



## Megaron

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DOI: <https://doi.org/10.14744/megaron.2023.31384>

MEGARON

### Article

## Analyzing design factors affecting users' interactions in public spaces

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### ARTICLE INFO

#### Article history

Received: 31 March 2023

Revised: 21 December 2023

Accepted: 22 December 2023

#### Key words:

Design factors; public space; Shahriyar Park; social interaction.

### ABSTRACT

Public spaces are now considered the most important environments that play a key role in shaping citizens' social interactions. Due to uneven development in urban design, this role has become less important. Therefore, it is necessary for architects and urban planners to fill this gap by considering the design factors. This study aims to identify and classify the design factors that influence social interactions in public spaces and present a conceptual framework for designers and future studies. The field study method is used to identify the design factors and the descriptive-analytical survey study is used to evaluate them. Shahriyar Park of Tabriz, Iran, was selected as a case study. 268 users of the park participate in survey including 6 design factors and 22 measurements, which are recorded on Likert scale. LISREL software has been used to analyze the data. The results of the study show that the 'safety factor' as the first priority, 'vitality, activity, psychological and behavioral factors' as further priorities, and the 'physical factor' as the last priority influence the level of users' social interaction in the public spaces of Shahriyar Park. In this respect, variables such as accessibility, visibility, topography, material diversity, planting, and furniture were found to play a positive role in making the park more pleasant and enhancing social interaction between users. Accordingly, it has been suggested that these factors and variables should be considered by designers as a viable approach when designing urban public spaces, particularly parks, to encourage social interactions among city users.

**Cite this article as:** Khaleghimoghaddam N. Analyzing design factors affecting users' interactions in public spaces. *Megaron* 2023;18(4):520–534.

### INTRODUCTION

One of the most significant roles of the built environment is to provide a platform for creating and enhancing social relationships. Such relationships are often formed in work and activity environments or arise in the form of social interactions in public spaces. In this respect, as meeting points of social encounters, urban spaces organize users' spatial behaviors and experiences and contribute to preventing

social anomalies as much as possible (Askarizad & Safari, 2020). Meanwhile, piazzas, green spaces, and neighborhood parks have been the basis for social interactions since long ago (Cao & Kang, 2019). The growth of modern urban life has reduced the social interactions of citizens. As settings involved in citizens' actions and communication, public spaces play a leading role in performing functional activities and rituals that create social bonds and collective memory (Uysal Bilge, 2020). Pleasant public spaces, commensurate

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Published by Yıldız Technical University, İstanbul, Türkiye

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with culture, environmental conditions, and social needs, can be considered an undeniable value in the desirability of contemporary urban life (Silaci & Vitkova, 2017). Being in the open urban space increases the sense of citizenship, cooperation, and belonging to the place and improves social interaction and quality of life (Zhang Y. et al., 2022).

Nowadays, public spaces are often not responsive to the expectations of humans, and people regard urban space as a way to pass through; indeed, instead of inviting people to establish social relations, urban spaces encourage them to avoid them (Lopes et al., 2020). Therefore, the sense of belonging to society, the opportunity for face-to-face meetings, and social interactions become less significant as essential needs (Carmona, 2021). In this regard, to create retreats and private spaces for meeting people of any gender, age group, and social class, as well as to create spaces for presenting and developing individual and group skills, public spaces can be effective as behavioral settings (Han et al., 2022; Jalalkamali & Doratli, 2022). Parks and urban public green spaces are among the public spaces that strengthen cohesion, collective identity, social vitality, social trust and participation, sense of security, mental health, and the quality of social interactions in terms of having architectural components and activity areas (Enssle & Kabisch, 2020; Jennings & Bamkole, 2019). Hence, the present study aims to identify and categorize the design factors of public green spaces to propose practical approaches to designers, architects, and urban planners. In this context, the study seeks to answer the following questions:

1. What are the design factors affecting social interactions in public green spaces?
2. How is the prioritization of design factors affecting social interactions in public green spaces determined?

In this regard, due to playing a significant role as a cultural center involving historical, religious, and monumental buildings, as well as its location in the center of the Sorkhab neighborhood, one of the most ancient neighborhoods of Tabriz city in Iran, as a place for recreational and social interactions, Shahriyar Park has become the reason for the appearance of distinct behavioral patterns in social behaviors. Therefore, it is considered a suitable case for investigating the effective design factors of public spaces in promoting social interactions. To this end, through descriptive-analytical and field study methods, the design factors of urban public spaces were identified as the conceptual model of the study and measured by a survey study method conducted at Tabriz Shahriyar Park. Lastly, design factors affecting users' interaction in public green spaces were classified according to the impact of the coefficient, and results were analyzed to promote social interaction.

## CONCEPTUAL FRAMEWORK

Urban spaces are defined open and public spaces that reflect the nature of social life. Accordingly, by being present in public spaces, people are involved in various social activities whose dynamics and efficiency require social and diverse interactions (Tibaldez, 2015). Public spaces such as piazzas, maidans or green spaces demonstrate the life of a city, its identity, its movement and the vitality of its citizens. As arenas of public life, such places have great importance for urban planning. Public open spaces are remarkable elements of sustainable development and livable urban development (Belleme et al., 2021). In a broader concept, public open space creates various functions that define it as an outdoor public gathering place in the outside environment and spaces between buildings. These spaces can be introduced as urban open spaces such as cafes, retail markets, parks, green spaces, and sidewalks. In their research, Tahmasebi et al. (2022) introduced usability of space for individuals, provision of psychological and physical comfort, individuals' satisfaction with being in the space, security, pleasantness, and social activity as the basis of process of social interaction in the community and improvement of collective life in public space. Other studies have considered attractiveness, beauty, security, tranquility, accessibility, and hierarchy as physical characteristics of public open spaces to increase social interactions (Kamińska & Mularczyk, 2021; Sadeghian et al. 2021). Amran & Fuad (2020) and Carmona (2021) consider physical features and social activities as influential factors to enhance social interactions and sense of belonging to a place. According to Whyte (2012), the physical features of public space such as monuments, stairs, fountains, form, size, landscape, furniture, and lighting encourage people to interact and improve the quality of public space. Garau and Annunziata (2022) emphasized the physical quality of public space and natural elements as factors that enhance environmental stimulation and vitality, pleasant experiences, and social well-being.

Nowadays, the existential dimensions of human beings are more considered by urban planners and designers, and people are more likely to stay and participate in the public space of cities (Gehl & Svarre, 2013). In addition to physical factors, there is a direct relationship between psychological aspects, design factors, social activities, and perceptions of the environment. Sociability in public spaces is based on individuals' need to communicate. Public spaces should provide opportunities for people to communicate and interact. Comfort, safety, security, relaxation, social participation, and discovery are the most important behavioral and psychological aspects of urban public spaces (Peng et al., 2021; Wan et al., 2020). Hampton et al. (2015) introduced activities and

accessibility as factors to promote social life in urban public spaces. In this context, Mouratidis and Poortinga (2020) identified diversity of activities and urban vitality as factors that influence social activities and accessibility in public spaces. Najeeba and Raffaello (2019) found that the permeability, accessibility, and presence of citizens for their activities in the city influence people’s behavior and interactions. Other studies have suggested place behavior as an important concept related to social interactions. For example, Tamir and Hughes (2018) emphasize form, private space, solitude, and crowd as influential dimensions of place behavior. Faghirnavaz et al. (2021) have considered sidewalks, public/semi-public spaces, and private/semi-private spaces as behavioral settings that enhance social interactions in public spaces. Many studies have introduced safety as a factor that influences social interactions and sociability in public spaces. In this context, Levasseur et al. (2015) believe that increased social participation promotes feelings of security. Backer (2018) highlights visibility as an important criterion for control, recognition, and safety in public spaces. Pakzad et al. (2019) demonstrated the direct relationship between visual control and visual controllability and the patterns of static presence in the central part of the square. Sumartojo (2022), Klaudiusz and Guminska (2020) and

Gokhale (2013) consider the significant role of lighting in public spaces in creating security during the day and night life. Vitality is another effective factor in increasing user interaction. Functional variety, excuses to linger in the space, provision of seating or walking opportunities, consideration of human scale, and the ability of space to create memorable feelings have been cited in many studies as components that influence spatial interactions (e.g., Zheng et al., 2023; Zhang F. et al., 2022; Hataminejad et al., 2018). In general, as Figure 1 illustrates, the conceptual framework of the present study has been developed in six categories—physical, psychological, activity and behavioural attitudes, security, and vitality—based on a review of theories and studies on social interactions in public spaces. These categories were extracted from a review of related studies and literature, and each factor involves the most effective elements—for example, size, landscape, and furniture for the physical factor or comfort, safety, discovery, and relaxation for psychological factor—for establishing social interactions in public spaces like parks. Factors and components considered in this model serve as a benchmark for designing survey questions and as gauge for assessing how well the case study’s spaces facilitate users’ social interactions.

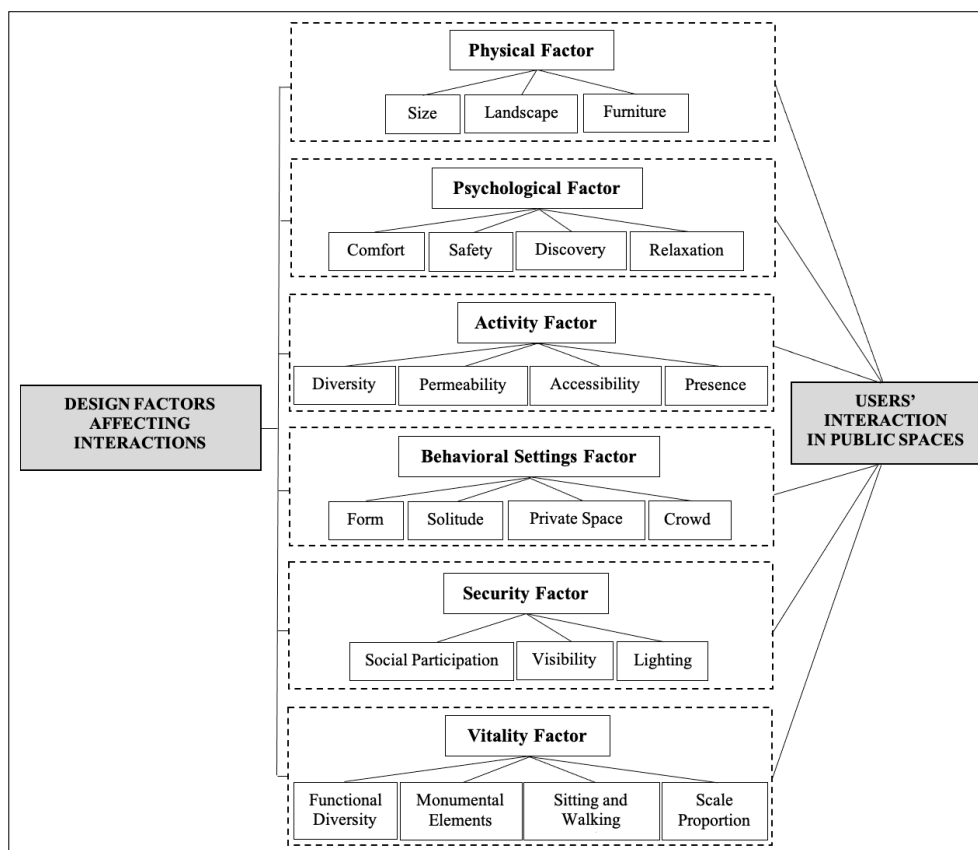


Figure 1. Conceptual model of the study.

## METHODOLOGY

Since the purpose of the present study is to identify and classify the design factors that influence social interactions in public spaces, it is considered both quantitative and qualitative in terms of the nature and character of the research. This means that one part of the study should be descriptive (qualitative) and the other analytical (quantitative). Therefore, it seems necessary to apply a mixed descriptive-analytical method. Descriptive studies focus on the investigation of particular themes or situations. In this context, drawing on previous studies and a review of the literature, the factors and variables influencing the research topic are identified and presented. Analytical studies examine the relationship between variables and the desired outcomes and discover scientific relationships (studies such as the forthcoming article, case-control studies, and questionnaires). In this study, a descriptive field study was used to review the literature and the studies conducted, and to identify design factors that impact social interactions in public spaces. The relevant variables were extracted and presented in the form of the study's conceptual model (Figure 1). To test the corresponding model and categorize its factors according to their effectiveness, the analytical method was applied, i.e., data were collected by physical presence at the selected site, and through field observations and questionnaires. In this context, 268 residents (133 males and 135 females; mean age = 38.65) of the Sorkhab neighborhood in Tabriz City, East Azerbaijan Province, Iran, were randomly selected for participation. The corresponding questionnaire comprised 6 factors and 22 measurements, which were recorded on a five-point Likert scale (strongly disagree = 1 to strongly agree = 5).

Questions 1 to 3 addressed the 3 variables of the physical factor: Size (the presence of suitable facilities and the appropriate size of the park provided a sense of comfort and the opportunity to participate in social activities); Landscape (the park's surroundings, its views, green spaces, beautiful scenery, and natural diversity as effective factors encourage me to be present and interact in the park); Furniture (the design, placement, quality, variety, and comfort of the furniture used in the park encourage me to sit down, make new friends, and spend time). Questions 4 to 7 pertained to the 4 variables of the psychological factor: Comfort (the park's facilities, such as the diverse vegetation and trees, have purified the air and created a pleasant thermal condition that makes me feel comfortable); Safety (the presence of safety facilities such as surveillance cameras, adequate lighting, proximity to help and information centers gives me a sense of security); Discovery (the entertaining, monumental, and historical elements of the park arouse my curiosity to discover the surroundings); Relaxation (the sounds I hear are not disturbing, and the spaces of this park offer me the opportunity to get away from disturbing noises, and

I feel calm and peaceful). Questions 8 to 11 were for the 4 variables of the activity factor: Diversity (How do you rate the diversity of plant life and its impact on your stay in the park?); Permeability (The physical environment of the park is clear and recognizable, and this makes me feel safe and able to spend time in the park); Accessibility (I often come to this park because it is easy to reach in the city and because it is also easy to navigate within the park and between spaces); Presence (when I am tired, I prefer to walk through the spatial diversity of the park and feel comfortable). Questions 12 to 15 examined the 4 variables of the behavioral factor: Form (The physical and natural elements in the park are pleasant, coordinated, and do not cloud my mind with inconsistency); Solitude (I can easily observe and follow the current activities in the park, and it is possible to see different areas of the park); Private space (To what extent do the park's spaces and facilities offer the opportunity to sit alone or in pairs); Crowd (The presence of a large crowd in the park may encourage me to participate in group activities). Questions 16 to 18 inquired about the 3 variables of the safety factor: Social participation (The park's facilities and environmental qualities motivate me to participate in social activities and improve my sociability); Visibility (The landscape and natural perspectives of the park allow me to disconnect from everyday life, and I feel relaxed, refreshed, and calm); Lighting (The lighting systems used give me a sense of calm and serenity). Questions 19 to 22 related to the 4 variables of the vitality factor: Functional diversity (The forms used in the park appeal to me and evoke positive feelings); Monumental elements (The shapes of the objects attract my attention; they are memorable and appear warm and inviting); Sitting and walking (The different areas of the park in terms of sitting, eating, walking, etc., have sufficient capacity to meet our needs); Scale proportion (I enjoy walking on a continuous path that passes by water, plants, and trees).

The questionnaire was conducted during the week, at different times of the day, and completed through personal visits. The validity of the questionnaire was confirmed by a pilot study with 38 users of the Sorkhab neighborhood park (Shahriyar Park). The reliability of the questionnaire was determined to be 0.852 using Cronbach's alpha test. LISREL software was used to analyze the data, and confirmatory factor analysis was performed using structural equation modeling. This method is a complex mathematical and statistical combination of factor analysis, multivariate regression, and path analysis, which are combined into a comprehensive system to analyze the effects of different factors and to measure multivariate phenomena such as this study. The role of each question in the reliability of the whole scale was examined. The coefficient of determination of the items was considered acceptable for values over 0.3. The validity of the results was measured using confirmatory factor analysis separately for each of the design factors. Figure 2 represents the summary of Research steps.

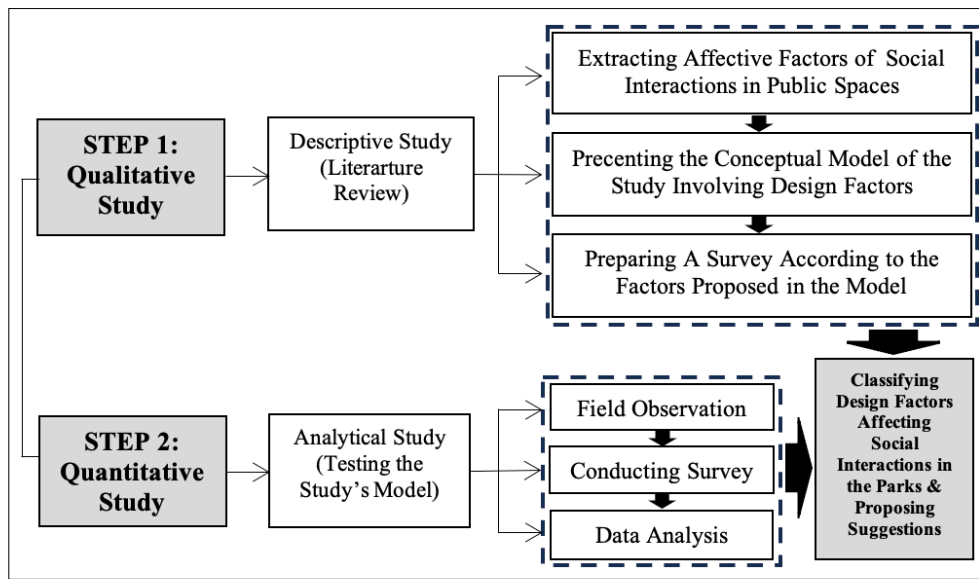


Figure 2. Procedure handled in the methodology.

**STUDY AREA**

Since this study aims to evaluate the effect of design factors on social interactions in public spaces, it was necessary to select an area that reflects people’s cultural and social values, thereby creating a meaningful connection between the built environment and social interactions due to the presence of humans in these spaces. Therefore, Shahriyar Park, located in the old Sorkhab neighborhood of Tabriz, was chosen for the study as it is in proximity to the city’s historical context and monuments (Figure 3). Tabriz is considered one of the most renowned cities in Iran and the capital of East Azerbaijan province. Known as the largest Turkish city in Iran, Tabriz serves as an administrative, commercial, political, cultural, and military hub. The city's geographical location has made it a crossroads of ancient civilizations throughout history, and it is one of the cities along the Silk Road. The old Sorkhab neighborhood, situated in the north of Tabriz, is recognized as one of the most important historical-tourist zones in the city, due to its numerous historical houses and its closeness to

the historical complex of Shahriyar Park.

The cemetery known as Maqbareh Al-Shoara in the Surkhab district has been the burial place of many great Azerbaijani poets, such as Khaqani, Zaheer, Qatran, Asadi Tousi, and others, since ancient times. In 1967, it was decided to build a tomb for poets and create a park in the then-abandoned cemetery of Sorkhab. In 1970, a decision was made to erect a monument to poets. Concurrent with this event, the first steps were taken to design the park. Following the construction of the monument and its proximity to the historic mosque and the shrine of Seyyed Hamzah, officials began to develop green areas for the expansion and design of the cemetery. The green area of this complex underwent several transformations until the current park, Shahriyar Park, was designed and constructed in 1993 with the assistance of the Municipality of Tabriz District 1. The park covers an area of 35,000 m<sup>2</sup> and is bordered to the west by Seg Al-Islam Street, to the north by Arif Street, to the south by Shahid Paydar Street, and to the east by an 8-meter-long avenue. Significant features within the park that enhance

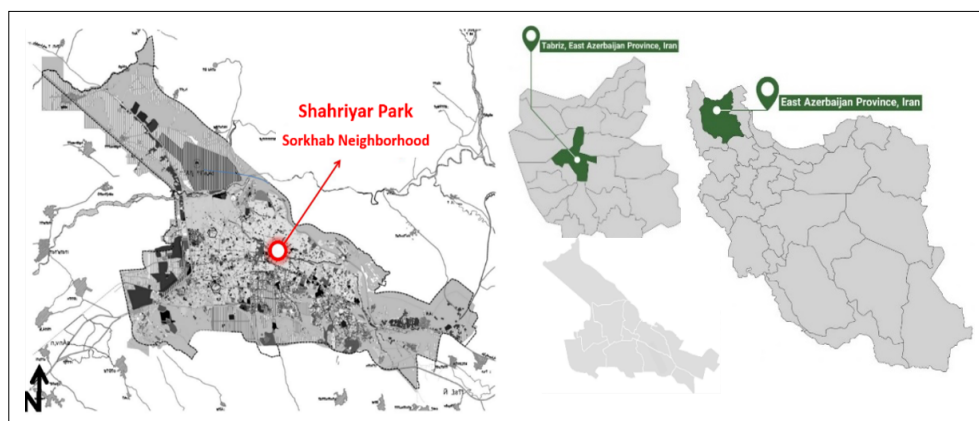


Figure 3. The urban location of the case area.



its importance for people's presence and visits include the Monument of Poets, Tombs of Ancient Poets, Seyyed Hamzah Mosque and Shrine, Behtouni Museum, Tabriz Poetry Association, Amphitheatre, and a library housing exquisite historical books and documents. Surrounding the park are vital facilities such as a pathological laboratory, schools, a children's hospital, pharmacies, sports halls, commercial complexes, residential complexes, and the organization of industries and mines, which contribute to the park being frequented by a large number of people on a daily basis (Figure 4).

Since the park has undergone various changes after restoration works, and given that it serves not only as an urban green space but also as the burial site for historical poets, writers, and philosophers of Iran, as well as the most renowned poet of the contemporary Turkish language, namely Shahriar (Maqbareh Al-Shoara Monument), along with other important architectural elements like the historical Seyyed Hamzah Mosque and Shrine, the museum, the library, an athenaeum, an amphitheater, and the monument of the poets, it has consistently been one of the most frequented centers in the city of Tabriz (Figure 5). It serves as a daily gathering place for numerous locals and tourists. Moreover, the presence of several significant structures such as hospitals, clinics, daily markets, cab and bus stations around the park further underscores its importance as an urban space, rendering it an attractive case study for investigating the influence of design and architectural factors on social interactions among users.

### FINDINGS

To determine the effective design factors for user interaction in public spaces, establishing the reliability of the questions in the factor analysis was necessary. Therefore, the role of each question concerning the reliability of the entire scale was initially examined. In this context, items with coefficients of determination less than 0.3 were excluded.

The results of the reliability test, using the confirmatory factor analysis method, are presented in a tabulated form for each design factor affecting interactions. Additionally, the factor loading of each index was analyzed in conjunction with its corresponding factor.

Table 1 displays the outcomes of the confirmatory factor analysis for the variables related to the physical factors. As indicated, the factor loadings for all variables exceed 0.3 and demonstrate acceptable reliability. Within this context, the variable 'landscape' (M=3.97) with a factor loading of 0.83 and the variable 'furniture' (M=3.17) with a factor loading of 0.71 exert the most significant influence on the physical factor.

The results of the confirmatory factor analysis for the variables related to the psychological factor are presented in Table 2. It is evident that all variables pertinent to reliability have factor loadings exceeding 0.3. The variables 'comfort' (M=4.33) and 'discovery' (M=4.17) are shown to have the most substantial impact on the psychological factor, with factor loadings of 0.72 and 0.66, respectively.

Based on the results obtained for the activity factor, the variables 'accessibility' (M=4.67) and 'diversity' (M=4.12) have the most significant influence on the corresponding factor, with factor loadings of 0.78 and 0.69, respectively, as shown in Table 3.

The consideration of private spaces has led to changes in the spatial behavior of users, an increase in vitality and sense of belonging, and the development of social interactions in the park. Table 4 indicates that the variables 'private spaces' (M=4.31) and 'form' (M=4.00) have the highest average values with factor loadings of 0.81 and 0.69, respectively. This reflects the quality of the corresponding variable that has contributed to the strengthening of collective space behavior.

Personal and social security in public spaces is one of the fundamental principles that contribute to their attractiveness for the population. Security in public spaces is essential for quality of life and serves as a prerequisite for

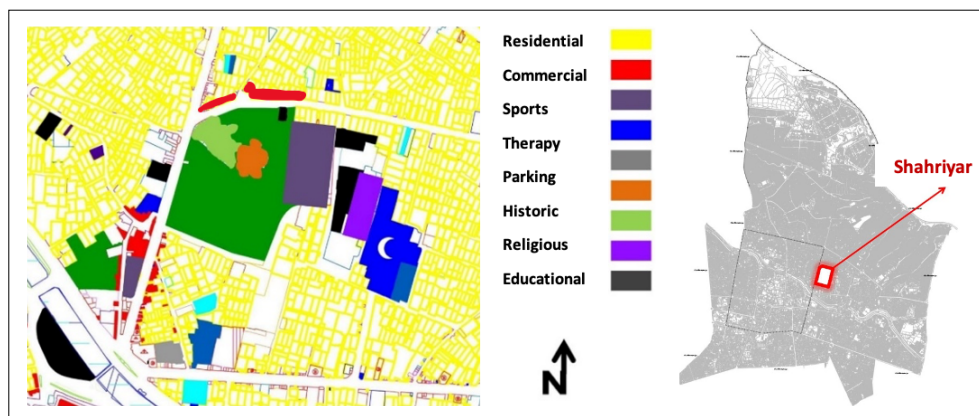


Figure 4. The locations and land-use pattern of the case area.

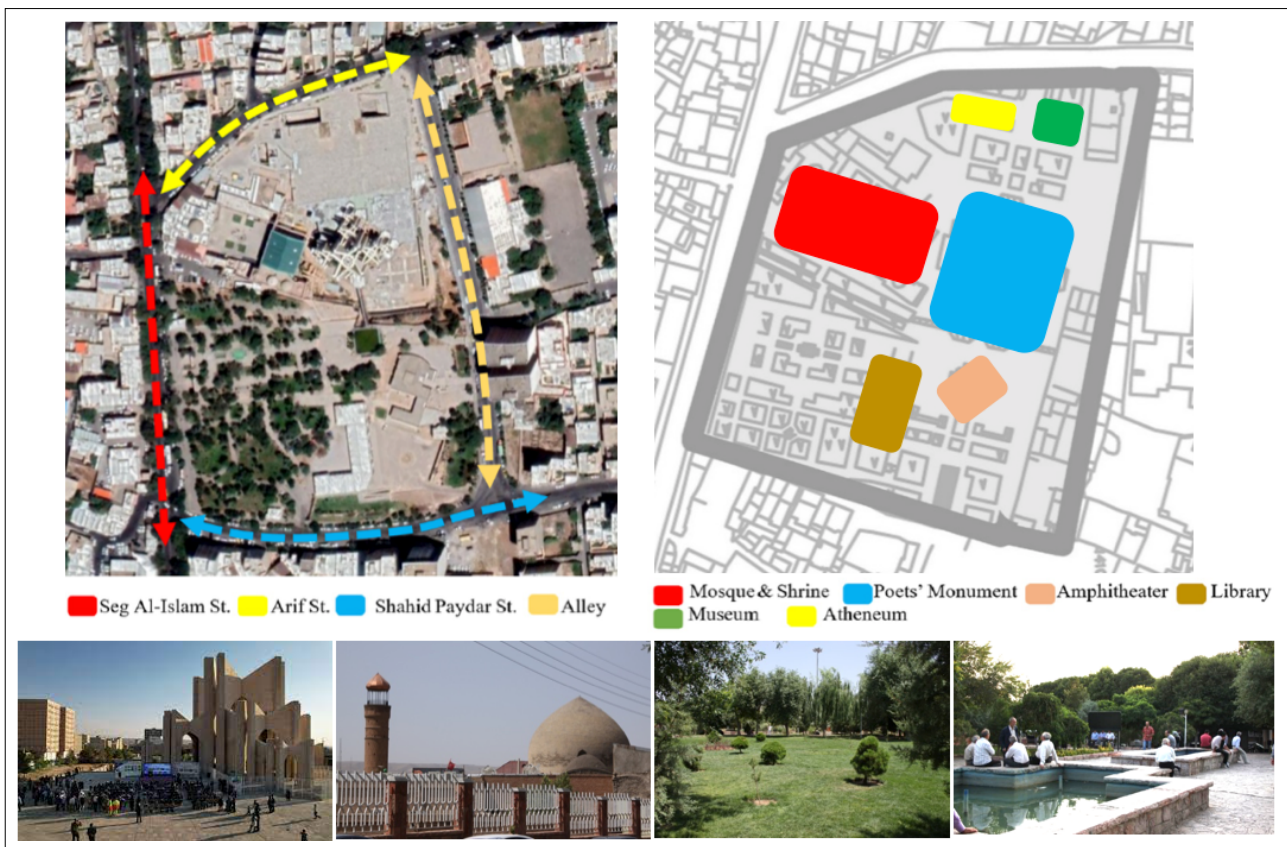


Figure 5. The accessibilities and various uses of the case area.

maintaining and enhancing people’s well-being and health. Furthermore, security enhances the potential for cohesion and the occurrence of social interactions in collective spaces. Table 5 indicates that the variable 'visibility' (M=4.72) has the highest average value with a factor loading of 0.84 in the

Table 1. The results of confirmatory factor analysis of physical factors

Variable	M	SD	t	Loading Factor	Prob. Level
Size	2.14	0.39	7.93	0.31	0.000
Landscape	3.97	0.64	19.45	0.76	0.000
Furniture	3.17	0.60	17.76	0.62	0.000

Table 2. The results of confirmatory factor analysis of psychological factors

Variable	M	SD	t	Loading Factor	Prob. Level
Comfort	4.33	0.73	22.47	0.51	0.000
Safety	2.97	0.36	15.45	0.36	0.000
Discovery	4.17	0.66	19.76	0.62	0.000
Relaxation	2.23	0.34	15.15	0.32	0.000

evaluation of the security factor.

Regarding the vitality factor, as seen in Table 6, 'sitting and walking' (M=4.19) was evaluated as the most effective variable for user interaction. Paths define continuity, transition, and movement between places. The creation of

Table 3. The results of confirmatory factor analysis of activity factors

Variable	M	SD	t	Loading Factor	Prob. Level
Diversity	4.12	0.69	19.32	0.63	0.000
Permeability	2.01	0.30	14.13	0.31	0.000
Accessibility	4.67	0.74	21.74	0.78	0.000
Presence	2.99	0.32	14.89	0.36	0.000

Table 4. The behavioral setting factors

Variable	M	SD	t	Loading Factor	Prob. Level
Form	4.00	0.63	18.79	0.69	0.000
Solitude	3.98	0.57	17.41	0.63	0.000
Private Space	4.31	0.66	19.23	0.81	0.000
Crowd	1.11	0.22	10.03	0.24	0.000

**Table 5.** The results of confirmatory factor analysis of the security factors

Variable	M	SD	t	Loading Factor	Prob. Level
Social Participation	3.26	0.51	16.72	0.42	0.000
Visibility	4.72	0.72	20.25	0.64	0.000
Lighting	2.81	0.29	14.50	0.31	0.000

**Table 6.** The results of confirmatory factor analysis of the vitality factors

Variable	M	SD	t	Loading Factor	Prob. Level
Functional Diversity	4.09	0.64	17.82	0.49	0.000
Monumental Elements	4.01	0.61	17.29	0.59	0.000
Sitting & Walking	4.19	0.71	18.67	0.74	0.000
Scale & Proportion	1.74	0.31	10.03	0.20	0.000

sequential spaces and the design of suitable views, along with the variety of materials, furniture, colors, shapes, directions, and dimensions of the path, are considered ecological capabilities of different paths. Additionally, 'functional diversity' (M=4.09) and 'monumental elements' (M=4.01) are identified as other variables that have a positive effect on social interaction. Overall, the functional-spatial structure of the park, which includes the poet's monument, the mosque, the shrine, the library, the museum, the literary club, and the green areas, enhances the legibility of the spaces and creates a coherent spatial structure, thereby multiplying the choices available to users.

In this study, internal consistency was assessed using Cronbach's alpha coefficient, which indicated high reliability of the measurement tool. Table 7 presents the results of the

**Table 7.** The reliability of the tool for measuring design factors affecting social interactions in public spaces

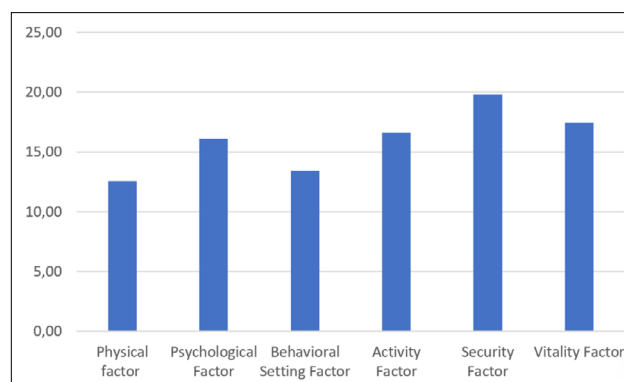
Variables	Cronbach's alpha	Factors	Cronbach's alpha
Design Factors	0.852	Physical Factor	0.702
		Psychological Factor	0.712
		Behavioral Setting Factor	0.726
		Activity Factor	0.754
		Security Factor	0.806
		Vitality	0.781

confirmatory factor analysis regarding the design factors that affect social interactions in public spaces. It reveals that each of these factors has a high factor loading. Notably, the security factor exerts the greatest influence with a factor loading of 0.806, while the physical factor has the least influence with a factor loading of 0.702.

To confirm the significance test of each design factor's contribution to social interactions in public spaces, confirmatory factor analysis was conducted. The t-value test was employed to assess the significance of the relationship between variables. Significance was determined at an error level of 0.05. Factor loadings indicated by a t-value test of less than 1.91 were not considered to signify a significant relationship. A factor loading of less than 0.3 was deemed a weak relationship, while a factor loading between 0.3 and 0.6 was considered acceptable. Table 8 presents the results of the confirmatory factor analysis regarding the design factors affecting social interactions in Shahriyar Park's public space. It demonstrates that each of the factors possesses a high factor loading. Notably, safety has the highest impact with a factor loading of 0.93, followed by vitality, activity, psychology, behavioral setting, and physical factors, with factor loadings of 0.85, 0.82, 0.81, 0.79, and 0.74, respectively (Figure 6).

**Table 8.** Confirmatory factor analysis of design factors affecting social interactions in the Shahriyar Park

Design Factors	T Statistic	Loading Factor	Prob.Level
Physical Factor	12.57	0.74	0.000
Psychological Factor	16.13	0.81	0.000
Behavioral Setting Factor	13.41	0.79	0.000
Activity Factor	16.63	0.82	0.000
Security Factor	19.84	0.93	0.000
Vitality Factor	17.52	0.85	0.000



**Figure 6.** Impact factor of design factors affecting social interactions in the Shahriyar Park.



## DISCUSSION

By examining the effects of the design factors and their components through a questionnaire completed by the users of the case area, it was found that the security factor ( $t=19.84$ ,  $L.F. = 0.93$ ) was identified as the most influential in fostering social interactions within the public spaces of Shahriyar Park. Given the park's accessibility from four sides, it offers opportunities for visual visibility, thereby facilitating surveillance and social safety (Figure 7). The park's proximity to important facilities such as the medical center, along with easy access from all four sides, and the row of stores on the north and south sides (Figure 4), as well as the mosque and the shrine (Figure 5), have enhanced security and social oversight. The three sides

of the park that are bordered by apartment blocks, most with more than four stories, provide an excellent vantage point for overlooking the park. This has improved overall surveillance, enabling residents to use the park daily with ease, which, in turn, has led to an increase in both social interactions and a sense of security. Furthermore, observations indicate that people often traverse the park on their way back from visiting the shrine to rest, eat, relax, or pray at the mosque, and they regularly engage with both the park and the shrine. As a result, the park is consistently well-observed. Additionally, the frequent visitors to the library, the museum, and the poet's monument contribute to the human presence in the public space, enhancing controllability and security.



**Figure 7.** Importance of accessibility and surrounding buildings in enhancing the sense of control and security.



In this context, it is concluded that visibility, as the most effective variable, significantly contributes to creating psychological and physical security by positioning the park in proximity to high-traffic areas such as the neighborhood's main roads, public service facilities (bus station, stores, medical center), residential blocks, and historical-religious (mosque, shrine), monumental (poet's tomb), and cultural (library, museum) establishments.

Vitality was regarded as the second most influential factor ( $t=17.52$ ,  $L.F. = 0.85$ ), such that variables including seating and walking facilities (flower beds, paths, furniture, etc.), functional diversity (cultural and green spaces), and monumental elements (sculptures, statue-like elements, etc.) draw individuals, foster vitality, reinforce spatial legibility, and have a positive impact on the social interactions of users. In the park under study, a considerable diversity of paths and spatial sequences contributes to the space's attractiveness. The walkways vary in materials, colors, dimensions, and level differences, satisfying users with their resulting quality. Providing social cohesion through a place fosters a sense of belonging. By cultivating social relationships, the place engenders and reinforces group affiliation, thereby increasing the density of personal connections. In this park, various types of furniture, ranging from stairs and fountains to benches and statues, are utilized in the design of the diverse paths in accordance with the site's topography, attracting different age groups and infusing vibrancy, a sense of place, and interaction within an urban public space.

In Shahriyar Park, the monument dedicated to the poet stands as the focal point of the site. With its distinctive shape and proper proportions, it is visible from distant points within the city. Adjacent to this structure, the brick dome and minaret of the Seyyed Hamzah shrine are prominently featured. The juxtaposition of these two structures is

intriguing, both in terms of their construction periods and their architectural styles and techniques (Figure 8). The significance of these two features in augmenting the quality of the park spaces must be acknowledged, as they are compelling elements in terms of form and symbolism as well as function, contributing to the reinforcement of social interactions. It is also essential to highlight that these structures aid in the orientation and wayfinding of visitors, offering a variety of vistas and visual sequences through movement and changes in direction within the park. Moreover, they have enhanced the physical-social identity of the urban public space in a symbolic manner.

Activity was identified as the third factor ( $t=16.63$ ,  $L.F. = 0.82$ ) influencing social interactions in Shahriyar Park. Regarding the activity factor, variables such as accessibility and diversity significantly encouraged users' interactions. The park's accessibility from the neighborhood's arteries on all four sides led people to frequent the park for various functions and social gatherings (Figure 9). Shahriyar Park's integration into the urban accessibility network from these four sides enhances its potential to attract more visitors, offering access to diverse features such as green spaces, furniture, and historical, cultural, and religious elements, thereby increasing social interactions. The proximity of the cab and bus stations, medical center, local market, and schools enhances the park's potential to draw individuals and facilitate access to the activities within the area. The park's main entrance is strategically located opposite the medical center (pathology laboratory), encouraging visitors to this facility to utilize the park for rest and waiting. Furthermore, the park's main wall, adjacent to the main road (Seg Al-Islam St.), plays a pivotal role in drawing residents and tourists visiting the Tombs of the Poets (Maqbareh Al-Shoara). Notably, the park's proximity to the Seyyed Hamzah Shrine Mosque and the presence of numerous merchants along this wall are key factors in



**Figure 8.** Diverse functions in the park and their impacts on users' vitality and interactions.



**Figure 9.** Attractive walls and sides of the study area.

attracting more visitors. The array of stores and residential units on the north side (Arif Street) also draws additional foot traffic to the park. Significantly, the dome and minaret of the shrine mosque, and the monument at the poet's tomb, serve as prominent landmarks and attractions on this side of the park.

The psychological factor was acknowledged as the fourth factor ( $t=16.13$ ,  $L.F. = 0.81$ ) influencing social interactions in Shahriyar Park. The variables of comfort and discovery were determined to have the most significant impact on users' interactions, as the quality of the landscape and green areas, combined with the park's orientation in relation to the sun's path and prevailing winds, provided optimal thermal comfort (Figure 10). Furthermore, the incorporation of diverse functions (entertainment spaces, monumental, and historical features) creates attractive perspectives and enhances visual appeal, making public spaces welcoming and enjoyable. In terms of comfort, the selection of vegetation, including elm, willow, and alder trees, has contributed to air purification and the establishment of a favorable thermal environment. The strategic orientation of the park maximizes comfort and meets ecological requirements. Moreover, the park stimulates visitors' curiosity and sense of discovery, with its entertainment (green spaces), monumental (the poet's tomb and monument), and historical components (ancient mosque and shrine). As these elements are framed by the trees and shrubbery, various perspectives and visual effects emerge, capturing users' interest and fostering social interactions. Apart from the west side and the entrance facing the main road, the remainder of the park offers a serene environment, relatively free from noise and odors, with the vegetation playing a crucial role in mitigating unpleasant smells and sounds.

Behavioral attitudes ( $t=13.41$ ,  $L.F. = 0.79$ ) and physical factors ( $t=12.57$ ,  $L.F. = 0.74$ ) are the fifth and sixth factors influencing sociability in the case study, respectively. Private spaces and form have been identified as the most effective behavioral settings that enhance social interactions in parks. Private spaces contribute to the reinforcement of individual or group spatial behavior and the development of social interactions by providing opportunities to sit alone or with others, utilizing divergent or convergent geometries, and creating pleasing views and plantings. The high average variable of private spaces is attributed to their positive response to the individual (solitude) and collective (interaction) needs of users, offering conditions suitable for solitary or paired seating, optimal geometry, vegetation, and vistas.

In terms of formal characteristics and acknowledging that the factors of activity and place are instrumental in creating a behavioral setting that leads to spatial functions, it can be asserted that the Poets' Monument in Shahriyar Park serves multiple roles. In addition to its commemorative function and housing the graves of renowned poets, it functions as a museum and exhibition, thereby constituting a unique behavioral setting. Moreover, this structure facilitates conversation and social interaction within, outside, and around its base. It also stands as a symbolic form, and its proximity to the sanctuary has fostered an inviting environment where people can gather, communicate, and interact (Figure 11).

Furthermore, the results of this study indicate that monumental and symbolic elements, such as the poet's monument, possess various conceptual and cultural attributes that serve as significant features, drawing people and enhancing sociability. The findings also reveal that defining spaces with physical elements—historic buildings and monuments, trees, statues, natural elements, seating areas, and walkways—contributes





Figure 10. Controlled noise and air condition providing comfort.



Figure 11. The behavioral settings of Shahriyar Park.

positively to the prolonged presence of people in public spaces by fostering a sense of security among users. The park in question has provided physical efficiency and visual appeal through its diverse vegetation, trees, and historical components. Moreover, physical qualities like monuments, stairs, fountains, and sculptures are acknowledged by visitors as influential factors that encourage presence and interaction in the space, thereby enriching the physical attributes of the park's public areas (Figure 12).

## CONCLUSION

Urban public spaces, such as parks, are recognized as one of the most crucial environments for fostering the social interactions of citizens. The enhancement of social interactions in urban public spaces reflects their responsiveness to collective behavior and their capacity to contribute to vitality and a stronger sense of community. This study aimed to examine the impact of design factors





**Figure 12.** Various physical elements of Shahriyar Park.

on user interactions within these spaces. A review of theories and research on social interactions in public spaces highlighted physical, psychological, activity-related, and behavioral attitudes, as well as security and vitality as influential design components. The findings suggest that an accessible public space, like a park, is where diverse activities take place and where numerous opportunities for participation are available. Such spaces should be universally accessible, both physically and socially, to enrich the quality of life and interactions in an urban setting. Moreover, the aesthetics of a public space play a pivotal role in enhancing sociability, with the quality of activities and aesthetic considerations emerging as key variables in assessing the space's appeal. This study determined that factors such as accessibility, topography, material variety, planting, and the presence of amenities like furniture make a park more inviting and stimulate user interaction. It was observed that psychological and physical security in the park, influenced by visibility, visual permeability, and legibility, promote and sustain the presence of people. Aesthetic elements, historical and monumental features draw individuals and encourage social engagement. Recognizing that public spaces are instrumental in building trust and fostering solidarity within the urban community, the functional diversity of the park—including features like the poet's monument, mosque, shrine, museum, and library—plays a significant role in facilitating communication and sociability. Additionally, elements such as monuments, stairs, fountains, forms, materials, and planting are acknowledged as impactful in enhancing the physical quality of public spaces and in motivating people to gather and interact.

For future studies, it is recommended to evaluate the effectiveness of public spaces by their ability to offer accessibility, safety, and a welcoming atmosphere that encourages people to stay longer. Successful spaces prioritize comfort, provide aesthetically pleasing views, and serve as social hubs for users to forge and strengthen relationships. Furthermore, the results suggest a direct correlation between park usage and its central neighborhood location, which

simplifies transportation and access; thus, the inclusivity of disabled individuals should be considered in all areas. The park's legibility, achieved through various features such as monuments, religious buildings, diverse furnishings, trees, and walls, contributes positively to its occupancy by offering a sense of security. Design considerations should include seating, edges, and low walls in green spaces and parks to enhance user comfort and encourage longer stays. Protection from the elements through vegetation or structures addresses physical needs and promotes longer visits, thus stimulating interactions. Various amenities like lighting, benches, trash bins, fences, statues, and special lighting should be incorporated to evoke a welcoming atmosphere, reinforce local identity, and attract users. The research indicates that visible and open spaces, as opposed to secluded areas, generate a sense of safety, which is key to attracting people. Creating social interactions through organized activities such as festivals and performances, as well as providing opportunities for people-watching, are recommended. The presence of colors and lighting that spark discovery and curiosity are also significant factors in drawing people. Lastly, considering the diversity of users and their needs, offering a range of uses and activities tailored to different groups—women, men, children, youth, the elderly, etc. - can enhance the park's appeal and visitation rates. The addition of food and beverage services like cafes and restaurants, along with commercial amenities such as stalls and kiosks, can further facilitate social interactions.

**ETHICS:** There are no ethical issues with the publication of this manuscript.

**PEER-REVIEW:** Externally peer-reviewed.

**CONFLICT OF INTEREST:** The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

**FINANCIAL DISCLOSURE:** The authors declared that this study has received no financial support.



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