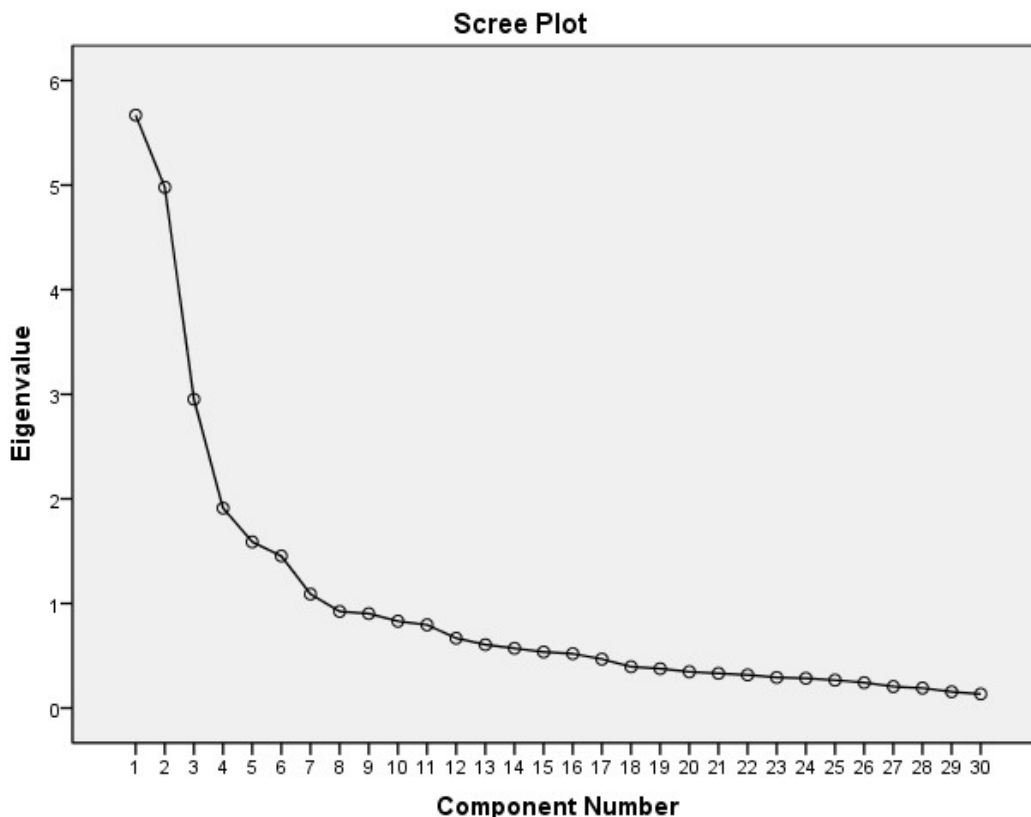


Figure 1: Number of factors and specific values in factor analysis of the questionnaire (Source: Author's analysis using SPSS)

Table 1: Characteristics of children with autism

(Source : Ganji, Mehdi. Psychology of Exceptional Children based on DSM-5)

Autism Spectrum	<i>Social disadvantages</i>	Extreme selection
		Mind reading
		Increasing sensitivity
		Lack of social interaction (verbal, nonverbal, reciprocal)
		Sensory or emotional deafness
		The genius remained in himself/herself
		A lone wolf
	<i>Language disadvantages</i>	Using language regardless of the texture
		Improper tone and voice
		He/she speaks for you, not with you
		Echo and parrot-like speech
	<i>Stereotyped behavior</i>	Reverse use of pronouns
		Limited repeated games
		Strange interested
		Repetitive movements
	Getting used to a routine	

Table 2: Factors, percentage of specific variance, and specific values (after rotation)

(Source: Author's analysis using SPSS)

Factors	Specified value	Variance percentage	Compression variance percentage
1	4.29	14.30	14.30
2	4.10	13.67	27.98
3	2.78	9.29	37.27
4	2.53	8.43	45.71
5	2.06	6.86	52.58

Table 3: Factor loads of questions and factors discovered (after rotation)

(Source: Survey by Author)

Factors	Questions		Factor load
Factor 1: Spatial perception caused by vision	3	Different spaces the place make your child likes to visit them frequently.	0.69
	10	To what extent do crowded and dimly-lit spaces inside the place help your child to recognize their position inside the place?	0.56
	13	The variety of materials used on the floor is an important factor because of which my child likes to visit the place	0.63
	15	To what extent does seeing water in the place help your child to recognize their position inside the area?	0.63
	21	Your child knows where the outdoor space is when he/ she sees the shape of the playgrounds and outdoor uses.	0.54
	24	Your child can recognize where he/ she is settled outdoor by considering the shape of the flowers and plants existing there.	0.67
	25	Your child knows where the edible vegetables are in the area.	0.43
	28	Your child knows where the fruit trees are in the area.	0.70
Factor 2: Utilization of olfactory	2	The smell of the flowers helps my child to recognize his/ her situation in the place.	0.83
	5	The scent of plants in the place is an important factor that the place is visited again.	0.83
	8	To what extent does your child know how different flowers in different parts of the place smell?	0.53
	16	The variety of the plants in the place is a factor that makes my child desire to be in that area again.	0.49
	20	How much does your child enjoy the smell of damp soil in the open space?	0.48
Factor 3: Utilization of gustatory	23	How much does your child enjoy smelling the existing flowers outdoor?	0.55
	7	how much does your child enjoy the smell and taste of the plants outdoor?	0.66
	14	How much does your child enjoy eating the fruits from fruit trees in the outdoor place?	0.53
	17	To what extent does eating vegetables outdoors make your child feel happy?	0.77
Factor 4: Stimulation and touch pleasure	19	Eating vegetables outdoor is a factor that makes my child willing to be in the area again.	0.81
	9	Your child likes to go outdoor repeatedly to touch different kinds of plants.	0.56
	27	How much does your child enjoy touching butterflies and domestic animals outdoor?	0.65
	29	One of the most important reasons to return to the place repeatedly is to touch the animals there.	0.68
Factor 5: Utilization hearing	30	How much does your child enjoy touching flowers and plants outdoor?	0.51
	6	How much does your child enjoy hearing water sounds outdoor?	0.64
	12	To what extent is it enjoyable for your child to hear the sound of birds and domestic animals outdoor?	0.73
	26	One of the important reasons for my child to visit the centre frequently is to hear the sound of the water outdoor.	0.55

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