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THE QUALITY OF GREEN SPACES BASED ON BEHAVIORAL PATTERNS USING FACTOR ANALYSIS-A CASE OF KHOLDEBARIN PARK IN SHIRAZ, IRAN.

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ABSTRACT

All people interact with their surroundings; they affect it or they are influenced by it. Providing some solutions, this research aimed at improving the quality of green spaces by using behavioral patterns to enhance the quality of space in line with the characteristics and needs of users. It, therefore, examined men's behavior settings and the way to apply techniques in order to increase the quality of green spaces in harmony with people. This study conducted in Kholdebarin Park located in district 1, Shiraz. Direct observation, interview and a questionnaire on the quality of different spaces for different age groups are the research's methods. Obtained data showed that coefficient of variance was 0.786 for both variables, namely the environment and behavior. Two variables, therefore, had the same effect on the behavior settings. There was also a correlation between environmental and behavioral factors; the significance level of this relationship is less than 0.5.

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KEY WORDS

Green Space, Behavioral Patterns, People-Environment Interaction, Kholdebarin Park, Shiraz.

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INTRODUCTION

Green spaces play an extraordinary role in human's life with different and multilateral values such as providing security, comfort, and creating leisure and recreation environment for people to gather, etc. In fact, it creates diversity in mind. One of the criteria to assess the quality of urban environment is public green spaces in which citizens are able to interact comfortably. The importance of this issue is to the extent that today there is an attention to urban green spaces and applying policies to release people of some problems such as despair and frustration, and to create a good relation between environment and green spaces [1]

To recognize behavioral psychological and human interaction with the environment, the issue is of one the architects and urban planners' interest. To design according to the psychological patterns allows designers to create flexible environment which responds to people's different trends, a place which Altman believes makes it possible to monitor social interaction [2].

The relationship between man and environment follows a system in which sensory receptors are influenced by environmental stimuli and finally human's response appear as behavior. All human behavior is done in certain spaces considered as behavior setting. Space is desirable when it is designed in accordance with individuals' characteristics, behavior and his needs. In design of spaces, it is necessary to consider human, his perception and behavior to make it consistent with the environment's target. Therefore, in order to benefit from human spaces in which the value of the environment is concerned, it is necessary to examine human-environment interactions and the consequences of it on behavioral patterns [3]

Barker studies behavioral patterns of individuals under ecological psychology, i.e. behaviors presents in behavior settings collectively. He believes, there is a certain connection between physical and behavioral aspects of these settings. The relationship is expressed by the concept of homologous. He states, there is a relationship between man

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and these settings; it takes certain social roles in different behavior settings. He defines the behavior settings as a fixed set of activities and places in which certain repetitive activity or fixed patterns of behavior happens, have a specific plan of environment, and make an appropriate relation between repetitive activities and environment that is done in a certain period of time [4]. It is necessary to examine the factors influencing behavioral patterns in behavioral place (green space), and then by them try to increase the quality of green space, and to make the space consistent with users' behavior.

MATERIALS AND METHODS

To achieve the desired goal of this research and to recognize the positive points by examining and finding the potentials available in the park, the analytical and descriptive methods are used to develop the behavior patterns. Data are collected through field study, observation, interviews and questionnaires. The case study is Kholdbarin Park–an urban park. Factors are extracted through library researches and the questionnaire designs on the basis of them. Pattern's factors in a behavior setting are divided into those stimulate the behavior and those related to environmental design. The options are considered as 6 photos of park. Data analysis has been done through SPSS software and has been presented by descriptive and inferential approaches such as correlation coefficient, mean and ANOVA **[Figure- 4]**. Fig. 5 also indicates the executive process of the research.

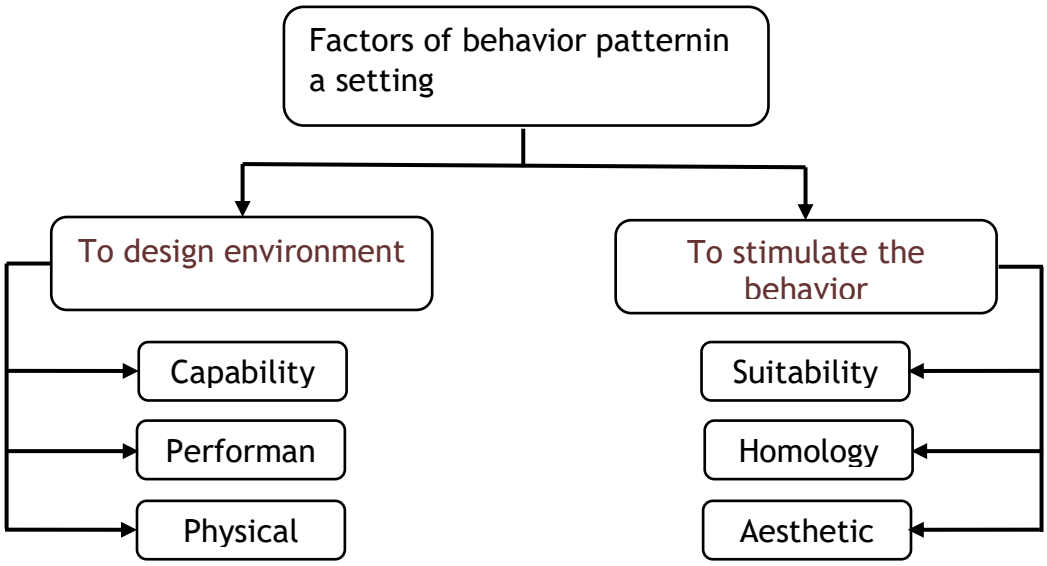

Fig: 4. Factors of behavior patterns in a setting

RESULTS

In this study, the quality of spaces is examined according to the mentioned factors.

Descriptive Statistics

According to **Table- 2**, 34 men and 32 women participated in the research, among them 53.8% were married and 47% were single. Age category includes respondents between 7-75 years old. The majority of them were between 16 and 25 years old which indicate a young sample group. Nearly 38.5% of the respondents had M. A. or higher education, 40% diploma and A. M, and 21.5% were students.

To do this research 6 spaces were chosen in the park. They were the choices for the questionnaire. The researchers asked the people in the park to respond to the questionnaire by choosing one of the pictures.

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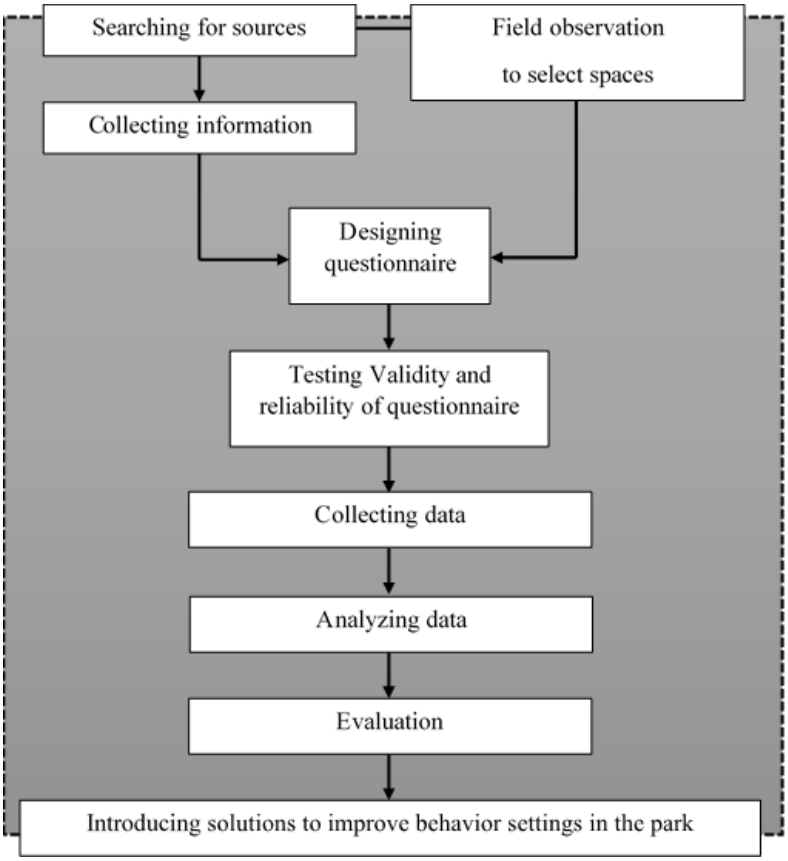

Fig: 5. Research executive process diagram

Table: 2.Demographic characteristics of samples

	number	Count (%)
Gender		
Female	32	48.5
male	34	51.1
Marriage status		
Married	31	53
Single	30	45.5
No response	1	1.5
Age		
7-15	10	15.2
16-25	16	24.2
26-35	10	15.2
36-45	10	15.2
46-55	10	15.2
56-75	10	15.2
Educational background		
Elementary school	7	10.6
Guidance school	3	4.5
High school	4	6.1
Diploma	25	37.9
B.A/BSc	1	1.5
M.A/MSc	23	34.8
PhD	2	3.0
No response	1	1.5

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Inferential Statistics

a) The effect of age on aesthetic factors

As **Table- 3** shows, the age affects the aesthetic factor. As the results of mean indicates respondents between 46-75 years old paid more attention to this factor (=3.5775) and after this group the respondents between 46-55 years old poses the second place (=3.0100). Therefore, it can be concluded that when the person is older the aesthetic factor become more important.

Table: 3. The effect of age on aesthetic factors.

Age category	Age	Mean	Standard deviation
1	7-15	2.6200	0.48259
2	16-25	2.8562	0.81320
3	26-35	2.8400	0.99465
4	36-45	2.2400	0.65862
5	46-55	3.0100	0.54665
6	56-75	3.5775	0.90711
-	Sum	2.8572	0.98882

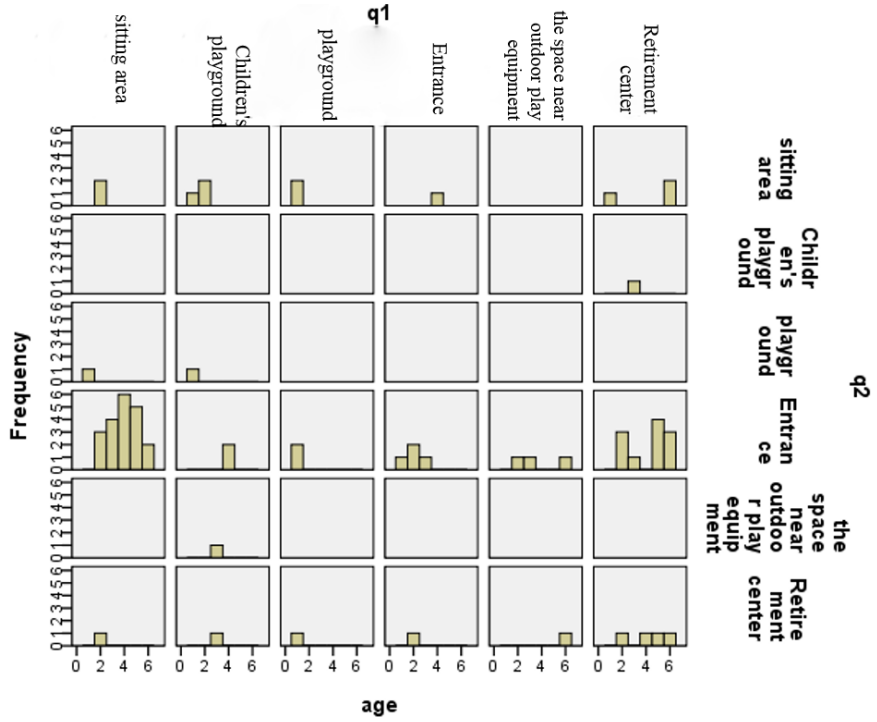

Fig:8. Assessing the spaces based on aesthetic factor; question 1 is about the memory of place, and question 2 is related to the culture which is subcategory of aesthetic factor. Age categories are shown in the horizontal axe.

According to **Figure-8**, among different spaces, the entrance space contains cultural characteristics, and sitting area and retirement center evoke the memory of place more for the respondents.
Group 4 (36 to 45 years old respondents) selected the choice "sitting area" more than other groups; and group 5 (46 to 55 years old respondents) selected the choice "retirement center" more than others.

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Table: 4.the most striking aesthetic factors and quality of space

Behavior setting	Aesthetic factors		The quality of space
entrance	Landmark, culture	Landmark, Iranian culture, visual beauty	Using an element appropriate to culture, good vision
sitting area	The memory of place, the value governing thinking, attitude, meaning, need, culture	Iranian culture, the memory of place, visual beauty, pleasure and comfort, sense of belonging to the place, sense of invitation	climatic comfort, good view, the existence of fountains, silence, the existence of shade and appropriate furniture, centrality of the form, justify to performance
retirement center	culture, simulation, meaning, need, the value governing thinking	sense of belonging to the place, pleasure and comfort, sense of invitation, the memory of place	cozy space, justify with the needs, belonging Iranian culture characteristics

b) The Effect of Factors in Behavior Settings

Table-5 shows the share value of variance coefficient for each variable. The primary share values are estimated variance in each variable considered with all components or factors. The values of this column indicate the amount of the total variance; all factors can explain it. In this section, the value of this variance is equal to 1 for all variables. Its variance extracted share value varies. This amount can vary between zero and one (Afshani, 2012). As shown in **Table-5**, this amount is equal to 0.786 for both the variable. Both variables (environment and behavior), therefore, have the same effect in behavior setting.

Table: 5. The share values

variable	primary share values	estimated share values
environment	1.000	0.786
behavior	1.000	0.786

According to **Table-6**, the rotational component matrices of both variables - environment and behavior - equally influence the behavior patterns and are in interaction with each other. Among environmental factors and in comparison with other factors, aesthetic factor is more effective [See **Table-7**], and among behavior factors, the physical factor is more effective in behavior settings[See **Table-8**].

Table: 6. Rotational component matrix of environment and behavior.

Variable	rotational component matrix
	1
Environment	0.887
Behavior	0.887

Table: 7. rotational component matrix of aesthetic and homology.

Variable	rotational component matrix
	1
Aesthetic	0.722
Homology	-0.722

Table: 8. rotational component matrix of aesthetic and homology.

Variable	rotational component matrix
	1
physical	0.818
capability	0.641
Performance	0.204

As shown in **Table-9**, there is a correlation between the environment and behavior, and the significance level is less than 0.05. Therefore, the assumption of no correlation is rejected.

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Table: 9. the correlation between the environment and behavior.

variables	correlation	significance level
Behavior- environment	0.599	0.00

DISCUSSION AND CONCLUSION

With the development of human societies and vacuum of meaning and concept in space, and lack of attention to the people's psychological needs with different ages in built spaces, the users considered the quality of spaces and the role of aesthetic and physical factors in building different spaces to create an appropriate pattern in a behavior setting. Its consequence includes paying attention to effects of environmental and provocative behavior in built space and in human's mind and behavior. These factors can determine the type of relationship between the audience, his activities and environment. Therefore, the way physical and aesthetic elements are used in spaces is important **[Figure- 9]**.

Examining the effect of age on the aesthetic factors it can be said:

- Middle-aged and older people have considerable attention to aesthetic factors.
- The entrance space shows the most cultural characteristics; data indicates sitting area and retirement center have the most memory of place, respectively.
- In spatial perception, spatial quality as users' psychological perception is of paramount importance.

Examining the effect of factors on behavior settings it is concluded that:

- The amount of extracted share value of variance coefficient for both variable is equal to 0.786; therefore, both variables (environment and behavior) were equally effective in behavior settings.
- The effect of physical factor as compared with other factors in behavior patterns was also more significant.
- There was also a correlation between environmental and behavior factors and the significance level of this relationship was less than 0.05.

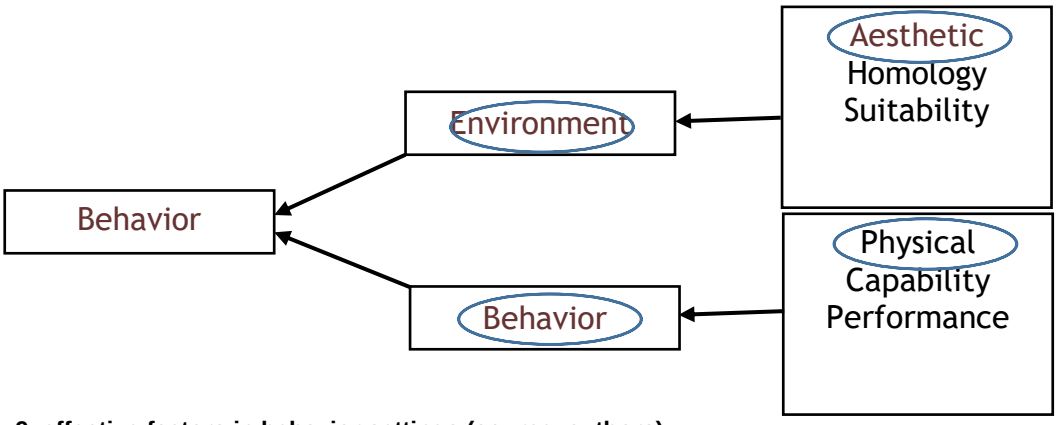

Fig: 9. effective factors in behavior settings (source: authors)

CONFLICT OF INTEREST

Authors declare no conflict of interest.

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None declared.

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