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Evaluation of Outdoor Environment from the Viewpoint of Children

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Abstract

Children have different views in comparison with adults about environment. Our researches show that childrens leisure time almost spent in non-physical activities, thus they have less opportunities to experience the environment. This leads loss of environment awareness. Important questions of research are: What are the differences between children and adults in case of usage of outdoor spaces? And what are the environmental characteristics of child-friendly outdoor spaces? Qualitative research method is adopted for analysis. Conditions are observed on the basis of six environmental characteristic: scale, safety, amenity, accebility, sociability, variety. The results show meaningful differences between children and adults in usage of environment and children's preferences are influenced by developmental needs, physical and social factors.

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1. Introduction

Nowadays the cities grow and grow more without necessary consideration to the social needs, especially for children. Our children suffer from lack of enough physical activities as well as lack of enough social relationship. Therefore improvement of the quality of these spaces has a significant impact on personal growth and social interaction. Children and young adolescents form an important social group within society. Understanding young children's perspectives about their environment is important and should be taken into consideration in research as well as in practice. It is noticeable that in the recent years, most of children's leisure time is spent watching TV and doing other non-physical activities. Hence, creating more recreational spaces is considered to prevent idleness, loss of awareness of one's environment and lack of interaction with the environment. Unfortunately, it is in most cases observed those children's spaces have been designed without consideration of their real needs. For example, only little attention has been paid to their psychological characteristics such as a need for variety in color and shape. To actualize children's creative abilities it is crucial to pay special attention to the balance between the spaces designed for children and their developmental needs and abilities. This study examines children's preferences of outdoor environment. The influence of the environment on children's growth from the view point of developmental and educational psychology is studied and could be used in the designing process by architects and interior designers who design children's spaces. A designed space for environmental education can facilitate learning and create a more childlike atmosphere.

2. Review of the Literature

In a report by Cook and Hess (2007), Scott (2000) suggested that there is a large gulf between adult observation about child's understandings of a situation and the child's own perceptions. Thus, it is agreed that adults can't actually see the world from a child perspective (Cook & Hess, 2007) and children's perspectives are recognized as separate and different from those of adults. However, since the need to understand young children's perspective have been emphasized into practice.

2.1. Psychological Models of Learning and Developing

Jean Piaget, one of the most famous psychologists, especially because of his concentration on the intellectual growth of children, believes that children observe the world differently from adults and understand their environment through direct experience rather than by understanding the language (Seyf, 2000). One of the most important aspects of Piaget's theory is its "stages of developing", He divided this process to four distinct stages: Sensorimotor stage, Preoperational stage, Concrete operational stage and Formal operational stage. In the Sensorimotor stage (from birth to age 2), Children experience the world through movement and senses. During the Sensorimotor stage children are extremely egocentric, meaning they cannot perceive the world from others' viewpoints. In the Preoperational stage (from ages 2 to 7), magical thinking predominates. Children cannot conserve or use logical thinking. In a Concrete operational stage: from ages 7 to 12, children begin to think logically but they are very concrete in their thinking. In this stage they understand how to keep things, arrange them and rank them in different levels. In the last stage: Formal operational stage: from age 12 onwards. Children develop abstract thought and can easily conserve and think logically in their mind (Singer, 1996). Jerome Seymour Bruner also has his own theory in this field based on cognitive learning. Same as Piaget's theory he focused on how children gather information from the environment, organize it and keep it in their mind. In his research on the development of children, Bruner proposed three modes of representation: 1) enactive representation (action-based) in which children save events in their life in an active manner, 2) iconic representation

(image-based) in which children have a photographic memory from their past events, and symbolic representation (language-based) is the level of having symbols for life events especially with the representation of language (Burner, 1983).

2.2. The perceptual effect of the environment

The psychological concept of ‘affordance’ (interactive possibilities of a particular object or environment), introduced by James Gibson, is about the configuration of a framework of a behavioral object or place which are to be used for specific activities. Gibson believes that instruction of designing pays more attention to shapes and space shape combinations, while the capabilities of the space are important for people. The capabilities of space are different for various social and age groups (Carmona, 2003). The concept of capability is useful for analyzing the correlation between open spaces of a neighborhood and emergence of perceptions and creative behavior in a child (Kytta, 2002). Origin of environmental perception exists in childhood. Children see the phenomena and objects in a universal form then define them by differentiation. The relationship between the child and the environment is topologic. The child notices vicinity, separation, symmetry, continuousness and being inside each other instead of distance, size, angles and areas in topology understanding. Therefore a child perceives places based on a sense of symmetry and centricity, paths based on a sense of continuity and intersections based on surfaces (Memarian, 2005). For example when a child faces a tree in an empty yard, he does not perceive the geometrical properties of the tree, but the local centricity of the tree in their surrounding environment (Ghanbarian, 2004). From the perceptual qualities of the parks we can mention uniformity, complexity, mysteriousness, readability, familiarity, being crowded or quiet which are influential in children’s selection for permanent use of the neighborhood space (Bahram Soltani, 2005).

2.3. Place preferences and emotions

Studies of child hood memories of favorite place, such as Lukashok and Lynch (1956), Ladd (1977), Hester (1979), Cooper Mrcus (1978.1979), Wyman (1985), and Sobel (1990), and studies of children place use, such as Hart (1979) and Moore (1986), have shown that strong emotions are attached to places. On the one hand, places can provide feelings of privacy, control and security. The need to be alone and to escape from social pressures and the importance of hiding places is a general finding in these studies.

2.4. Restoration in favorite places

In open –ended accounts, children s and adolescents favorite places have been most often associated with being relaxed, calm, and comfortable. Frequent mention of being a way from everyday life, forgetting worries, and reflecting on personal matters indicates that favorite places afford emotional release and restorative experiences (Koplan, 2000). Another link between favorite places and restoration is provided by the general findings of the predominance of natural settings among favorite places. An accumulating body of evidence supports the nation that natural environments provide restorative benefits.

2.5. The concept of affordances

‘A key to understanding the implications of the built environment and children’s active living is the concept of affordance.’ (Gibson and Pick, 2000, quoted in Cosco, 2007:127) It helps us to understand the impact of the physical environment on children and to identify environmental attributes that are associated with specific behavioral responses.’ (Gibson and Pick, 2000, quoted in Cosco, 2006:17) The approach can

be understood through. Three concepts: "Affordance, information" and "pickup information" (Gibson and Pick, 2000). Affordance: Is defined as the functionally significant properties of physical opportunities and dangers, in which an organism perceives while acting in a specific setting (Gibson, 1979/1986; Gibson and Pick, 2000; Heft, 2001; Kytta, 2003).

In other words, the environment features as a property of the relationship between the environment and the users and the possibilities that a place can offer users, whether or not the landscape architects intended those possibilities. Thus the concept of affordance, in Gibson's ecological approach, has been applied to 'examine the relationship between the functional properties of the environment and how environments are used' (Clark and Uzzel, 2002:95).

Information: The environment provides information as ambient arrays of energy that is structured by surfaces, boundaries, events, objects and layout of the environment (Gibson and Pick, 2000). The information perceived changes depending on the perceiver's movement (sitting, standing, walking, etc.) and their senses (sight, hearing, taste, touch and smell).

These changes are essential for identifying, extracting and describing information about where one is, where one is going and what one is accomplishing. Pickup information: Is classified into two types: Exploratory and performatory (Gibson and Pick, 2000).

The former permits children to discover the new properties of the environment and also about their own capabilities, while the latter is the outcome of already learned affordances and this relates to actions directed towards objects or an individual(s) within a setting for an intended purpose, for example, throwing, hitting, etc.

'Perception and action are closely intertwined in both exploration and performance, and learning is an important outcome of both types of action' (Gibson and Pick, 2000:21).

2.6. Children sensory perception from space

Children must deal with forms and buildings and also with connection and live inside them feel comfort, not fear and relax. spaces with spirited and light color and often colors with unclear forms (like cases generated in watercolor painting) inspire imaginary topics and inspire feelings like kindness, sense of emotion.(Moore and Cosco, 2007:34).

While children should recognize themselves from surrounded world, should analysis and render this world. And do this by recognition surrounded forms. So however space sensory perception for children be more, it is more possible to joy from space and of course more ethic space perception.

Perception of space is difficult. The child must also to analysis the world. This recognition happens by doing things around. So you get more sense of space for children (Chawla and Heft, 2002:23).

3. Research questions and Methodology

What are the differences between children and adults in case of usage of outdoor spaces? And what are the environmental characteristics of child-friendly outdoor spaces?

Regarding the interdisciplinary approach of the research, the field of environmental psychology has been deemed appropriate for explanation of the hypothesis and its testing. Based on this, content analysis approach and logical reasoning were used at the stage of studying and explaining the subject, and general results are presented in this article.




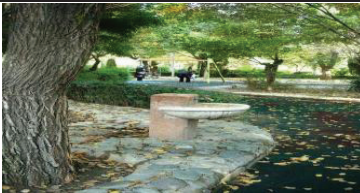


In order to test the hypothesis, research methods of environmental psychology, such as observing the behavior of children in a neighborhood park, special questionnaire of children, analyzing their behavior and paintings around the park and their practical participation in the process of design and shaping the environment of the park will be put to use.

4. Case studies

To answer the research questions, ten cases in the city of Tehran randomly selected to find the differences between children and adults in case of usage of outdoor spaces, and what are the environmental characteristics of child-friendly outdoor spaces.

In following these cases illustrated.

Table 1. Environmental characteristics of child-friendly outdoor spaces for the case studies.

| | Name of parks | Strength | Weakness |
|---|-----------------------|--|--|
|  | Nazi Abad Park | openness and aesthetics | lack of variety in pavement |
| | | | unsuitable scale of trees |
|  | Besat Park | accessibility in entry of playground | lack of amenity |
|  | Laleh Park | convenience and walk ability | lack of amenity because of large entrances |
| | | | unsuitable height of signboard for children tallness |
| | | | rough pavement parquet |
|  | Mellette Park | organic edge | inappropriate edge |
| | | suitable scale of drinking cup | lack of support and safety in playground |
|  | Zaferanie Park | the crowded trees to prevent sound pollution | unsuitable view to tall building |
| | | | lack of security in neighboring street park |
|  | Zafar Park | natural ways | lack of natural area |
| | | potential for participating children in designing nature | |

| | | | |
|--|-----------------|---|---|
|  | Shafagh Park | appropriate scale of bush | incorrect junction between ways and edge |
| | | | inflexible form of edge |
|  | Niavaran Park | challenge and complexity through variety in color and forms | lack of space for group children play |
|  | Lavizan Park | variety in type of relating ways | lack of amenity |
|  | Gheytharie Park | conduciveness to gathering and staying | lack of support and safety for sitting edge |
| | | playfulness color | |
| | | suitable scale for sitting edge | |
| | | convenience floor parquet | |

5. Results

The results of the paper show that the most challenging issues regarding to design the suitable environment for children in case of Tehran are:

- 1- Inappropriate scale in designing leisure installation
- 2- Inconvenience floor parquet material
- 3- Needfulness of amenity in designing of edge and entry ways
- 4- Varsity in forms, colors and type of ways
- 5- Necessity of security for entry of playground
- 6- Sociability spaces for group play
- 7- Instrument that provide safety for children
- 8- Presence of parents in children spaces
- 9- Flexible spaces for participate children in designing

According to findings of paper, the most promising issues related to design suitable outdoor environment for growth of childrens are:

1- Scale: There is a significant impact in using an appropriate children's space on their environment. Studies show if the space scale is relevant to a child, then better quality and more variation in the child activities is resulted. Limited spaces cause more concentration. Children usually do not long for large entrances and vast public places and they have more physical and mental comfort in residential and local scale environments.

2- Amenity: A comfortable neighborhood should feature openness and aesthetics. Openness in an environment can offer clear visibility, which could lower the fear of crime, and create opportunities for interaction. The aesthetics of an environment refers to the general pleasantness of the surroundings – well kept houses and gardens, without graffiti and rubbish.

3- Safety: Children show an extreme physical and mental sensitivity to environmental hazards. They will play in a park if they have a comfortable mental condition. Noise and pollution and absence of a physical and mental domain and crowd prevent children from an appropriate interaction with houses and living spaces, most research has focused on safety as the most important concern, leading to a huge decrease in children's outdoor activities. Safety can be differentiated into two aspects: physical and mental. The increase in car usage has contributed to an environment designed for drivers.

4- Accessibility: High accessibility means more opportunities to walk rather than drive.. Access to parks, playgrounds and recreational facilities has also been linked to increased physical activity and less sedentary activity. Furthermore, high walk ability was positively related to increase walking and cycling among children.

5- Sociability (conduciveness to gathering and staying): Research has indicated that a lack of friends is a barrier to a child's participation in physical activity, which highlights the importance of sociability to children. It offers children opportunities to learn social skills, including self- expression, communication, sharing, and compromising. Sociability also provides opportunities for role play which helps children learn emotional control. In the context of a neighborhood environment, sociability is a measure of the opportunity for people to gather, which Implies opportunities for children to engage in social interaction.

6- Variety: parks should be designed to be motivating, attractive and with variety for children and a potential of searching and discovery of unclear aspects. Such a discovery in childhood days improves the ability of thinking and helps them for their future social behaviour. It also helps children to improve their imaginations.

Table 2. The Characteristics of Child-Friendly Environment

| | characteristics | definition | examples |
|---|-----------------|--|---|
| 1 | Scale | proportion with children size | 1-proportion between installation size and children size 2-attend to children furniture size |
| 2 | Amenity | openness and aesthetics | 1-guard entrance 2-attendance of parents in children spaces |
| 3 | Safety | physical and Mental Security | 1-soft parket floor 2-attend to edge |
| 4 | Accebility | convenience and walk ability | 1-clear relating ways 2-apparent entrance |
| 5 | sociability | conduciveness to gathering and staying | 1-development of children participant 2- efficient area for group play |
| 6 | variety | variability, challenge and complexity | 1- motivating color 2-mysterious relating ways 3-complex playing installation form |

6. Conclusion

The child's interaction with the environment is of great importance, in a way that it affects the personality formation and the child's physical and mental growth. According to what Piaget has said, the children see the world differently from adults; therefore emphasis on creating comfortable, secure, accessible, attractive and creative spaces which lay the foundation for the child's physical and mental growth, are from the points which should be taken into consideration by designers (Seyf, 2000, Singer 1996). The result of the paper shows that a proper space for children in outdoor environment is what it has for characteristics namely: 1- Scale, 2- amenity, 3-safety, 4-accebility, 5-sociability and 6-variety.

References

- Bahram Soltani, Kambiz. (2005) Architecture Frames of Urban Green Spaces. Did Publication. Tehran.
- Burner, J.S. (1983) Child's Talk: Learning to Use Language. Oxford: Oxford University Press, 19.
- Chawla, L. and Heft, H. (2002) Children's competence and the ecology of Communities: A functional approach to the evaluation of participation. *Journal of environmental psychology*, 22.
- Clark, C. and Uzzel, D.L. (2002) The affordances of the home, neighbourhood, School and town centre for adolescents. *Journal of environmental Psychology*, 22.
- Cook, T. & Hess, E. (2007). What the Camera Sees and from Whose Perspective: Fun Methodologies for Engaging Children in Enlightening Adults. *Childhood*, 14(1).
- Ghanbarian, Monir. (2004) Children and civilization. Tehran Municipality Publication, Tehran.
- Gibson, E. and Pick, A. (2000) an ecological approach to perceptual learning and development. New York: Oxford University Press.
- Heft, H. (2001) Perceiver-environmental relations. In Gibson, et al. (eds.) *Ecological psychology in context*. New Jersey: Laurence Erlbaum.
- Harting, T., Book, A., Garvill, J., Olsson, T., & Garling, T. (1996). Environmental influences on psychological restoration. *Scandinavian Journal of psychology*, 37, 378-393.

- Harting, T., Mang, M., & Evans, G. (1991). Restorative effects of natural environment experiences. *Environment and Behavior*, 23, 3-26.
- Kytta, M. (2003) Children in outdoor contexts: Affordances and independent Mobility in the assessment of environment child friendliness. Unpublished Doctorial, Helsinki University of Technology.
- Kytta, m. (2002) Affordances of Children's Environments In The Context of Cities, Small Towns, Suburbs And Rural Villages In Finland And Belarus.
- Memarian, Gholamhoseyn. (2005) Study to Architectural Theoretical Foundation. Sooroosh publication. Tehran. Iran.
- Moore, R. C. and Cosco, N. G. (2007) What makes a park inclusive and universally designed? A multi-method approach. In Thompson, C. W. and Travlou, P. (Eds.) *Open space: People space*. London: Taylor & Francis.
- Singer, Dorothy G. and Revenson, Tracey A. (1996) *A Piaget Primer: How a Child Thinks*. Revised edition. New York: A Plume book, by The Penguin Group.
- Seyf, Aliakbar. (2000) *Educational Psychology: Learning and Teaching Psychology*. Agah publisher. Tehran. Iran.