Identification and Analysis of Factors Improving Social Life in Urban Public Spaces with Focus on Enclosure and Sociability

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Abstract

The dominance of vehicles in the urban spaces of Iran has continuously decreased the human scale and degraded social values. Unfortunately, the issue of human-centered designs has been rejected in many cities of Iran. The central square of Bam city is one of these spaces. In this study, with regard to the importance of social life in public urban spaces as one of the main elements of the city and public sphere, the effective factors of improving social life in urban spaces are identified. The focus of this identification is on the element of enclosure and the role and significance of each factor in flourishing social activities. The nature of this study is descriptive-analytical, and it has a practical purpose. The study investigates the views of 83 participants in SPSS software with factor analysis and attractiveness measurement model. The results indicate that from a total of 35 identifiers extracted from the literature and the views of experts, 3 main factors (physical-spatial, activity-functional and perceptual-semantic) are determined with 29 identifiers, which play a significant role in improving social life in urban spaces with focus on enclosure and sociability. Moreover, it was found out that the revitalization of these factors is important in improving social and optional activities without affecting compulsory activities. At the end, the results showed that enclosure is the fundamental principle of urban spaces and architectural design, and that the space is in fact begins with enclosures. The observance of the factors identified in this study may turn urban spaces to spaces that are sociable for people in connection with other principles of architectural design.

Keywords: Urban public spaces, Enclosure, Sociability, Factor Analysis.

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Introduction

Technological developments and the advent of devices such as cars, televisions, refrigerators, telephones, computers, and the Internet have reduced the need for people to be in urban spaces for shopping, entertainment, work, and even social interactions (Hampton et al, 2015) to the extent where a growing trend of private life is observable today. However, community life can increase the vitality, health, security and stability of cities (Gehl, 2010). Unlike individual life, social life requires a specific place with special circumstances –a place that the public has access to (Rezazadeh and Abbas-Zadegan, quoted by Hedman and Yazowski, 2015: 89). One of the most important spaces that need to be considered in the discussion of sociability are public spaces.

Urban public spaces, as the most important part of cities, are an essential element for social life that cause movement in urban spaces, exchange of information and awareness, sociability, and enrichment of the quality of urban environments (Madanipour, 2012: 1) and are one of the most important environments where one can free oneself from the formal constraints and become a part of the caravan of human society. David Harvey believes that cities are reproduced in public spaces, and man also constantly redefines his social "self" in public spaces (Barati and Khademi, 2018: 20). Open spaces include parks, squares, streets, and open spaces of residential areas (Muruani & Amit-cohen, 2007). In fact, these spaces are enclosed by building blocks and natural elements that are occupied by people to perform certain tasks of daily life. The main function of these spaces is to provide and lay the groundwork for the reception of all classes, age and gender groups and social minorities at all hours of the day and night. Therefore, the quality of public spaces and urban elements can be the basis for the presence or absence of citizens in urban spaces (Remeaser, 2005). One of the characteristics of urban public open spaces that can play a role in collective life, social stability and consolidation of cultural symbols and their integration in urban public open spaces is "enclosure". In order to achieve an attractive urban space, there should be enclosure in a desirable way. In fact, the first principle in designing urban spaces is "enclosure" (Tavassoli, 1997: 26). Enclosed communities are created with the goal of achieving security, safety, privacy, identity and a specific lifestyle.

Enclosure has an important role in creating a spatial understanding and communication between the user and the environment, to the extent that if the space is not enclosed in a desirable way, a desirable urban space cannot be achieved (Seyedian, 2007: 46). The effect of enclosure on collective life in a public space can be seen as a result of the presence of people and their activities and can be the basis for valuing the place (Lawson, 2012: 56) and the purpose of creating a public space. However, the enclosure of spaces is only a trivial goal and is not enough to make a place perfect (Jaecheol, 2017,2). Therefore, addressing the social needs that are among the top needs in Maslow's proposed hierarchy (Lang quoted by Frampton, 2011: 116) and socializing the space to meet the social needs of human beings can be a desirable goal for public spaces. Jan Gehl studied sociability in public spaces according to the activities of residents and introduced three general types of activities: essential, selective and social activities, and two types of voluntary and social activities as the characteristics of a good city. However, the main emphasis was on the association of collective life with social activities.

The purpose of this study is to identify the factors affecting the promotion of collective life in urban public spaces with emphasis on the element of enclosure and sociability and the impact and importance of the identified factors in the formation of three activities (mandatory, voluntary, social).

In order to state the problem and the purpose of the research, the following questions are asked:

1. What are the most important factors in promoting the collective life of urban public spaces with emphasis on the factor of enclosure?
2. What role do the identified factors play in relation to the creation and flourishment of

the three activities emphasized by Jan Gehl in urban spaces?

Literature Review and Theoretical Background

The present study consists of the main concept of "sociability" in public spaces and the specific concept of "enclosure". In recent years, extensive studies have been conducted on the sociability of public spaces, but less attention has been paid to the factors affecting the promotion of collective life in urban public spaces with emphasis on the element of enclosure and sociability. In particular, in this study, the impact and importance of the identified factors in the formation of the three activities (mandatory, voluntary, social) emphasized by Jan Gehl in urban spaces, is the main goal and innovative aspect of the research.

Public Spaces

Public spaces are valuable when they create a social and interactive role in the collective life of citizens (Mohazab Talab, 2006). These spaces are important elements of modern cities and play a vital role in various areas of human life (Kurniaty, 2014: 517). Carmona also believes that these spaces should be accessible to all classes as a stage for behavior, representation and social interaction (Carmona et al, 2004).

In Dehkhoda dictionary, the word 'public' is defined as the opposite of 'private' which belongs to the public (Dehkhoda, 1345). In general, whenever we talk about public space and its impact on society, two concepts of space come to mind. The first one is the physical meaningfulness of public spaces that can be seen in places like parks, squares, streets and the like, and the second one is the ability of these spaces in forming human communities independent of the government that create social freedoms in the mind of the individuals (Asadi Mahallali, 2012: 51).

Experts have pointed out the most important indicators of the desired quality of urban public spaces (Table 1). These indicators directly and indirectly affect the collective life and social behavior of citizens.

Theoretician	Year	Criteria of urban public spaces
Jane Jacobs	1961	Order of activities on visual order, mixed use, permeability, ability to monitor and care, variety and richness of activities, attention to the street, possibility of social mixing, richness of activities, flexibility.
Kevin Lynch	1985	Adaptability, accessibility, control and supervision, efficiency, justice, vitality (social), meaning, vitality (biological).
Woolch	1983	Readability of the environment, freedom of choice, different urban forms, possibility of social life, listening to the sounds of the past, attention to indigenous regional connections.
Ian Bentley	1985	Permeability, Diversity, Flexibility, Permeability, Diversity (Form), Readability, Flexibility, Visual Adaptation, Richness, Possibility of Personalization, Energy Efficiency.
Panter and Carmona	1997	Land Use, Pedestrian Flow, Behavioral Patterns, Riding Flow, Permeability, Public Perception, Qualitative Evaluations, Functions, Meaning Association, Readability, Objective View, Artificial Form.
Swarth Worth	1989	Structure, legibility, form, sense of place, identity, vision, human scale (foot).

T1. Indicators of urban public spaces

Despite the various definitions of public space, most scholars agree that these spaces include all areas that are open and accessible to the public in a community (in principle, not necessarily in practice) (Orum, 2001: 1).

Sociability

With the increase of individualism in modern society, the importance of human environments such as public spaces that bring people together and thus improve social interactions increases (Salehinia and Memarian, 2009: 6). Sociability is the ability of a place to gather a combination of human communities in different forms of social life. It appears in urban spaces such as neighborhood units, neighborhoods, etc. (Muzaffar Et al., 33: 1391).

In 1957, Osmond first defined the terms sociable and unsociable as the spatial qualities for environments that bring people together or separate them, adding that not every socializing space is desirable. In a desirable space, these two qualities must be balanced together (Osmond, 1957). Twittra considers social spaces as places for human peace that help the citizen to find the city's role and influence on the formation of his personality (Mitcherlich, 1969: 172). Halprin calls the spaces in which urban life takes shape and allows citizens to choose freely with great variety, and believes that, in fact, it is these spaces that give the city a special quality and character (Halprin, 1972: 210). Focusing on city squares, Zucker calls socialized urban spaces as elements that transform society into a "community" in the

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true sense of the word, and not merely an "aggregation of individuals" (Zucker, 1970: 157).

The study of collective life dates back to the 1960s when criticisms of opposition to modern architecture and urban planning peaked due to the neglect of social needs and the marginalization of social interactions (Mahmoudi Farahani & Lozanovska, 2015: 178). During this period, studies of collective life by researchers such as Jane Jacobs (1961); Ian Gol (1971) and William White (1980) began (Gehl & Svarre, 2013: 2-3).

White (1980) looked for ways to increase the vitality and presence of people in urban spaces. He defined street life as "where people talk for hours and say goodbye for a long time"; and this leads to the growth of urban behaviors.

Gol introduced three general types of activities that include necessary, selective and social activities (Gol, 2012: 5) Among these, he introduced two types of voluntary and social activities as characteristics of a good city (Biddulph, 2007: 49).

Francis Stuart Chapin (quoted by Bahraini 2014: 140) divides people's activities in space into three categories: compulsory activities (such as work and sleep), optional activities (such as family activities, and recreation) and participatory and passive activities.

Type of activity	Desirable environmental quality	Undesirable environmental quality
Compulsory		
Optional		
Social		

T2. The relationship between environmental quality and environmental activities (White, quoted by Charkhchian and Daneshpour, 24: 2007)

Comprehensive studies of collective life in one of the world's first cities (Copenhagen) have been conducted regularly for decades (WHO Report FINAL WEB, 2017; 73). Collective life, or in other words, socialization in an enclosed public space, has been proposed in contrast to social exclusion in order to increase the collectivism of the people. Holland et. al. have also noted the decline in the social nature of public open spaces (Askari, 2014). Furthermore, Jacobs emphasizes the importance of social activities by mixing uses in a public space (Jacobs, 1961: 153-222).

Regarding the sociability of public spaces as a key component, many researchers have shown the effect of physical, social and psychological factors on sociability:

Daneshpour and Charkhchian (2007) using the library and documentary study method, in addition to reviewing the literature in relation to the main variables of the study, studied the characteristics of social public spaces. They believe that the formation of social public spaces requires attention to privacy, territory, readability, comfort and security. In terms of physical dimension and gaining environmental awareness and experiences, they considered the presence of people and social interactions as important and pointed to three types of activities (mandatory, optional and social) in urban public spaces. In fact, the relationship between these activities and the physical quality of spaces can affect the degree of sociability of urban public spaces. Shojaei and Partovi (2015) used descriptive-analytical method and field method (questionnaire and observation) to study and recognize sociability in urban public spaces, its factors and the relationship between different factors and sociability. By examining the dimensions of socialization of urban public spaces, they introduced three dimensions including physical, social and activity-related. Their findings showed that not paying attention to the scales of public spaces leads to disruption or functional interference on the public space of the area and also the public space at a lower scale. In other words, the public space of the local scale loses its relative efficiency and does not reach the set goal.

Hassanpour et al. (2015) have mapped the factors affecting the promotion of social interactions in the form of an analytical model. The method of his research was field observation. The results of this study indicate that the physical factors of the environment, the user and other people present in the environment are factors affecting the quality and quantity of social interactions.

Hatami and Zaker Haghighi (2018) with the

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aim of investigating and identifying the factors influencing the choice of public space by citizens on the two sidewalks of Bu Ali Sina and Ekbatan in Hamadan have tried to provide a new perspective on achieving a successful public space chosen by citizens. The study has adopted an applied research and a descriptive-analytical method. The collected data were analyzed using SPSS software (one-way analysis of variance T and Spearman correlation coefficient). The results of this study show that attention to non-physical components is of high importance compared to other components.

Alavi Nasab Ashkezari et al. (2019) have studied the factors affecting the socialization of space in three public spaces including descriptive, analytical and field methods and using the questionnaire tools. The focus of the study was on the Book Garden, Museum of Sacred Defense and Pol-e Tabiat. The results show the sociability of collective and public spaces in Tehran in three general categories of physical, activity-related and social factors and that the social dimension is more prominent than other components of research. The most important factors in the degree of sociability and success of a public place compared to other places are as follows: accessibility, presence of people, comfort, social interactions, social activity, flexible spaces, quality and beauty of the place.

Javan Majidi and Negari (2019) have done a descriptive-analytical research adopting field study and using a questionnaire with the aim of recognizing the components of socialization in the city hall. Physical, functional and semantic perceptual components have been identified as research indicators. The results showed the importance of legibility and visibility, the hallmark of the city hall, inviting entrance, the existence of transparent spaces, holding national and religious celebrations and ceremonies, the existence of cultural function, creating identity and having collective memory in the socialization of the town hall.

Naghi Lou and Falahat (2016) have studied socialization in urban environments. This research proposes a conceptual model for describing sociability that is based on three aspects: human, environmental and semantic-perceptual factors. They studied the effects of environmental factors on socialization in urban spaces and divided them into physical and social categories.

Enclosure

Enclosure is one of the important elements in creating sociability in urban spaces, defining the place and emerging a sense of identity, which is actually the feeling of being inside a defined space to the extent that if an urban space is not enclosed properly, it cannot be an urban space.

According to Dehkhoda dictionary, "enclosure" means confined, surrounded, limited by walls and fences (Seyedian and Abaf Yeganeh, 2007: 48). The purpose of enclosure is to enclose a space by its walls, so that it feels like it is inside a container. Enclosure has certain degrees. In the street, enclosure depends at least on two factors, "the ratio of wall height to floor" and "the degree of continuity of street wall". Color, texture, shape of wall and floor materials also affect the enclosure of a space. All the defining elements of space, volumes, surfaces and points, such as types of buildings, walls, trees, etc., create enclosure and each of them has a different effect on the observer. It should be noted that human beings have a special expectation for each place from enclosure and enclosing elements (Pakzad, 2007: 133).

Some consider the enclosure of space as the first feeling that should be achieved in urban spaces (Carmona quoted by Zaita, 2005: 289) or as one of the most basic principles of creating space (Dost Hosseini et al., 2017: 126).

Shaftoe considers enclosure in terms of creating a micro-climate to be effective in creating a happy and exciting atmosphere (Shaftoe, 2008: 70). In addition to achieving human scale, security and comfort are other categories that have considered enclosure to be effective in creating them (Tibbalds, 1992: 41). The public spaces created as a result of enclosure. They have been explored through the study of physical elements. Moughtin considers the key to enclosing a field to be the treatment of its corners (Moughtin, 1999: 57); and White considers the sense of

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enclosure in the Seagram Plaza as a reason to enjoy that place (White, 1980: 26).

Among the physical factors affecting the enclosure, some studied W/H (Carmona et al, 2003: 139) ratio and some other were concerned with D/H ratio (Table 3). For this reason, in order to find the optimal number for W/H ratio, some have researched a street space through their effect on comfort and safety (Alkhresheh, 2007; 18) or by using virtual reality simulation technique for W/H ratio (Jaecheol and Seungnam, 2019; 1).

In addition to the W/H ratio, other factors such as the appearance of buildings and the size of the space (Tavassoli, 1376-27: 29) have been mentioned in order to achieve an attractive urban location. These three factors have been studied in the enclosed urban square through their impact on perceptual qualities (Jaecheol, 2017: 1).

The origin of enclosed communities may go back to the history of human habitation and the formation of human communities. Building fences and walls around residential spaces has long been common in residential areas. However, the growth of enclosed communities by today's definition has been palpable in most parts of the world since the 1970s. There has not been much research on enclosure in public spaces. Here are two examples of research that helped explain the basics of enclosure in this article:

Seyedian and Abafat Yeganeh (2007) by comparative study of qualitative and quantitative factors of enclosure in traditional urban landscapes of Iran and Europe, showed the importance of cultural, climatic and temporal conditions that enclosure according to other principles of urban planning and architecture should result from local and contemporary conditions –an effort that maximizes the convenience of space for pedestrians and riders.

The results of Kalantari research (2010) indicated that enclosure may increase social cohesion and improve the sense of community, comfort and security at the local community level.

Row	W/H Ratio	Sense of Enclosure	
1	1:4	Weak	Outward views do not remain inside the space enough to create a sense of enclosure
2	1:2.5 & 1:2	Good	Visibility overcomes the sky less and the sense of 3D enclosure increases.
3	1:1	Strong	Creates minimal comfort in terms of enclosure.
4	Above 1	Very strong	Creates a sense of fear of enclosure and reduces the penetration of light into space.

T3. Height to width ratio for street enclosure (Carmona et al 2015: 297)

Urban public spaces have been created with emphasis on the factors of enclosure and socialization. The nature of the present study is quantitative and qualitative, and it has an applied purpose with a descriptive-analytical method based on survey strategy. The data were collected by completing the questionnaires designed by the researchers. The research questionnaire was developed based on the literature review and its validity was confirmed by the professors of architecture and urban design. The statistical population of the present study are experts of urban space design (organizational experts, university professors and undergraduate and graduate students in the field of architecture and urban design) who were familiar with the subject and had the ability to answer the questions. Using the expert group method and available sampling, 83 people were examined and the questionnaire completion stage continued until theoretical saturation was reached. One of the reasons for using Available Sampling was that it means selecting subjects that are either available to you or that are very easy to find. The main advantage of this method is that it is very easy to use. Before analyzing the data and extracting the effective factors related to the collective life of urban public spaces and the role and importance of the factors affecting the three activities in urban spaces, the degree of reliability and generalizability of the research findings should be examined. Cronbach's alpha was used (0.74) which indicates the acceptable reliability of the research findings. After data collection in the present study, SPSS statistical analysis software was used to analyze the data. In this study, different statistical and mathematical models and techniques were used to answer the research questions. To answer the first question of the research, factor analysis method was used, which is a well-known statistical model for summarizing data and determining effective factors, and to answer

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the second question of the research, which is in relation to the identified factors and their role in creating and flourishing the activities emphasized by Jan Gehl in urban spaces, attractiveness measurement model was used.

Research Indicators

Since enclosure alone could not be a goal for public spaces, the sociability of space was also proposed as a desirable indicator. However, less studies have been done about the relationship between the physical components of enclosure and collective life. The coherence of physical and social dimensions was formerly the approach of modern designers. However, the evolution of architecture led to the abandonment of the social dimensions of space. This is because of the inaccurate explanation of relationship between independent variables (environment) and dependent variables (social behavior) in the study of social behaviors in space. Therefore, in this article, the factor of enclosure and its related elements (as an independent variable) and its effect on promoting sociability in urban public spaces (as a dependent variable) were studied and analyzed. In order to determine indicators for measuring and operating the concepts of enclosure and sociability, as well as the value and importance of each of these indicators (Table 4) participants were asked questions in the form of a questionnaire with Likert scale (very high, high, medium, low, very low).

Criteria	Indicators
Physical criteria (with emphasis on the enclosure factor and related elements)	Composition of linear elements, rows of building columns, how to connect the interior divisions of the designed space with the surrounding spaces, vertical wall surface, width of the designed space, height of the frame of the designed spaces, materials used to build surfaces and cover the designed spaces, color variation in the designed space, wall Continuous with variety of rhythm, sufficient space to sit, access and visual and physical continuity of the designed space, functional nature of the blocks designed in the walls, compatibility of activities in the walls, mixing and richness of activities in the walls, compatibility Visual in the facade of buildings, revitalization of passive uses in space, design of legible sidewalks in enclosed space, quality of lighting and illumination, use of small-scale commercial uses as a stimulus for pedestrian activities in space, accessibility, no significant differences between the facades of buildings Use of ramps instead of stairs, low noise in space, use of water and water fountains in enclosed space levels to create comfort, existence of elements for sitting, inviting enclosed space for sitting, playing, etc.
Criteria for sociability	Voluntary activities in space, ethnic diversity, age and gender of space users, possibility of holding cultural and artistic ceremonies and events, memorable level of enclosed space, identification of enclosed space as an element of urban, individual expectation of space, attendance, mental image of people from space

T4. Indicators used in research with emphasis on the factor of enclosure and its related elements and the factor of sociability – Source: Schultz (2012), PPS Institute (2010), Jane Jacobs, quoted by Sharepour (2010), Lang (2003), Al-Haqla (2009), CDM (2008), Kahana (2003), Landry (2000), Gehl Yan (2006), Carmona (2011)

Research Findings

One of the main applications of factor analysis method is to classify variables into several factors and to better understand the nature and complexity of phenomena and their relationships with each other. In the present article, after extracting the indicators from the study of theories related to the subject under study, about 39 indicators were selected. After consulting with professors and experts, these indicators were compiled in the form of a questionnaire and provided to specialists, experts and students. Before performing the factor analysis method, Bartlett test with KMO coefficient was used to evaluate the adequacy of the sample size and reject the null hypothesis; because it is not possible to use this model in all situations and the data must have the necessary competence. The KMO value should be higher than 0.5 and then this model can be used. The KMO value in the present paper was calculated to be 0.71, which shows the executability of the data in the factor analysis model. Bartlett test was used to determine the correlation value of the research factor model, and it was equal to 2486.81 with a significance level of $0.000 \leq 0.001$. This shows that the obtained data are suitable for factor analysis. Then, the correlation matrix was formed after standardizing the initial data to eliminate the scale difference. The closer the internal correlation value between the variables, the lower the number of factors. In the present study, about 35 reagents were evaluated by 83 specialists during the research. The number of extracted factors along with the specific value of each of them, the percentage of variance of each factor and the cumulative frequency of the percentage of variance of the factors are given. Eigenvalue is the variance of the set of observed variables that is explained by each factor. The first factor always explains the largest

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variance of the variables, so it has the largest eigenvalue. In the present study, 3 main factors were extracted, the specific values of each of which were above 1, and the changes and variance of the variables were well interpreted. In fact, the eigenvalues of the three factors were such that the studied reagents were more scattered around them. According to the results of Table (5), 3 main factors were extracted, the first factor with a special value of 7.59 the highest share and the second factor with a special value of 4.68 in the next order and the third factor with a special value of 2.37 the least contribution in explaining the changes they had.

Row	Factor	Special Values	Variance Percentage	Variance Cumulative Percentage
1	1	7.59	31.71	31.17
2	2	4.68	18.64	50.35
3	3	2.37	13.09	63.44

T5. Number of factors extracted with eigenvalues, percentage of variance and cumulative percentage

According to the obtained loading factors, the first factor has 16 subfactors. The subfactors of the first factor are those that are related to the physical and spatial part and most of the spatial dimensions and technical dimension of the enclosed space. For this purpose, the first factor was named as the physical-spatial factor. The second factor is composed of 6 subfactors which have the nature of activity and function in public space, thus the name is activity-functional. The third factor, which is named perceptual-semantic, has 7 subfactors whose nature is internal and perceptual (Table 6).

Physical-spatial factor

According to the studied indicators and their physical and technical nature in the formation of the element of enclosure in urban spaces, the first factor in this study, which was formed from 16 reagents, was named the physical-spatial factor. Due to the appropriate physical structure, urban spaces can lead to the revival of civil society in urban spaces.

Activity-functional factor

An urban space is a combination in which various social, service and cultural activities and functions take place. Jane Jacobs also emphasizes the need for forms of social communication, social interaction, and the activity of urban spaces. Due to the nature of the studied reagents (6 reagents), this factor was named as an activity-functional factor.

Perceptual-semantic factor

This factor provides the basis for improving the quality of the environment and emotional feeling towards the place in shaping the foundations of human-environment communication. It causes closer communication and interaction of citizens with each other in public spaces and creates stronger social ties with space and a feeling of vitality and happiness.

Importance Valuation of Indicators regarding the Identified Factors with related Activities

Considering the identified factors related to the collective life of urban public spaces with emphasis on the factor of enclosure and sociability and consultation with professors and experts, the three activities (social, optional, compulsory) that were fully described in the theoretical foundations section, the study discusses the value and their relationship with the identified factors. For this purpose, the model of measuring the level of attractiveness was used. Evaluating the importance and relevance of the components under consideration in relation to the activities performed in urban spaces will include a score between 1 and 5 according to the standard weight. Moreover, the level of attractiveness will be based on three groups: 1 (level 1) to 3 (level 3). Table (7) discusses the level of importance and relevance of physical factor indicators in relation to triple activities in urban spaces, and it was found that indicators such as the combination of linear elements, the manner of internal divisions of space, color variation in the designed space, designing sidewalks etc. are of great importance in promoting the level of social activities of people in public urban spaces and then play a role in promoting voluntary activities. However, physical indicators have the least role in the forced activities of individuals.

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Row	Factor	Variable	Factor loading
1	Physical-spatial factor	Combining linear elements	0.715
		Row of building columns	0.627
		How to connect the interior divisions of the designed space with the surrounding spaces	0.619
		Vertical wall surface	0.529
		The height of the frame of the designed spaces	0.667
		Materials used in the construction of surfaces and covering designed spaces	0.707
		Color variation in the designed space	0.496
		Unified and continuous walls with a variety of rhythms	0.688
		There is enough space to sit	0.723
		Visual and physical access and continuity in the designed space	0.551
		Visual compatibility in the facade of buildings	0.616
		Design of legible sidewalks in enclosed space	0.722
		Lighting quality and lighting	0.678
		No major differences between the facades of the buildings	0.481
		Use ramps instead of stairs	0.518
		Use water and fountains on enclosed space surfaces to create relaxation	0.642
2	Activity-functional factor	The functional nature of the blocks designed in the walls	0.725
		Compatibility of activities in the walls	0.682
		Mixing and enriching activities in the walls	0.598
		Revive inactive applications in space	0.488
		Using small-scale commercial uses as a stimulus for pedestrian activities in space	0.553
		The number of voluntary activities in space	0.503
3	Perceptual-semantic factor	The amount of memory of the enclosed space	0.532
		Low noise in space	0.671
		Inviting the enclosed space to sit and play etc.	0.499

T6. Results of factor rotation by Varimax method

	Combining linear elements	Row of building columns	How to connect the internal divisions of space	Vertical wall surface	Height of frame space	Used materials	Color variation in the designed space	enough space for sitting	Visual and physical access and connectivity	Visual compatibility in the facade of buildings	Design of sidewalks	Lighting quality	No huge differences between the facades	Use ramps instead of stairs	Unified and continuous walls with a variety of rhythms	Use water and water fountains	Total points	Attractiveness
Social activities	4	5	5	4	5	3	5	5	5	4	5	5	4	4	4	5	72	1
Optional activities	3	3	4	3	4	2	4	3	5	3	4	4	3	2	3	3	53	2
Compulsory activities	1	2	2	2	2	2	1	3	3	1	3	2	2	1	1	1	29	3

T7. Importance of physical-spatial factors with three types of activities

The results of the study of the components of the activity-functional factor in the promotion of triple activities in urban spaces are presented in Table (8). According to Table (7), the importance of the existence of activity-functional components in promoting social and voluntary activities in urban public spaces is at the level of importance and has a greater role in the formation of collective life in urban public spaces. Moreover, the existence of some of these components has a role and effect in performing compulsory activities in urban spaces.

The results of the attractiveness measurement model for the perceptual and semantic dimension in relation to the promotion of the three activities are given in Table (9). The existence of perceptual and semantic components in urban and architectural spaces, causes the formation of a special relationship between the individual and the environment. This dimension is the factor that turns the space into a place with special sensory and behavioral characteristics for people; Therefore, according to the research findings, perceptual and semantic dimensions play an important role in promoting social and voluntary activities in urban spaces.

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	The functional nature of the blocks designed in the walls	Compatibility of activities in the walls	Mixing and enriching activities in the walls	Revive inactive applications in space	Using small-scale commercial uses as a stimulus for pedestrian activities in space	The number of voluntary activities in space	Total points	Attractiveness
Social activities	5	4	4	5	5	5	28	1
Optional activities	4	3	3	3	4	4	21	2
Compulsory activities	4	3	3	1	1	1	13	3

T8. Importance of activity-functional factors with three types of activities

	The amount of memory of the enclosed space	Low noise in space	Expectation from space	Inviting the enclosed space to sit and play	Identify enclosed space as an urban landmark element	Attendance rate	People's mental image of space	Total points	Attractiveness
Social activities	5	5	5	5	5	4	5	34	1
Optional activities	4	4	4	5	5	4	4	30	2
Compulsory activities	1	1	3	1	2	1	2	11	3

T9. Importance of perceptual-semantic factors with three types of activities

Conclusion

Considering that one of the principles of achieving a desirable and attractive urban space is enclosure, scale and proportion in body, structure and elements, most studies are concerned with numbers to analyze the elements of enclosure including three aspects of floors, walls and the façade of the buildings and columns. Enclosures are, in fact, created by combining material surfaces and urban elements. The present research studies the characteristics of these combinations and the elements of such spaces in order to enhance the attractiveness of the space and promote collective life and the presence of people in that space to perform activities. To do so, we have collected reagents relevant to the principles of enclosure and sociability of public urban spaces. After that, using factor analysis model, reagents were identified and summarized in the form of three factors: physical-spatial, activity-functional and perceptual-semantic. Existence of various activities in space causes the gathering of people and promotes the feature of collectability. However, this ability depends first on the people to have the opportunity to engage in various activities and to choose the activity that suits their interests or needs. If different activities are put together, one can engage in several activities at the same time. Secondly, the enclosed space should create a suitable platform for offering different activities and be able to perform several different activities and provide a suitable space for people to sit and play with young children. In other words, the space should be able to perform different activities together with the appropriate equipment and furniture. Finally, the enclosure of space is the basic principle in architectural design and urban space, and space actually begins with enclosure, and observing the factors identified in this article can enhance the sociability of urban public spaces in conjunction with other principles of architectural design.

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