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## Explanation and Evaluation the Impact of Environmental Factors on the Formation of Behavioral Patterns in Urban Spaces (From Theory to Practice: Study of Tajrish Square)

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### Abstract

**Statements of problem:** The presence of people in urban areas with the aim of “being in space” is one of the components of the vitality of urban spaces, Which leads to the promotion of social relationships, the increase of natural security, the sense of belonging to the place by increasing the possibility of occurrence of individual and collective memories and reducing crime in the city.

**Goal:** The purpose of the present research is to explain the forms of occurrence and patterns of behavior in urban spaces. By studying one of the important urban spaces of Tehran, Tajrish Square, we try to provide a comprehensive analysis based on the recognition of behavior patterns in this urban space. The main question of this research is about the relation of various dimensions of urban space with the formation of behavioral patterns.

**Research method:** For the analysis of urban spaces, Tajrish Square has been selected as an urban space with a high level of actions and diverse activities. Qualitative analysis and observation using behavioral mapping techniques, interviews, and photo analysis were conducted to assess the status and to answer the research questions.

**Conclusion:** In this research prove that various behavioral patterns including walking, standing and sitting is under the influence of three main components of functional-activity, environmental-physical and cultural-social. Behavioral patterns are heavily influenced by land use and presenting of amenities in urban spaces encourages citizens to develop different behavioral patterns.

**Keywords:** *Urban space, Behavioral patterns, Criteria, Analysis, Environmental psychology.*

### Introduction and expression of the problem

Urban spaces are areas for the presence and

occurrence of different behaviors of citizens. The relationship between space and behavior or the environment and society, both in the social sciences (aesthetics, sociology, psychology

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and management) and in environmental sciences (architecture, geography and urbanization) has led to the emergence of theoretical models, which in general provides a good guide for the formulation of a space-based model in urban behavior management, the base of the above theories are that open space makes social production; urban space in general and urban imagery in particular make behavior reveal. Considering human desires and motivations in shaping urban spaces in the last few decades has been highly sought after. In this regard, some people with emphasizing on the existence of behavioral patterns in these spaces, accentuate the importance to recognize and apply these activities and behaviors in designing and shaping urban spaces.

The theoretical basis of this research is behaviorist movement. The foundation of this movement is a science called "environmental psychology," which was raised since the 1880s. In these years, the subject of human perception from space and Gestalt theory were seriously raised. Of course, the form of human perception from space has been discussed and noticed from many years ago. With the formation of a movement called behaviorism in environmental design, a movement that many people have defined as a clear answer to restoring the quality of the human living environment, indeed, a group of architects have realized the need to create a common language and strive to build and create a new knowledge for creating an environment that can be better known to people (Motalebi, 2001: 52).

The main purpose of the present research is to analyze the patterns of behavior in Tajrish Square as a lively and successful urban space. In this regard, it is attempted to recognize and understand the factors influencing the ideal quality of urban spaces by emphasizing the complexities between social, economic and political issues, based on the practical and theoretical classical principles of the field of behavioral sciences. Therefore, in the first step, the behavioral patterns in this space should

be identified and categorized, and in the next steps, by analyzing or recognizing the factors affecting these good and bad patterns, it tries to identify these factors and enable, intensify or decline them according to their condition .

The main research question is about how the various dimensions of urban space communicate with the formation of behavioral patterns. Other questions are also raised, including: What are the dimensions, criteria, and indicators of urban space affecting behavior patterns? What is the effect of mentioned dimensions, criteria, and indicators on presentation of citizens' different behaviors in the urban environment, and in particular in Tajrish square? It should be noted that the present study is based on the hypothesis that the various dimensions and components of urban space constituents are the main determinants of behavioral patterns.

### Research method

This research is an applied research. Using the method of collecting information through library studies, texts, sites and documents related to the field of behavioral and placemaking, and also using techniques such as non-interventional observation, photographing, filmed, recorded interviews and dialogues have been recorded quantitative and qualitative information by conducting field studies and the terms of the combination (quantitative-qualitative) is considered. It also examines trends and currents and describes what is happening in terms of behavioral patterns in urban environments. Due to the need to examine the relationship between these patterns and urban space using the analytical method, in summary, this research is considered as an analytical-descriptive research. The area of monitoring the scope of this research is Tajrish Square, located in the district 1 of Tehran and with the presence and the observation of the researcher during several days in different hours of the day in various parts of the study area, the daily life of this area was reviewed based on the behavioral patterns of 30 space users through behavioral

mapping techniques which were further analyzed. This analysis is based on the content and is made by the authors.

### Background research

The present study consists of two concepts of behavioral patterns and urban space, each of them has been the subject of various researches. In the field of urban spaces, numerous studies have been carried out, some of which have sought to improve the conditions of these spaces using behavioral patterns. In this research, behavioral patterns were considered as the main factor in the formation and improvement of urban spaces.

“Theil” in his studies at 1962, devised a method called “Space Measurement and Counting”. He did his research on examples in Japan and the United States, in this way, he organized the physical forms that the person understood when moving with a change in his speed and direction. The Theil method, which has been considered as the most complete and complex method, is used to record and analyze the characteristics of pedestrian spaces at low speed; being analytical is the most important point of this method. In this method, a large number of contractual symbols are set for specific features of space, and then they are used as the base of the analysis of the pedestrians’ behavior in space. His main goal in these studies was to find the contractual symptoms that all of the properties of space such as crowded or non-crowded, could be identified and revealed by them. In other words, he sought to create a common language for designers. Although Theil is one of the pioneers of behaviorism, Donald Apilard has been identified as the founder of visual-behavioral studies, which, in collaboration with Kevin Lynch and John Myer, in 1964, conducted the first visual-representational research in city scale, and its results were published in the book of “The view from the road”.

In 1969, Halprin used another new method for recording circuit or repetitive behavior of people in urban environment. After that, Foley conducted

a study entitled “A Method for Understanding the Construction of the Spaces of Large Cities” and Weber conducted a study entitled “Urban Places and Townships and Urban Area” in 1971. In the same year, William White published a project called “Street Life”. In these studies, White’s goal was to examine the behavior of ordinary people on the streets and to find out whether or not there was a certain order in their behavior (Bahrainy, 2008: 240).

Other studies in this field include the redesigning of the Tachio Square in Naples. The goal of this project was to improve the use of spaces by pedestrians, taking into account the general and hypothetical overview of the behavioral patterns of users from space. In another study, the Mellastman square in Toronto aims to analyze the relationship between behavioral patterns and space design features and examines the reciprocal effect of space and behavior on each other. But Jan Gehl has done a lot of research in this area and has been focusing on this since 1987. Gehl believes that the design of the physical environment can be effective on the number of events and the number of people using public spaces, the duration of an activity and the type of activity; alike other foreign researchers include Lorap (1972), Venus (1983), Aldenburg (1999), and others. In Iran, fewer studies have been carried out. Important studies in this regard in the country can be found in the study entitled “Analysis of urban spaces in relation to user’ behavior patterns.” This study was conducted at the University of Tehran by Dr. Bahrainy during the years 1985 to 1987. Using a series of photographing techniques of urban spaces and recording activities and patterns of motion on the map of a number of important squares and urban spaces of Tehran, has been analyzed in this research and it is argued that culture creates behavioral patterns which determine and express the way people use spaces. Then, environmental factors are also referred to as guiding and supporting of behaviors in urban spaces. Other Iranian related

researches are Motalebi (2001), Rezazadeh (2005), Rafie'an and Khoda'i (2009), Bahrami and Qaraee & Mansournia (2016), and others.

### Theoretical Foundations

The environment is one of the most basic concepts that need to be identified for discussion in this article. In his urbanism culture, "Robert Cowan" defines the environment as a local environment in the language of urbanization, which means the characteristics of a place, and divides it into two parts of the natural environment and the artificial environment (Cowan, 2008). The presence of human habitats in nature and the human effort to benefit from the natural benefits of their habitats leads to a complex relationship between natural processes and artificial environment. In this way, the meaning of the environment here is everything that surrounds man (Dehkoda, 1946: 621). The relationship between man and his surroundings is a function of his multiple senses complex. The importance of human senses is so much that Edward Hall considers the human feelings of space to be closely related to his perception of his senses, which is also in close reaction with his surroundings (Hall, 1966). Motivation is the driving force of behavior. Behaviors are shaped to meet human needs. Human needs can be grouped into different categories, one of which is the hierarchical model of needs, which Maslow (1943) has invented to classify and used in environmental design fields. Somewhere else, they have defined behavior as a way of doing an activity, which is also aimed at providing human needs (Pakzad, 2006: 41 & 48). Rapoport, on the other hand, considers culture as an important factor in shaping the activity of people and the resulting settlements (Rappaport, 1977). In other words, culture generates behavioral patterns, and then behavior patterns determine and express how people use spaces (Bahrainy, 2008: 2). In general, it can be stated that the environment and culture are two factors that have shaped the behavior of humans, which have been examined from different angles (Hall, 1966; Lang, 2005; Rappaport, 1977).

Also "Environmental psychology" seeks to create a link between environmental and cultural factors and does a "psychological study of behavior in the physical environment of daily life" (Craik, 1970). Although based on what Stephen Friedman has argued, traditional psychology studies focused on individual or intrinsic phenomena of the environment and analyzed behavior in the context of the relationship between individuals or the individual's states (Friedman & Juhasz, 1974), today as Altman has stated, "environmental psychology" has been redefined and studies human behavior in the environment and the field "(Altman, 1975). In fact, the behavioral environment of the cognitive image is the objective environment that shapes the basis of behavior (Koffka, 1935).

There are different views in the field of behavioral patterns in urban environments and spaces. In Table 1, theorists and related concepts about the perceptual and behavioral dimension of urban space are discussed (Table 1).

Also Jon Lang tried to develop the knowledge of behavioral environments and attempted to create a theory based on behavioral studies for designing human-made environments. John Lang's main characteristics of the behavioral territory are: if at certain times a consistent and different behavioral pattern is observed, that environment would be seen as a separate behavioral site (Lang, 1987: 128). It is shown in Fig. 1.

According to Gehl, people's activities in public spaces can be classified into three groups each of which needs different characteristics in physical environment: essential activities, selective activities, and social activities:

Essential activities: every person, in any case, had to do these activities. Since such activities are compulsory, it receives the least impact from the material environment and public space, as it is done always under any circumstances. If the outer environment has a low quality, people only do the necessary activities; and where the quality of space is high, in addition to doing essential activities, they

Table 1: Summarizing the ideas in the field of behavioral patterns in urban environments and spaces, Source: authors.

<b>Dominant Approach</b>	<b>Key concepts</b>	<b>Title Text / book / theory</b>	<b>Year</b>	<b>Theorist</b>
Strengthening social interactions	The public realm, the main cause of extraterrestrials and political and public life	Human condition	1958	<b>Hannah Arendt</b>
Strengthening social interactions	The square is a factor of the transformation of community into society and is not just the place where people gather	City and square	1959	<b>Paul Zucker</b>
Environmental-behavioral effects	Formation of the mental image and elements of the city's image from the perspective of citizens	The Image of the City	1960	<b>Kevin Lynch</b>
Strengthening social interactions	The sidewalk is the factor of creating reinforcements and social interactions, the concept of social monitoring through design	The death and life of great American cities	1961	<b>Jane Jacobs</b>
Environmental-behavioral effects	inactive status of human towards the pedestrian navigation environment in urban environments	Human aspects of city form	1977	<b>AmusRapoport</b>
Strengthening social interactions	Emphasis on the social role of urban spaces	The social life	1980	<b>William White</b>
Strengthening social interactions	Impact of transport and urban structure on social interactions	Small urban spaces Livable streets	1981	<b>Appelard</b>
Environmental-behavioral effects	Direction of people in urban space and paying attention to the special needs of users	Routing in architecture	1984	<b>RafidiPasini</b>
Environmental-behavioral effects	Behavioral Capacities / Subjective Planning from People's images of the Environment / Interactions Between the Built Environment and Behavior	Creation of Architectural Theory (The Role of Behavioral Science in Environmental Design)	1987	<b>Jon Lang</b>
Strengthening social interactions	Division of activity in urban space/ essential, selective, social	Living Between Buildings	1987	<b>Jan Gehl</b>
Strengthening social interactions	Emphasizing on the public sphere as the third realm of people	Good places, cafes, coffee shops and other hangouts in the heart of a community	1989	<b>Oldenberg</b>
Strengthening social interactions	Evaluation of the residential environment and the introduction of seven urban spaces	People places	1990	<b>Marc Colercoop</b>
Environmental-behavioral effects	Paying attention to behavioral patterns and the cultural-social context for designing	Social vitality	1999	<b>House clown</b>
Environmental-behavioral effects	Emphasizing on the study of the behavior in public spaces	The Endless City	2008	<b>Reiki Bordet, Dian Sudjik</b>
Environmental-behavioral effects	Study of public life as a principle	What We See	2010	<b>Goldsmith, Elizabeth and Goldbear</b>

tend to be in the environment and prefer to walk than travelling by car.

**Selective activities:** Such activities do not have a vital aspect, and will be done under favorable conditions such as recreational activities.

**Social activities:** These activities are related to the presence of other people in space, and they are

generally not possible outside of the collective, such as children's play, short visits to neighbors and local shopkeepers (Gehl, Gemzoe & Kirknaes 2008).

Jan Gehl considers the amount of these activities in the urban environment and space in relation to their quality, and Fig. 2 illustrates this relationship (Fig. 2).



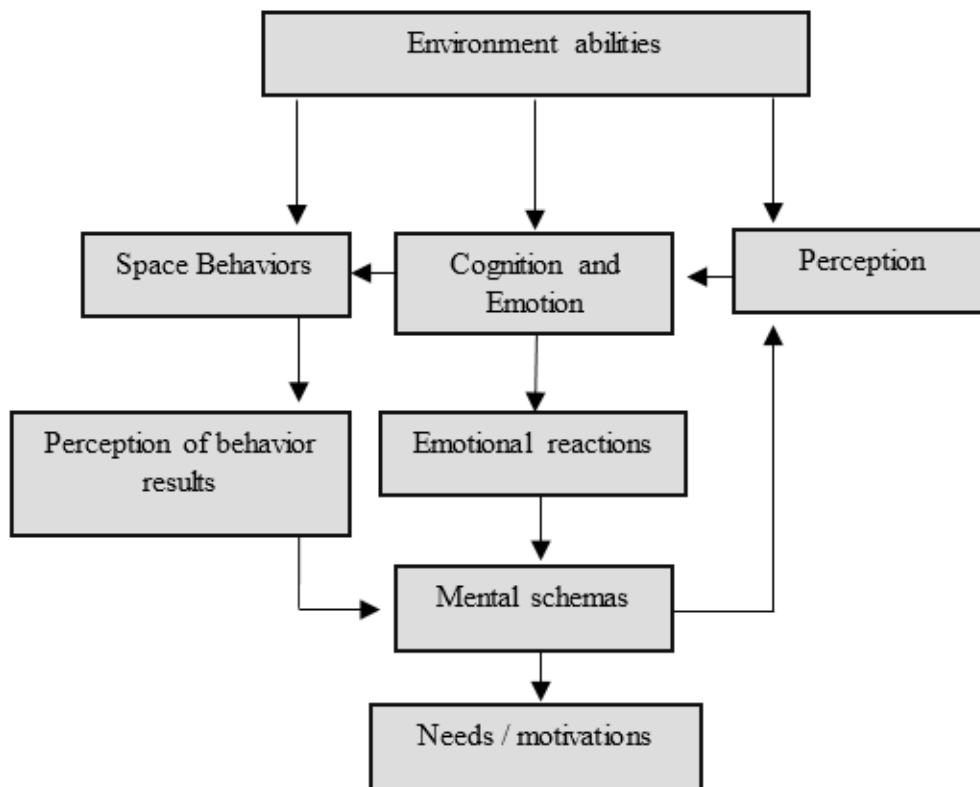


Fig. 1. The Fundamental Processes of Human Behavior. Source: Lang, 1987: 95.

To formulate a conceptual model of research, after reviewing the definitions and concepts, the evaluation of the opinions of theorists and researchers and the global experiences about the formation of behavioral patterns in urban space, criteria, and indicators have been adopted. These criteria and indicators have been adapted to and commonalities have been selected as criteria and indicators of this research. The dimensions of the formation of behavioral patterns in urban spaces are classified in three main dimensions of functional-activity, environmental-physical, and cultural-social in this research. Each of these dimensions has the criteria and each criterion has one or more indicators. The relationship of dimensions, criteria, and indicators is hierarchical. Dimensions of the criteria and indicators are presented in Table 2.

### Study area

Tajrish is one of the oldest neighborhoods in Tehran located in district and is considered as one of the main areas of the capital, so Tajrish Square is

selected in order to analyze the behavioral patterns in urban space based on the designed model (Table 2). In the past, Tajrish Square has been Shemiran people's stopover, a gathering and exchange center with other people. In the area around Tajrish Square, there are some popular attractions such as Tajrish market and Imamzadeh Saleh and a wide area of outdoor space around the square is dedicated to bus and taxi stations. This square is in the intersection of two main streets of Tehran, the north-south main link of city (Shariati St. and Valiasr St.). In addition, the other main access roads to this area include the streets of GholamJafari, Fanakhosro, Sa'adabad, and Maghsudbeyg (Fig. 3).

### Research Findings

#### • Functional-Activity

The functional-activity dimension consists of four criteria that require indicators for measurement. To analyze the factors a qualitative method using

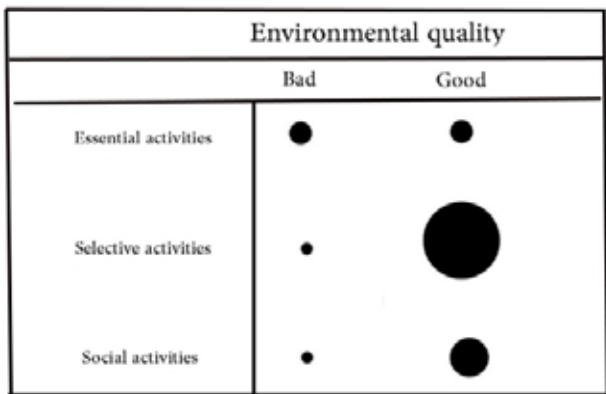


Fig. 2. Relationship between the quality of outer space and the incidence of external activities Source: Gehl, 2008: 5.

field observations (interview, questionnaires, illustrations, ...) was conducted and the results of each criterion was investigated and analyzed separately as follows.

The presence of pedestrians in this field is evident because of the diversity of applications and activities. The location of the land use is set in Scheme 2, and the various activities for land use are also shown by the illustration, which has led the various strata to appear in this space (Fig. 4). Tajrish Square and its surrounding areas are the most important trading zone of the district 1, which

operates beyond the district and attracts many people from other parts of Tehran to weekly and monthly purchases. Another land use related to this activity is the tourism and entertainment that includes hotels, hospitality, restaurants, or similar land use. Because most of these types of land use have cross-regional performance and require adequate access roads, they are mainly distributed along the main communication network. The existence of cross-regional religious practices such as Imanzadeh Saleh, which has a very important role in the area, is another important point in the study of range land uses (Fig. 5).

In the study of the type of activity, there are three main categories: walking, standing, and sitting. In the Fig. 5 Movement patterns of people using the motion drawing technique (tracking or chasing shadow to shadow) in different time periods and age groups are taken and the movement plan is presented in this map, and in the Fig. 6, activity patterns of standing and sitting in the study area are drawn. Various activity patterns (moving, standing up and sitting) in different spaces of the square occur due to access to various land uses and other criteria, as further will be explained (Fig. 6 & 7).

Table 2. Dimensions, Criteria and Indicators of the Research, Source: authors.

Indicators	Criteria	Dimensions
Checking of types of land uses	Land uses diversity	<b>functional-activity</b>
Walking, studying, watching, sitting and ...	Type of Activity	
Live music, paintings in space, crafts and ...	Public activity	
Urban side wall classification based on: active, friendly, coherent, boring and inactive	Type of Urban side wall	<b>environmental-physical</b>
Pedestrian & cars spaces and ...	Passage & access roads	
Flexibility in planned and unplanned activities	flexibility	
Suitable & enough equipment: urban furniture, flooring and ...	Facilities and services	
Presence of historical and natural elements (valuable vision corridors)	Valuable perspectives (historical, natural, ....)	<b>cultural-social</b>
Space enclosure, spatial identity in the body, body height and street width...	Visual qualities	
The existence of people in different groups of ages and gender	Social presence	
Way of interaction based on essential, selective and social activities	Social interactions	

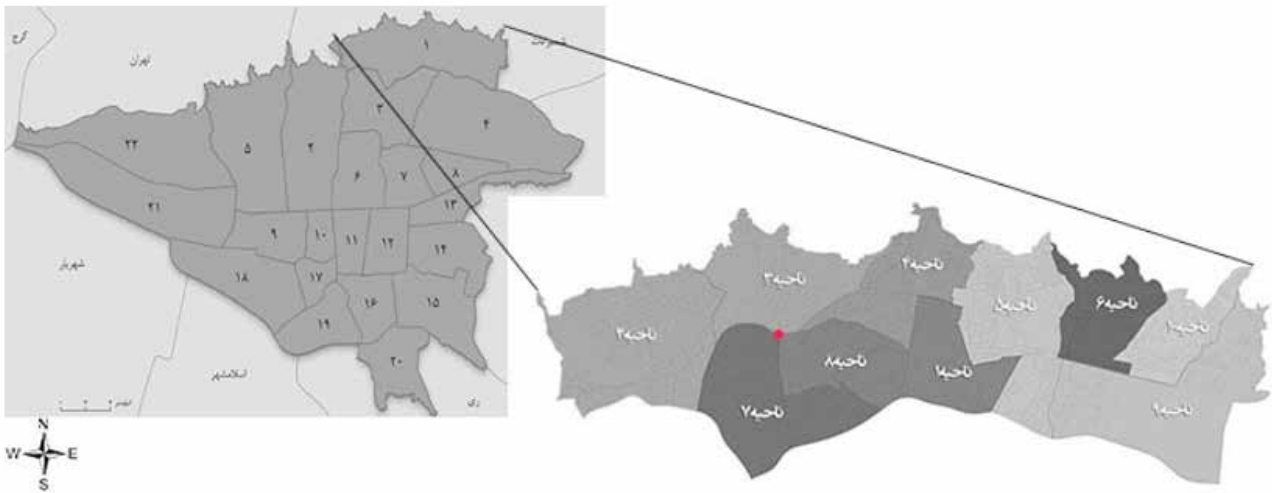


Fig.3. Tehran City, Position of Tajrish Square in district 1. Source: Tehran.ir.



Fig. 4. Location of Land use and type of activities. Source: authors.



Human activities and experiences, as well as unusual or unexpected events cause the initiation and creation of dialogue. William H. White (quoted by Jan Gehl, 2015) uses the term triangulation in the social life of small urban spaces and states that in the position of two people who do not know each other and start talking through an external event, uses the term triangulation. The outer event acts like a facilitator, which can be a street artist or a physical element like a statue. The classification of the sidewalk according to the criteria set out in the article "Cities for People" by Jan Gehl in 2016 is presented in Fig. 8.

#### • Environmental-physical

In order to study the environmental-physical dimension, six criteria are considered separately. In this dimension, qualitative analysis and descriptive statistics are used to analyze each criterion.

The main issue in the system of motor vehicles is the high volume of vehicles moving in the square and the passageways around it in the east-west direction and vice versa which along with the existence of commercial spaces and the bus and taxi stations which has led huge number of cars on the street sides of the municipality and pedestrians, especially during peak hours. Taking taxis at certain times has increased traffic in the street and caused the formation of a pattern of standing in certain parts of Tajrish Square. Tajrish Square is the center of Shemiranat so the above pattern is intensified.

In Fig. 7, visual qualities and valuable perspectives (historical, natural, ...) have been mapped and analyzed (Fig. 9).

The existence of the natural landscape of the Alborz Mountains as a symbol for Shemiranat and the city of Tehran and the spiritual aspects of the Imamzadeh Saleh landscape, along with the largely green landscape of streets leading to the square, is derived from its local identity, and is part of the visual quality. This field is effective in shaping different patterns such as taking pictures, watching, walking, talking, and the existence of four buildings with a historical architecture of different periods

of time are other important elements affecting the visual quality of Tajrish Square. Post office building on the southwest side of the square, built around 1931, Tajrish post office building has two floors and with brick facades and in terms of climate, the ceiling of the building has been constructed for the Shemiranat. The Lister building is located on the northwest side of the Ahmadiyah building. This building was built around the years 1941 to 1951. This architecture is based on the architecture of the modern period in Iran. In fact, its architecture is in Art Deco style of architecture. The facade is made of cement and the form of windows and the shape of the columns are the features of this building. The coffee house is the building that is located on the south-east side of the square, which has a special place in the memory of the people of Shemiran and the architectural style related to modernity (the combination of Persian and Western neoclassical architecture). The balconies facing the street and the facade divisions and the openings and the shape of the ceiling are architectural features. The Melli Shoe Building is located on the side of the east of Tajrish Square. This six-story building was built in early 1971 and has an international style architecture. The view of the building consists of windows horizontally and the rest of the body is covered with stone.

#### • Cultural-Social

In order to analyze the cultural-social dimension, two criteria are considered. The results of the survey are presented in a comparative manner based on the questions of the questionnaire in relation to social interactions, social attendance is shown in Fig. 10 & 11.

In the context of this dimension, it can be said that Tajrish Square is an area for the younger, middle-aged and elderly people to entertain, and there is no limit to the presence of women and men, and there is room for maneuver at different times. In examining how interaction is based on the main activities (essential, selective, and social), major contributions to the necessary activities

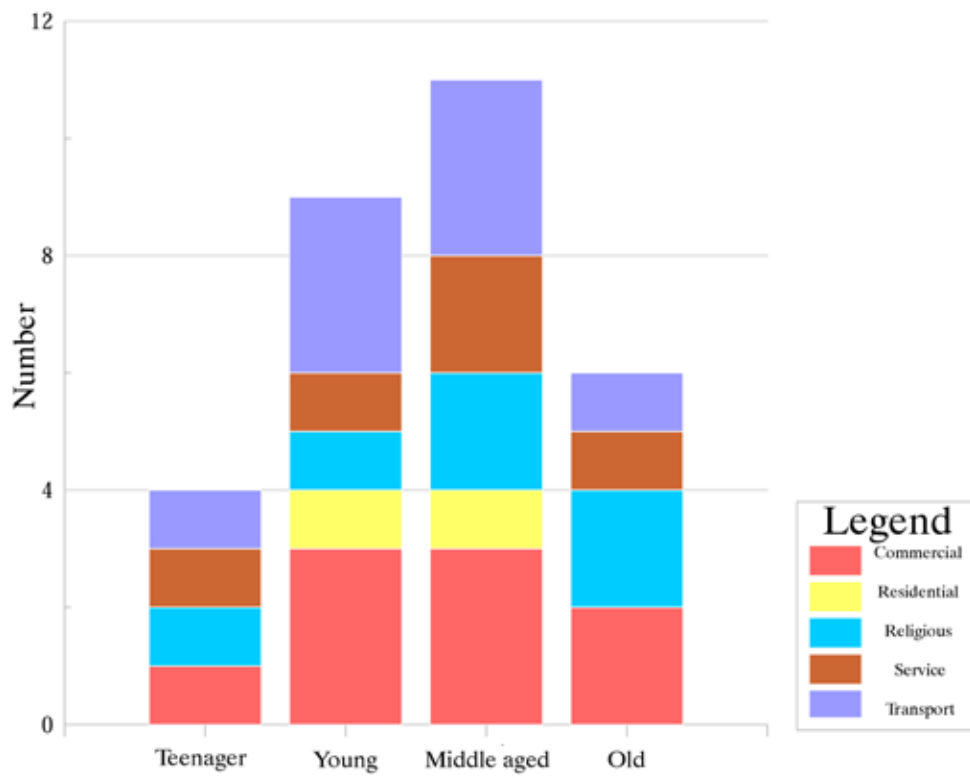


Fig.5. Target Land Uses for Different Age Groups, Source: authors.



Fig. 6. Citizen's Movement Model, References: authors.

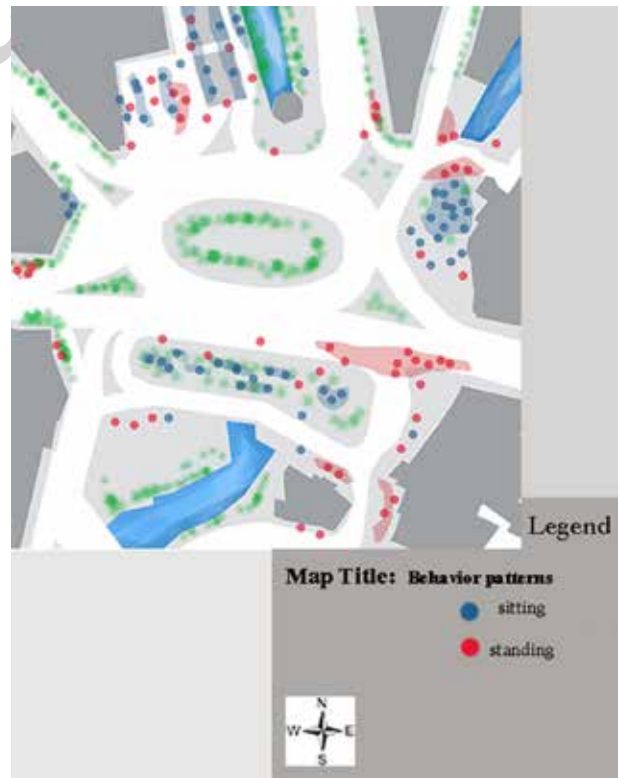


Fig.7. Behavioral patterns (sitting and standing), Source: authors.

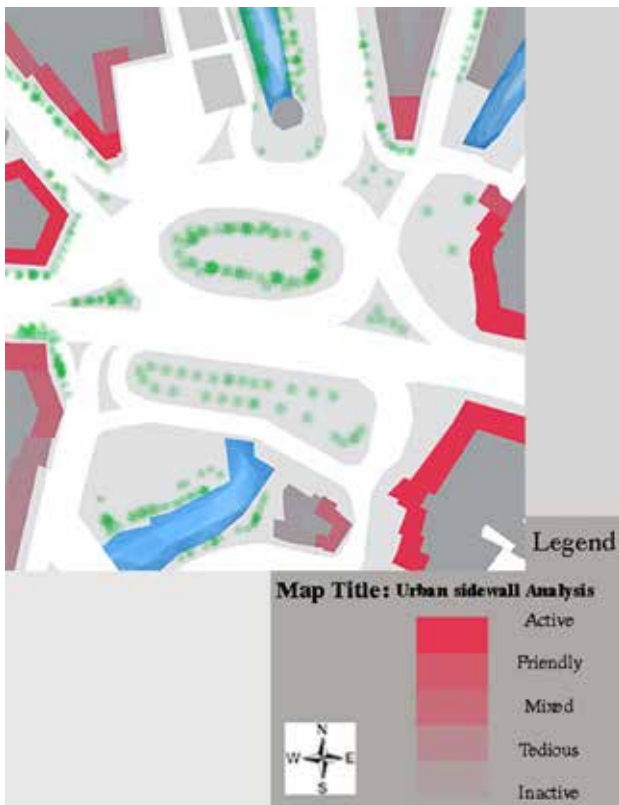


Fig. 8. Urban sidewalk classification due to the amount of activity. Source: authors.

are followed by selective and social activities. However, there are more selective activities raised from the environment that expresses the high qualities of the environment for shaping different patterns.

### Discussion

The urban space analysis framework has been used as one of the effective tools for understanding the role of women and men in society and external factors that may affect planning, based on human relationships. Relations, on the one hand, depending on the characteristics of the container or environment (city or place), and on the other hand the action of the groups (citizens' behavior patterns) are influential. The characteristics of their urban space or place are derived from the definition of the concept of place, which summarizes three dimensions of the body, meaning, and human relationships (Canter, 1977) in the context of the relationship between person, others, and

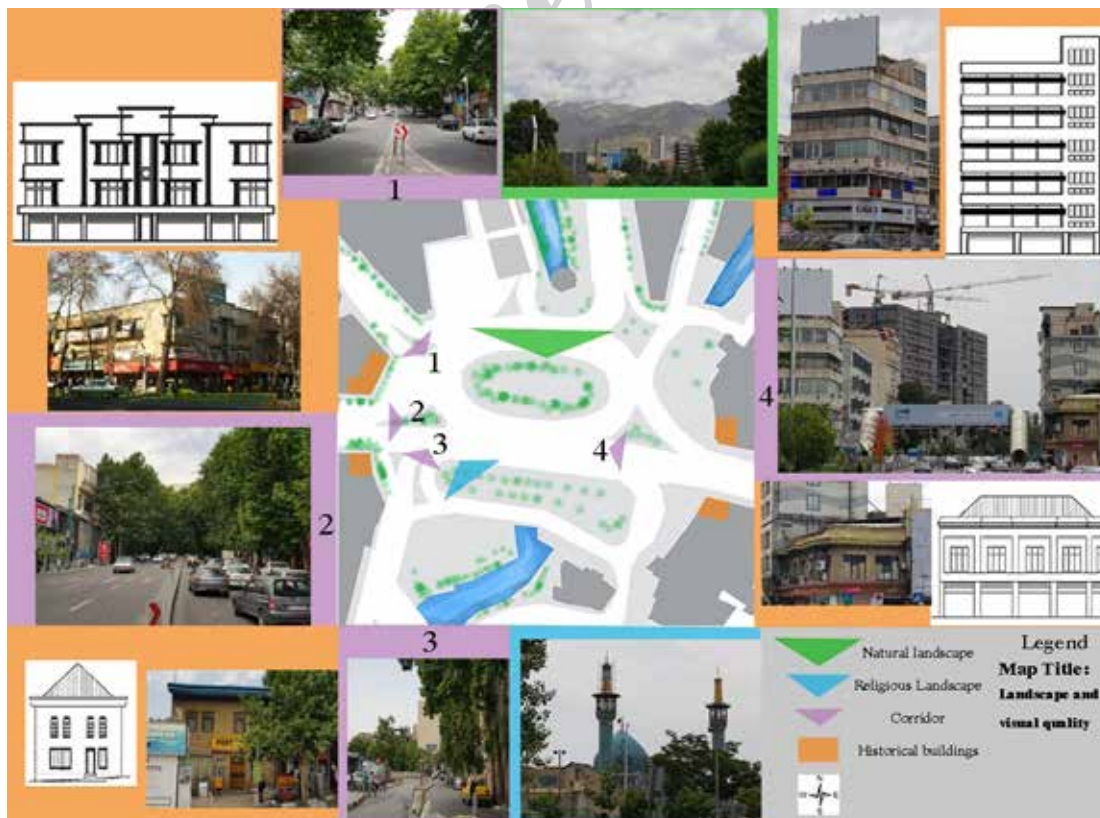


Fig. 9. Visual Qualities and Natural & Artificial Perspectives, Source: authors.

environment (Gustafson, 2010). The body of the city's space can be understood to correspond to its shape. In urbanism, the form or appearance of content (Arnheim, 1968) is a manifestation of the physical and visible (Lynch, 2012) or part of the life that is under control (Alexander, 1964, quoted by Habib, 2006: 22). On the other side, according to Kan, to the form of the creature has been the source of performance (Venturi, 1966), and thus, it is not only considered in relation to the body but also its relation with the perceptions and activities of society (Whitehand, 1992). Among the three dimensions of the place, the semantic component is more complex in comparison to the other two components, and it is more difficult to explain the implications of its subjective and implicit factors. The three components of form, function, and meaning always have a two-way relationship (dialectic) with each other, and it may be possible to have a set of discourses among them that can be defined in the form of a general structure. The form and function are combined to give people the opportunity to carry out various activities and behaviors, the form and meaning are combined in an immediate and emotional experience of urban spaces, as well as function and meaning in the common social affairs. Therefore, the three components, which are in dissociable to each other, are inextricably linked to the perception and understanding of mankind from different places and spaces. Thus, these components in combination can be effective in the formation and occurrence of behavioral patterns by guaranteeing human activities, thereby encouraging or threatening certain behaviors.

The common feature of all selective, recreational and social activities is that only when the outer conditions are suitable for stopping around, the most favorable and the least disadvantageous condition is physically, psychologically and socially presented that can be pleasant in every setting. Tajrish Square, due to its specific characteristics, has various conditions for operating, environmental,

physical, and cultural-social aspects of the formation of the main walking, standing and sitting patterns. Walking requires space. It is essential for a person to be able to move without interruption. The level of tolerance and the need for space from one person to another, in different groups of people, and from a situation to another, is very different. Walking and sitting activities are both more difficult activities in the physical environment than standing up. However, the stand must be thoroughly investigated, because this very clear activity covers some of the features of important behavioral patterns and a large number of standing activities in urban environments. To be able to stand in public spaces is naturally important, but the key word is "to hang". Along the views of any space or in the area of transfer from space to space, where it is possible to see both spaces at the same time, the domains of popularity can be found. Only when there is an opportunity to sit down, there can be various stops with each passing time. Possessing good opportunities to sit down will pave the way for countless activities that are major attractions of urban spaces, including eating, reading, sleeping, knitting, playing chess, sunbathing, watching people, talking, and the like. Sitting positioning should be guided by the full analysis of the functional and spatial qualities of the location. Each bench or sitting area should preferably have a unique local quality and should be located where, for example, a space inside another space, there are dents in the wall, the corner, the place where the intimacy and security are provided, and some kind of creates a climate. According to what was said, a behavioral base largely induces its behavior to its users. The theory of behavioral assertions states that the environmental conditions of a site can have an effect more than individual characteristics on the behavior of individuals. Behaviors in an environment do not occur in an irregular manner, but also due to the dependencies of a behavioral system with other behavioral patterns of physical discipline. This organization of behaviors is in the



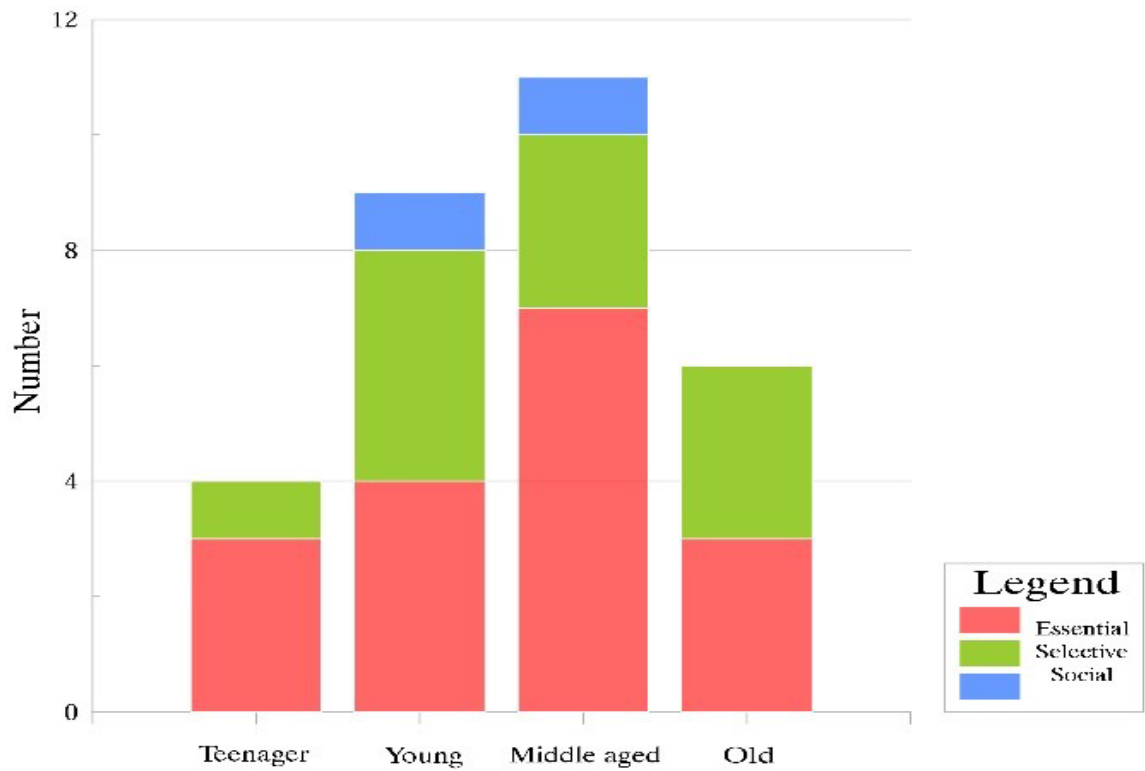


Fig. 10. The presence of people based on age and gender. Source: authors.

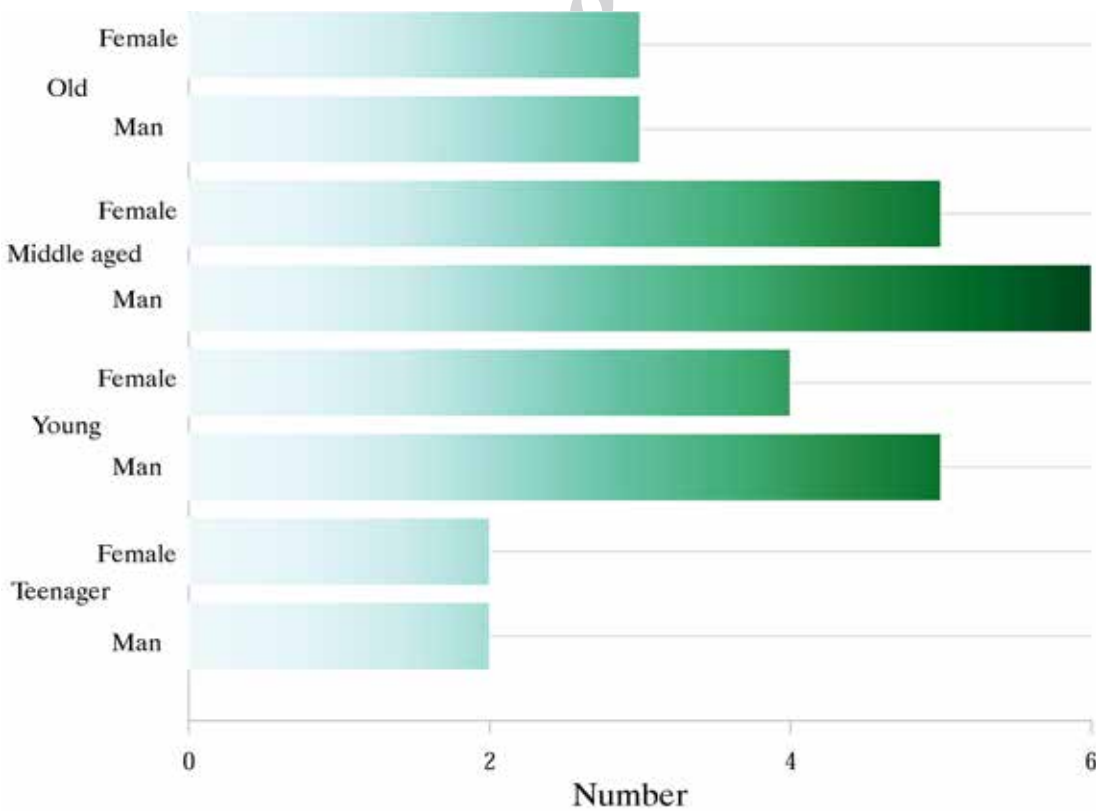


Fig.11. Interaction based on three main activities, Source: authors.



point of view of the designers. It is necessary to design different patterns of behavior with a pattern appropriate to the environment.

If the environment, according to this theory, identifies a set of behavioral coordinates, the most important issue is how to connect and communicate these behavioral nodes. In the public space, there are clear, permeable boundaries. This is due to the public nature of these spaces. An impregnable edge of access not only limits access to that site but also expands the overall availability of the environment.

### Conclusion

Different patterns (walking, standing and sitting) are heavily influenced by applications and are the key to determining the goal of moving toward different parts of the urban space. In addition, the index of facilities and services for a variety of activities (walking, studying, watching, sitting, ...), such as the proper width of the pedestrians (motor spaces), and even a bench, are factors in the formation of behavioral patterns. The existence of public and participatory activities is another criterion. Segmentation of units, the variety of functions, the number of active and passive units, and details of facades (number of openings, advance, and recession) are among the issues that are important in determining the type of wall and the effect of the walls on behavior patterns. Another criterion is the valuable landscape (historical, natural, etc.) which, by shaping valuable corridors, will enhance the sense of chasing (sequential sequencing) in the audience. Strengthening selective and social activities increases attendance and the formation of different patterns in urban spaces, and underlies the presence of age groups, gender, and different strata. Tajrish Square is one of the few squares in Tehran, with various patterns emerging. Of course, the lack of social activity along with public activities is one of the weak points in this field.

According to observations and studies, it is suggested that in urban spaces, the privacy and scope of each behavioral site be identified using design

measures. But it should be noted that the creation of any edge and privacy that limits access and permeability will certainly have an important cost and impact on the performance of the surrounding areas and maybe the metropolitan area network. Therefore, care must be taken to create barriers and edges. The design of the pedestrian access network should be preceded by the design of the cavalry network, because, despite the high compatibility of pedestrians, social life is a city-friendly environment that relies on the comfort of the pedestrians. The pedestrian access network should be designed according to the important points (beginning and destination) of the users and their natural routes of movement. Creating direct and unhindered access, supporting them will be enhanced by designing marching trails and specifying privacy for hiking as well as driving which increase the performance of driving directions. Tajrish Square is a scratched and fragmented scene in which the layout of the environment and micro and macro patterns of behavior are not integrated.

Considering the method used in this study and relying on the objective environmental and behavioral evidence, the problems identified were also objective and could easily communicate between these problems and their possible solutions.

The most important suggestions of this study are:

- Scrutiny of the moving and walking patterns of pedestrians using simple observational methods.
- Identifying the routes and the points of departure and the end of the pedestrian travel.
- Prioritizing the design of the pedestrian access network in coordination with the points of the beginning and the end of the moving currents.
- Determining the privacy and the scope of each sphere of behavior using peripheral edges and elements for pedestrians.
- Less use of impermeable edges such as differences in levels and physical barriers... .
- Considering the pattern of people' use of the environment by using evidence-based methods and

avoiding abstract designs.

In summary, the various measures of land use diversity, diversity of activities, public activities, type of walls, passages and access roads, visual qualities, social attendance, and social interactions under the functional-activity, environmental-physical, and cultural-social dimensions will have a major and influential effect on explanation and analysis of the formation and measurement of different dimensions of behavioral patterns studies and their promotion and the main hypothesis of the research is proven.

### Endnote

1. Criteria:

Active: small units with a lot of doors (15 to 20 openings per 100 meters) and enormous diversity of functions with no closed units, with progressions of façade characterizing the space, qualified articulation of vertical views, and detailed views in most units.

Friendly unit is relatively small (10 to 14 openings per 100 meters) relative diversity of functions, the small number of inactive and closed units, moderate the projection on the facade, with a lot of details.

Mixed: large and small units (6 to 10 openings per 100 meters), several closed and closed units, moderate attraction, few details.

Tedious: Large units and very small doors (2 to 5 openings per 100 meters), almost unmatched, dull units, negligible details.

Inactive: large units, without opening doors or negligible (0 to 2 openings per 100 meters) no variety of functions, units closed or inactive, the same views, without details and without something to watch.

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