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Article

## Privacy, patterns, and factors in urban open spaces (Case study: Jannat Park in Shiraz City)

Hajar ASADPOUR<sup>1</sup>, Mina RAZMARA<sup>2</sup>, Ali Akbar HEIDARI<sup>3</sup>, Malihe TAGHIPOUR<sup>4</sup>

<sup>1</sup>Faculty of Architecture & Urbanism, Art University of Isfahan, Isfahan, Iran

<sup>2</sup>Shiraz Branch, Islamic Azad University, Shiraz, Iran

<sup>3</sup>Department of Technical and Engineering, Yasouj University, Yasouj, Iran

<sup>4</sup>Department of Architecture, Shiraz Branch, Islamic Azad University, Shiraz, Iran

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### ABSTRACT

As urban populations continue to increase, residents face a number of challenges including the need for spaces to spend their leisure time and satisfy the demand for social interaction and privacy. Privacy in urban environments means feeling comfortable in controlling the relationship with others without being disturbed. This research aims to examine the privacy patterns and environmental and human factors affecting it. The research method is quantitative and qualitative analyses and data is collected through field surveys. Moreover, behavioural mapping was also used for recording privacy patterns in urban spaces as a new method that has not been used before in the privacy field. The results showed privacy in two forms: individual and collective. Individual privacy, generally formed on benches and along main routes; and collective privacy for team games or particular sports areas as formal leisure. The human dimension, particularly age and gender, exerts the most prominent influence over individuals' privacy. Considering the environmental dimensions, the possibility of contemplation in place had the highest effect on people's privacy. The design strategies for some parameters that create social environments with desired privacy were mentioned at the end. There are some approaches to providing desirable privacy in urban open spaces, such as the circular arrangement of sits with a supporting angle of more than 45 degrees, using semi-open spaces in the park, installing lights in the green areas of the park to create security, and design pergolas with suitable furniture that can be personalised.

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### INTRODUCTION

In recent decades, the concept of privacy and its related mechanisms have been increasingly considered by

psychologists, especially social psychologists, and environmental designers (Namazian & Mehdipour, 2013: 109; Marshall, 1972: 93). Because individuals and groups attempt to be close to others or to be away from them

#### \*Corresponding author

\*E-mail adres: malihe\_taghipour@yahoo.com



sometimes, the concept of privacy as a process of change in one's own / another's boundaries undergoes constant change (Davis & Palladino, 1997; Namazian & Mehrpour, 2013: 109). However, human beings, in general, share the need for privacy whose achievement is necessary for satisfying other needs such as security and self-esteem. Additionally, providing privacy and personal space through the environment will positively affect social interaction, the perception of comfort, and the environmental quality (Lang, 1987; Altman, 1975; Ramezani & Hamidi, 2010: 502). According to Bencivenga (1998) and Brill et al. (2001), when people have no control over their relationships with others (privacy), their desire to socialise also decreases (Ondia, 2019: 5). Consequently, the process of privacy regulation is dynamic and dialectical, the amount of privacy desired by individuals and groups will also change as time and conditions change (ibid: 6). However, tools for achieving privacy are largely a function of place opportunities and limitations (Marshall, 1972: 95). To satisfy a multitude of needs, human beings require privacy boundaries, and they evaluate themselves by distancing from stimuli and events. Neglecting these needs will lead to tension and conflict. Therefore, environmental designers need to be able to provide users with different degrees of communication control in relation to others (Altman, 1976; Namazian & Mehdipour, 2013).

Studying, predicting, and evaluating human spatial behaviour began in the 1960s with the work of Edward Hall (1966), who developed the concept of proxemics that explored social cohesion, and described how people behave and react in different spaces (Yan & Kalay, 2004: 372). Ittelson, Rivlin, and Proshansky (1970) introduced a method called "behavioural mapping" to study behaviours in the psychiatric ward (Beeken & Janzen, 1978: 508). The experimental research method suggests engaging in space, observation, and photography to comprehend the details. Due to living in the confines of apartment houses, contemporary people are inevitably forced to spend their leisure time outside in urban spaces. This privacy in urban parks ranges from individual privacy to collective one. In this regard, parks, as urban public spaces, fulfil a large part of this need. Parks open up an opportunity to connect people with one another, promote high-quality social relationships, and, thus, enhance the social interaction of isolated people who live alone, and they play a crucial role in providing social and psychological benefits to urban residents (Cheung & Jim, 2019; Rigolon, Browning, & Jennings, 2018: 156; Zhang & Zhou, 2018: 27, Brown, Rhodes, & Dade, 2018; Pfeiffer & Cloutier, 2016; Kim & Jin, 2018: 2; Ayala-Azcárraga et al., 2019: 27). However, providing a different amount of privacy (individual privacy and collective privacy) in such spaces has a significant role in how people spend their leisure time in urban parks. Accordingly, this study discusses the strategies for providing desirable privacy in urban parks.

The main research questions proposed are as follows:

- 1) What are the different patterns of privacy in an urban park?
- 2) What features of urban parks do users choose for achieving their privacy there?
- 3) What is the relationship between the park environment and the human parameters with people's privacy patterns?

Spending leisure time in urban open spaces requires preserving an individual's privacy (Matsuoka & Kaplan, 2008: 12). In this regard, Marshall (1970) was one of the first researchers who investigated environmental privacy relationships using privacy scales (Margulis, 2003: 413). Pederson (1979) also examined Westin's view of the relationship between the privacy types and their functions for the first time. "Westin described solitude, intimacy, anonymity, and reserve as the four types of privacy", and added Pederson's (1999) creativity skill, a factor that emphasises engaging in creative activities, idea development (productivity), and problem-solving (relief). He developed Westin's theory (Margulis, 2003: 414; Pedersen, 1999). In the book "Encyclopaedia of urban studies"; Hatchison explains the concepts of privacy and territorial behaviour in environmental psychology (Hatchison, 2010). Protection of "personal space" contributes to achieving individual privacy, and guarding "territoriality" provides collective privacy.

Other research in the field of interior design, especially in the workplaces, has examined privacy based on which an appropriate level of privacy can be achieved and the concept of privacy in the workplace can be further developed by defining barriers, corners, changing levels, lighting, and using a semi-open space to connect interior and exterior spaces. (Kowalkowski et al., 2006; Parsaee et al., 2015). In addition to workplaces, some research on homes has investigated privacy patterns. In homes of the Shaamy community in Montreal, for example, residents' patterns of indoor use were observed (Hallak, 2002). In several studies, the investigation was conducted on basic concepts and theories of privacy, the impact of intercultural differences in the regulation of privacy and their conceptions (Mohammad Niy Gharaei & Rafeian, 2013; Newell, 1998; Rapoport, 1977), as well as the effect of architectural parameters on achievement and satisfaction of privacy (Kazemi & Soheili, 2019; Ondia, 2019), the experience of privacy and its impact on emotional depression (Laurence et al., 2013: 144) and the privacy benefits in social interactions. However, little research has been carried out into the impact of the environment on people's privacy, especially in urban public spaces such as parks, which is addressed in the present study.

## LITERATURE REVIEW

The term spatial privacy includes features that value spaces where one can relax (Qeidi, Motedayen, & Cheshmehghasbani, 2019). Privacy is the ability to control interactions, to have options and mechanisms to prevent undesired interaction, and to achieve desirable communication (Altman, 1976: 8; Rapoport, 1972). Privacy is considered as a priority, expectation, value, need, and behaviours which enables individuals to reflect on the meanings of the events and respond to them (Gifford, 2002). According to Simmel (1950), all social processes are comprised of dialectical connections between different forces (privacy, intimacy, etc.). Thus, privacy is closely related to ideas such as social process, social influence, a sense of personal control, and independence (Altman, 1976: 9; Al Moqrin, 2016: 189). In this regard, Altman and his colleagues (1981) proposed a different meta-theoretical approach to social influence and privacy regulation. They believe that when the permeability of borders is under the control of the individual, a sense of individuality is created in the individual (Mohammad Niay Gharaei & Rafeian, 2013: 42; Foddy, 1984: 299). Thus, privacy is presented as a two-way process in which the input data are transmitted to the individual by others and the output is the behaviours that the individual shows towards others (Namazian & Mehdipour, 2013: 109). Privacy can be pursued in different social units; Westin (1967) also considers privacy as voluntary withdrawal from the group due to physical or mental behaviours, whether in solitude or varisized group intimacy (Margulis, 2003: 412; Altman, 1976: 27). The level of privacy can be adjusted to suit different needs. The right to choose is essential to achieve privacy, and it should not be seen merely as a physical abandonment of one to others leading to isolation (Schwartz, 1968; Ondia, 2019: 6; Marshall, 1972: 93). According to Altman's (1975) model, privacy is divided into three levels: optimisation privacy, desired privacy, and achieved privacy (Margulis, 2003: 411). The privacy degree changes under the influence of personal factors (e.g., mood), interpersonal factors (e.g., closeness to others), and different situations (e.g., workplace) (Weber, 2018 & Margulis, 2003: 411). The right to choose is essential to achieving the desired privacy (Marshall, 1972: 93; Schwartz, 1968; Ondia, 2019: 6). When individuals achieve the desired control level in terms of the access other people have to themselves, they reach the optimum level of privacy. The achieved privacy is the result of the data received from related people as well as the processing involved (Altman, 1976: 13; Laurence, Fried & Slowik, 2013: 145). Thus, individuals use behavioural mechanisms such as verbal, nonverbal (body language) behaviours, environmental behaviours, and cultural norms and customs to achieve the optimum levels of privacy (Altman, 1976: 17; Ondia, 2019: 6).

## Different Dimensions and Efficient Parameters of Privacy

Research on privacy can be divided into three parts 1) emphasising the individual, 2) the place, or 3) the interaction between the two (Newell, 1998: 360). In addition to the dimensions of Westin's privacy (1967), he proposed four modes for privacy: (1) personal autonomy, (2) emotional release, (3) self-evaluation, and (4) limited and protected communication. Pastalan (1970) expanded Westin's view. He mentioned factors affecting privacy such as: (1) past social events such as roles and responsibilities, (2) organic factors such as unidentified motivation, and (3) mechanisms for achieving privacy such as physical abandonment knowing the use of nonverbal behaviour and psychological barriers, and (4) environmental factors such as crowding and confinement (Altman, 1976: 9). In his study, Pederson (1979) also presented different functions of privacy, such as intimacy with family (being alone with family), isolation (geographical isolation from others and their sightline), anonymity (being seen but not identified by others), and reserve (not revealing personal aspects of one's self to others) (Pedersen, 1999: 397; Margulis, 2003: 412). Individual and collective privacy is affected by environmental and human dimensions. Each one has parameters and indicators for following the other one. Privacy is a function of personal and environmental factors. Individual factors include privacy, interpersonal skills, personality variables, culture, age, gender, and so on (Johnson, 1974; Lang, 1987; Marshall, 1972; Hall 1966; Mohammad Niay Gharaei & Rafeian, 2013). Variables such as culture, age, gender, personality, and existing factors affect privacy in the environment (Hall, 1966; Altman & Chemers, 1980; Mohammad Niay Gharaei & Rafeian, 2013: 41). Environmental factors also include physical barriers, semi-open space, appropriate ambient lighting, and spatial domains (Ondia, 2019: 5; Kazemi & Soheili, 2019: 41; Altman, 1975: 107). Physical variables (e.g., scale, location, and climate change) lead people to label or experience crowds (Mohammad Niay Gharaei & Rafeian, 2013: 43). Semi-open space and lighting are factors that are necessary to consider to achieve the desired level of privacy in the built environment (Kazemi & Soheili, 2019: 41). If the physical environment does not satisfy the need to create privacy, people will inevitably show verbal or non-verbal behaviours. Round furniture, for example, allows for collective solitude. Environmental conditions, which include the elevation from the ground, the intensity of light, and the flow of air, make it possible to separate from or join people by facilitating or limiting the ability to see, smell, and hear people and other activities in a place. For example, air quality as an environmental condition affects the perception of olfactory privacy (Ondia, 2019: 7).

Considering the multiple viewpoints, Table 1 shows the parameters and indicators affecting privacy from different researchers' perspectives which are referred to as the theoretical framework in this paper. In this study, in

**Table 1.** Research theoretical framework: privacy dimensions and indicators affecting it (source: Margulis, 2003; Qeidi et al., 2019; Thompson et al., 2010; Altman, 1975; Wollman et al., 1994; Ondia, 2019; Newell, 1998; Hall 1966, Altman & Chemers 1980; Weber, 2018; Marshall, 1972; Pedersen, 1999)

	Dimensions	Parameters	Indicators
Individual and collective privacy	Environmental dimension	Lighting	Amount of light at night
		Permeability	Various paths to choose the appropriate place
			Distance from the park entrances
		Possibility of contemplation in space	Visual control
			Individual or collective relaxation in the park
			Individual or collective security in the park
		Vegetation	Shade trees
			Dense vegetation
		Sense of belonging	Personalisation of the environment
		Legibility	Ease of access to the desired location for privacy
	Proximity to the signs in the park (Sculpture, elements, etc.)		
	Climate	Environmental pollution (waste)	Noise pollution
			Airflow rate
		Sunlight	Shape of urban furniture (to sit, pause and observe space)
Arrangement of the benches			
Human dimension	Individual	Location of the benches	
		Spaces for collective activities (Sports, games; ...)	
		Age	
		Gender	
		Education level	
		Job	
	Collective	Number of visits per month	
		Reason for visiting to the park	
		Emotions (sad, happy, angry; ...)	
		Past experiences of crowds	
		Desire to be present in public	
		Number of collective activities and events	

addition to identifying the types of privacy, the effect of various environmental and human dimensions on privacy is measured, and in the end, strategies are designed to promote individual and collective privacy in the environment.

## RESEARCH METHOD

As mentioned earlier, the main purpose of this study is to analyse how individuals achieve privacy in urban parks and which factors influence this issue. After extracting the theoretical framework from the literature search (Table 1), the Jannat Park, located in Shiraz, Iran, was selected for the case study and attempts were made to investigate the various aspects of the issue. In this regard, the first step was to record the privacy patterns of individuals in leisure

activities at the park through users' behavioural mapping technique. In the second step, an assessment was done as to the factors affecting privacy, the relationship between the park environmental parameters, and the users' privacy patterns evaluated by means of Likert scale questionnaires. Figure 1 shows the research process and the steps involved. Since the statistical population of users does not have a specific volume, the number of samples according to Cochran's formula with an error of 5% is 96 but 109 persons were considered for certainty. People were selected through a random sampling method. We attempt to ask people who do various activities with different privacy patterns; however, no more than 109 responded. Even in some groups, some people did not accept to respond to the questionnaire. The questionnaires were administered

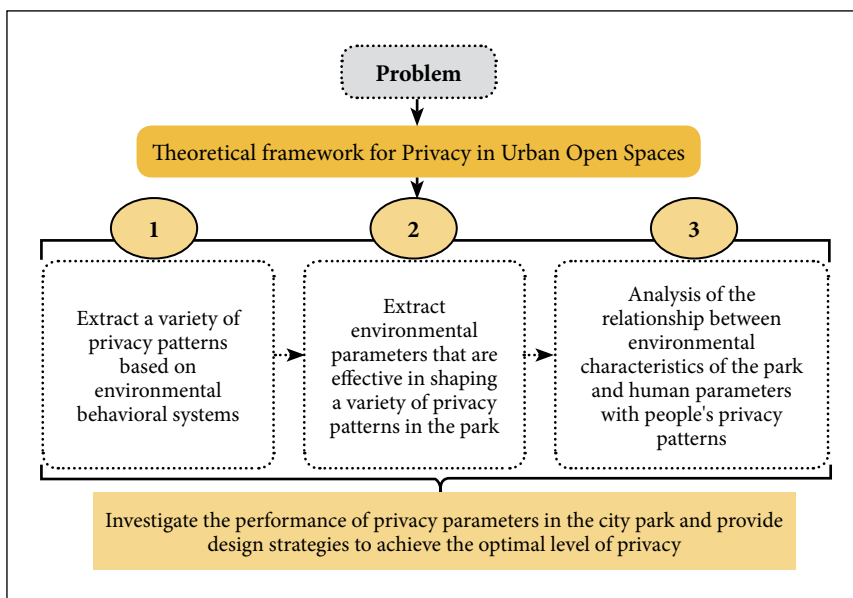


Figure 1. Research process.

during the daytime (9–12: 30 AM and 15: 30–19 PM) throughout a week in December 2019. Data collected were fed into the SPSS software according to the research approach. The questions included privacy dimensions and parameters affecting it mentioned in Table 1. The effect of all indicators on the privacy of individuals was evaluated using the 5-point Likert scale. Generally, environmental parameters were assessed with 19 questions and human components with 10. In addition to questions about the human dimension affecting people’s privacy (mentioned in

Table 1), the number of people and the reason for being in the park were also asked to investigate the relationship between questions. One question examined the level of privacy that people felt in the park.

**CASE STUDY**

Jannat Garden, located in Shiraz, is a property of Haj Mirza Abolhassan Khan Moshir Ol-Molk, which covers an area

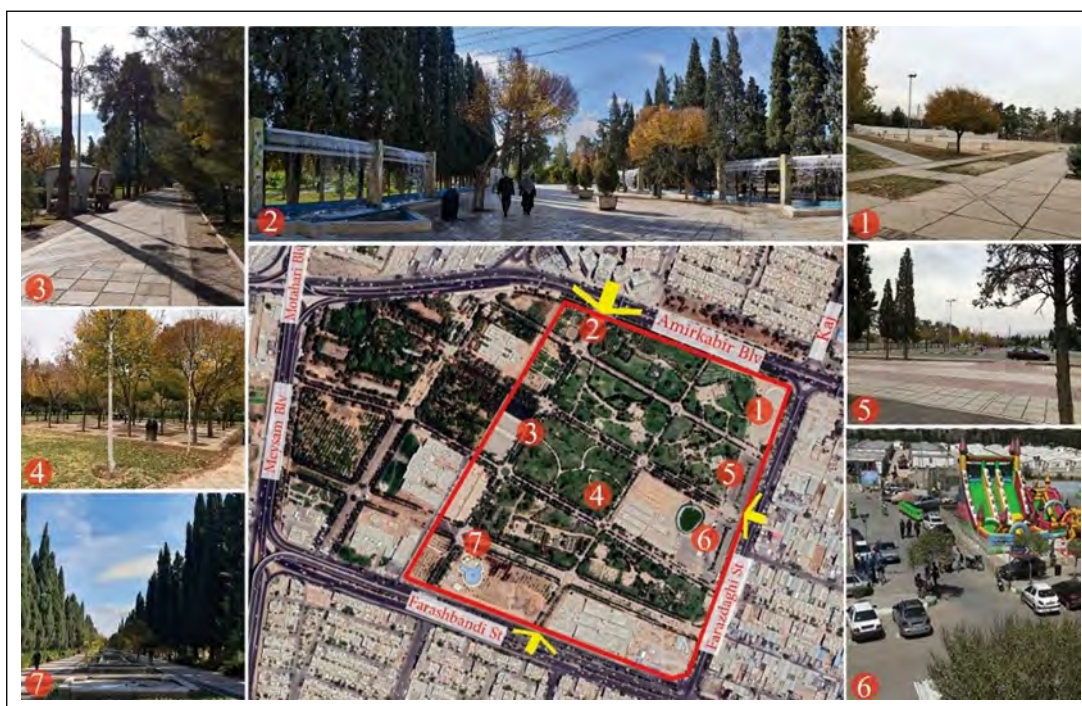


Figure 2. Janat Park area and its structure.

of about 54 hectares of relics of the Pahlavi era. With the implementation of the improvement plan, this historic garden, as an urban park, is now used by citizens to spend leisure time. The park has three entrances, a playground, a Nowruz accommodation camp for travelers, and a boating pond. Figure 2 shows the area of the park and some views from different parts of it. Janet Park has a regular geometry at the macro level, but an organic structure is used in different parts of its construction, and there are paths in the green spaces that do not follow a particular order.

**RESULTS**

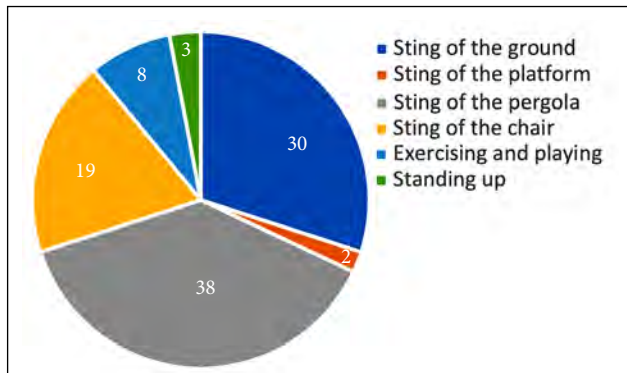
As mentioned in the research method and shown in Figure 1, data collection and analysis were performed are discussed.

**The Variety of Privacy Patterns Extraction Based On Behavioural Systems in the Park**

To record different patterns of privacy with an emphasis on behaviours in parks, the behavioural mapping technique was used solely on staying or static behaviours at the park level; however, dynamic activities in privacy were not addressed. Considering this explanation, types of behaviours observed

in the park with the intention of privacy included: 1. Sitting in a pergola; 2. Sitting on the ground (grass); 3. Sitting on the bench; 4. Sitting on a platform; 5. Standing up; 6. Playing; 7. Exercising; 8. Lying down on a bench; 9. Lying down on the ground (grass). These behaviours appeared in the environment individually and collectively. Figure 3 shows the frequency of privacy types recorded in the park according to people’s behaviours. According to gender, Figure 4 also shows the location of different types of privacy behaviours of individuals where white colour indicates men’s privacy activities and red shows women’s domain. Additionally, Table 2 introduces the position of each privacy pattern.

According to Figure 4, most patterns of privacy, such as standing, sitting on the bench, sitting in a pergola, and playing, occur near the main entrance. Men had the most presence in all kinds of privacy patterns. Most people, especially women, choose pergolas at the edges of the green spaces and intersections to sit on; then sitting on the floor is the most rewarding. Lying down on the ground, as an individual and collective privacy, takes place in the green spaces of the park. Taking photographs alongside the dense green mass or close to the signs is seen in collective ones. In general, people are less likely to use benches along the main axes and often choose those within green spaces.



**Figure 3.** Frequencies of privacy patterns observed in Shiraz Jannat Park (based on questionnaire data).

**Extracting Environmental Parameters Effective in Shaping A Variety of Privacy Patterns in the Park**

According to the previous section, there are various activities to spend time in the park, which require a specific type and amount of privacy. As mentioned in the literature review, the amount of privacy can be adjusted to suit different needs. Environmental factors affect privacy. Pastalan (1970) noted that environmental barriers such as crowding could reduce desirable privacy. For instance, lying down on the ground privately and publicly in the park and its green spaces is one of the types of such behaviours which may need solitude level while praying may need isolation. People may also participate in activities such as sports or get together to satisfy the need

**Table 2.** The crowd amount of privacy patterns in Jannat Park

Privacy patterns	Crowd amount	Number of women	Number of men
Sitting on the ground (grass)	Green spaces, the shrub edge, under the shade of the trees in the warm day and the sunny space in winter	30	62
Sitting in pergola	path (A) (intersection of AA 'and AB')	48	44
Sitting on the benches	Near the entrance number 1	25	38
Exercising	Enclosed sports spaces, square spaces with sports equipment	4	33
Playing	path (A')(especially near Ent1) and Green spaces among the trees	17	81
Standing up	Near to Ent1, AA's intersection and near the fountains	13	27
photographing	Around the signs and inside the Green spaces	7	12
Lying down	In green spaces close to the path A	3	6

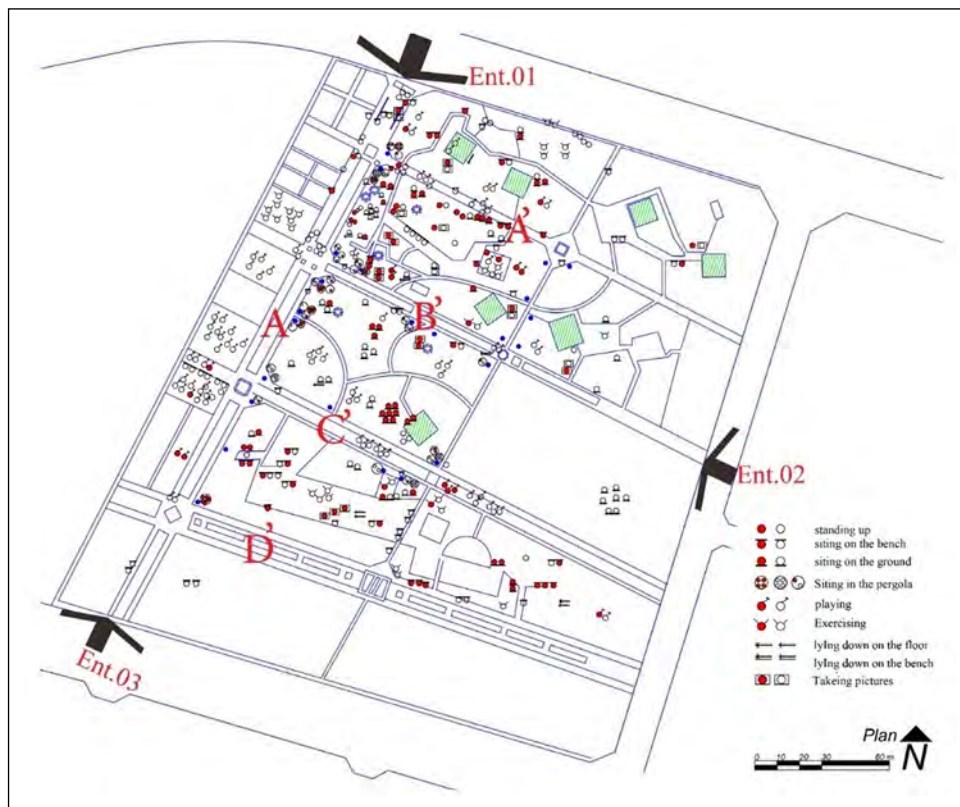


Figure 4. Types of privacy appearance by gender in Jannat Park.

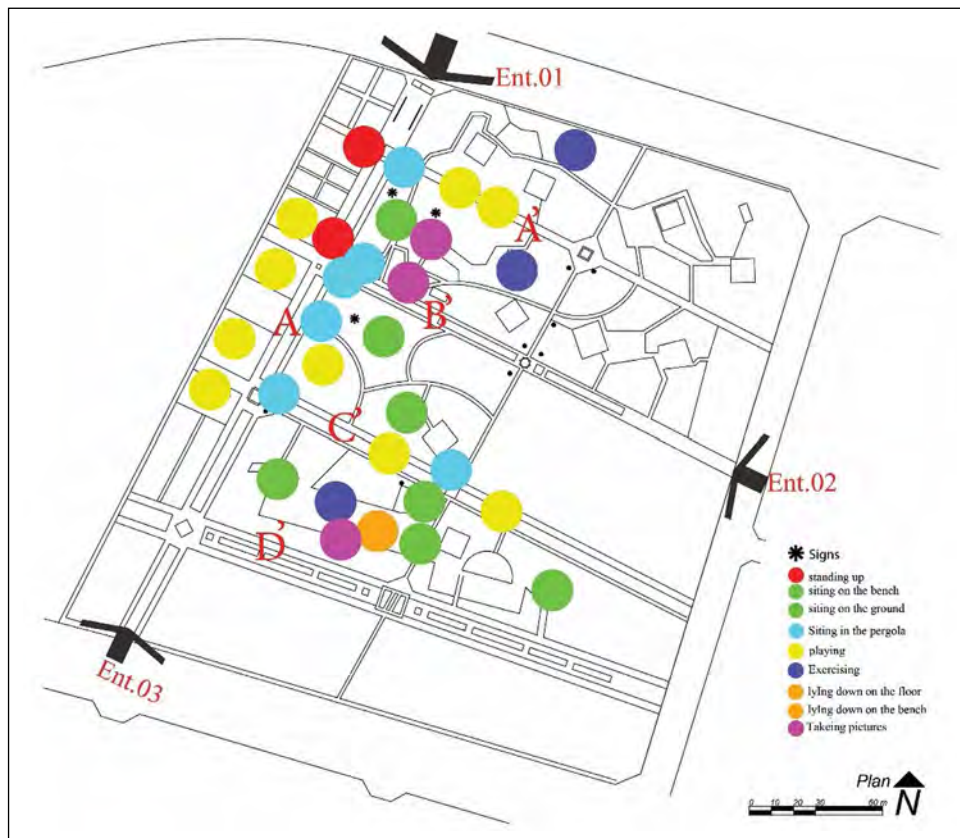


Figure 5. Distribution and crowd amount of privacy patterns in Jannat Park.

for an intimate level of privacy. Taking photos also takes place along dense green masses or near signs. When people focus on you and your friends when talking and enjoying your time, your privacy may be disturbed (Figure 5).

According to Table 2 and by examining the crowd amount of behaviours, it is indicated that most people prefer firstly sitting in pergolas, and then sitting on the ground. In collective privacy (a group of two and more), most people, without personalising the environment, were seen in the shade of trees (Hot days of the year), and in the sun to warm up (cold weather).

Most behavioural patterns (e.g., standing up, sitting on the bench, sitting in a pergola, doing sports, playing, and Practice of praying) that need individual and collective privacy to take place were observed near the main entrance (Ent.1), which is well defined and recognisable. Near entrance number 2, there are parking lots, an accommodation camp for Nowruz travelers, and a boating pond which are frequented in summer and Nowruz time, and the places, however, are not popular in winter and autumn (Area 6 in Figure 2).

Collective privacy (two people or more) appeared in pergolas located at the intersection (AA's). However, some pergolas did not have a bench and just had a platform making it possible to personalise some behaviours such as studying with friends, art training, having a birthday party, and so on. In addition to collective privacy like sitting in the pergolas, the starting point of Path A' witnessed other kinds of privacy such as playing along the pathway, playing

badminton (with personalisation of the environment by putting up a net to the trees), and standing near the fountains; this part of park area was a context for all kinds of privacy patterns. Different shapes of fountains, in the main path, play a small role in people's privacy. Fewer people prefer to have privacy on the benches of the path (A) and the other paths (A', B', C', and D'). They prefer to be in the green places rather than along the paths as they want to be away from cyclists' and pedestrians' sightlines, and relax and enjoy nature. Figures 6 and 7 show examples of the types of privacy patterns seen in Janet Park.

After extracting the types of privacy patterns in the park and describing their environmental characteristics, the correlation between the parameters affecting the park privacy was examined; thus, a survey was administered on a 5-point Likert scale. The reliability of the questionnaire was assessed by Cronbach's alpha test (alpha coefficient of 0.858), and the research instrument proved acceptable. According to the Kolmogorov-Smirnov test, the decision criterion (sig.) for all indicators was equal to (0.000); in other words, the distribution of this sample was normal. Table 3 describes the mutual relationships between the components in the form of a matrix. This feature was used to determine the intensity and direction of the relationship between model variables.

According to Table 3 and a correlation between the parameters affecting people's privacy, the human dimension has the most influence which is then followed respectively by the possibility of aggregation, contemplation in space, a



Figure 6. Types of collective privacy seen in Jannat Park.





**Figure 7.** Types of individual privacy seen in Jannat Park.

sense of belonging, and the climate conditions. The results of the table are presented in more detail:

- The lighting parameter has a significant relationship with privacy in the park, but the relationship is not so strong.
- Permeability has a significant relationship with the privacy of individuals, and its strength is 0.415, and there is a direct relationship between them.
- The possibility of contemplation in space has a significant direct relationship with privacy and its strength is 0.0529. This parameter is also strongly related to the permeability parameter (0.421).
- The greenery parameter, despite the general perception, has a significant relationship with privacy with less strength. This parameter is more effective in contemplation in the space with the strength of 0.391, which is more intensive compared to people's privacy.
- The sense of belonging has a significant relationship with privacy and the strength is 0.052 and has a significant relationship with the contemplation in space.
- Legibility has a significant relationship with privacy (0.488). This parameter has a significant relationship with the sense of belonging at a strength of 0.434.
- Climatic conditions have a significant relationship with privacy at a strength of 0.540. This parameter has a meaningful relationship with the sense of belonging as well.
- The possibility of aggregation has a significant relationship with privacy, and its strength is 0.569. This parameter has a significant relationship with greenery (0.404) and a significant relationship with legibility (0.306) and climatic conditions (0.337).
- Individual parameters of the human dimension have a significant relationship with privacy at the highest strength (0.790) among other parameters. Individual parameters have a significant relationship with permeability (0.364), the possibility of contemplation in space (0.301), the sense of belonging (0.374), legibility (0.416), and aggregator (0.372).
- The collective components of the human dimension have a significant relationship with the privacy of individuals and have the greatest impact on privacy after individual components ( $r = 0.785$ ). It also has a significant relationship with legibility, aggregation, and the human dimension (individual components) (0.264), (0.349), and (0.494), respectively.

The results of examining the correlations between effective environmental variables showed that along with previous research (Altman, 1976; Margulis, 2003; Weber, 2018; Mohammad Niy Gharaei & Rafeian, 2013; Ondia, 2019)

Table 3. Pearson correlation between parameters affecting privacy

Parameters	Individual and collective privacy	Lighting	Permeability	Possibility of contemplation in space	Greenery	Sense of belonging	Legibility	Climate	Aggregator	Individual aspect	Collective aspect
Individual and collective privacy	r	-									
	sig	-									
Lighting	r	**0/302	-								
	sig	0/001	-								
Permeability	r	**0/415	0/012	-							
	sig	0/000	0/904	-							
Possibility of contemplation in space	r	**0/529	0/116	**0/421	-						
	sig	0/000	0/228	0/000	-						
Greenery	r	**0/371	0/058	*0/204	**0/391	-					
	sig	0/000	0/546	0/033	0/000	-					
Sense of belonging	r	**0/527	0/090	**0/252	**0/349	0/186	-				
	sig	0/000	0/353	0/008	0/000	0/053	-				
Legibility	r	**0/488	0/093	0/096	0/186	0/087	0/434	-			
	sig	0/000	0/337	0/322	0/052	0/367	0/000	-			
Climate	r	**0/540	0/096	**0/249	**0/279	0/151	**0/391	-			
	sig	0/000	0/320	0/009	0/003	0/117	0/000	0/006	-		
Aggregator	r	**0/569	0/126	*0/225	**0/301	**0/404	0/156	**0/337	-		
	sig	0/000	0/109	0/019	0/001	0/000	0/105	0/001	0/000	-	
Individual aspect	r	**0/790	*0/194	**0/364	**0/301	0/047	**0/374	**0/263	**0/416	-	
	sig	0/000	0/043	0/000	0/001	0/630	0/000	0/006	0/000	0/000	-
Collective aspect	r	0/785	0/122	0/123	0/249	0/210	0/173	0/314	0/252	0/349	0/494
	sig	0/000	0/205	0/203	0/009	0/029	0/072	0/001	0/008	0/000	0/000

and Table 1, a set of environmental factors has been effective on behaviour. In the next section, the effect of these factors on people's privacy is mentioned in more detail.

### Analysis of the Relationship Between Environmental Characteristics of the Park and Human Parameters with People's Privacy Patterns

For investigating the relationship between the environmental characteristics of the park and the patterns of privacy, it is first necessary to analyse the achieved privacy of individuals in the park. To this end, a T-test was used. According to this test, the average privacy of people in the park was 3.33 and the significance level was 0.000, which means that there is a relationship between the park space and the achieved privacy of people.

After examining the significance level of privacy, the effect of the park environmental characteristics on the achieved privacy of individuals was analysed. For this purpose, a Friedman test was used. According to the test findings, among the environmental parameters affecting privacy, the possibility of contemplation in space, the presence of individual and collective security and comfort, as well as visual comfort (being hidden from people's look) are amongst the most significant factors providing privacy in the park. Furthermore, the vegetation variety in the park and the conditions of physical comfort, such as the presence of shade, enough natural light, airflow, the absence

of noise, and environmental pollution, are other factors that affect the environmental conditions for providing privacy in parks. According to Table 3, as individual parameters have bearing on people's privacy, the relationship between privacy and human characteristics are therefore analysed. The results proved that there is a significant relationship between people's privacy and the frequency of their visits to the park; however, the strength of these relationships is not high (0.307). People's jobs (0.353) and their gender (0.543) had a significant relationship with the individual and collective privacy of people in the park. 33% of respondents were men, and 67% were women. Those aged 25–35 years with a frequency of 32.1% had the highest, and those aged 45–55 years with a frequency of 9.2% had the lowest amount. Most respondents (68.8%) visited the park one to five times a month, and those with a bachelor's degree or less had the highest number (31.2%). Respondents had different jobs; however, most of them were housewives, students, employees, and retirees, respectively. They often stated the reason for visiting the park environment as enjoying nature (45%), visiting friends (33%) and studying (10.1%).

## DISCUSSION

Studies and statistical results show the patterns of using urban parks in both temporary and permanent forms. In the temporary pattern, people use these spaces at certain

**Table 4.** Types of privacy behaviours in urban parks and environmental parameters involved (Authors)

Privacy behaviours	Selection reason	Environmental parameters affecting privacy	Demographic features	
			Age	Gender
Sitting on the ground	Being away from pedestrians and cyclists sightline (creating optimal visual privacy)	Greenery	25–35	Men
	Enjoying the touch of the environment (sitting on the grass)			
Sitting in the pergola	Being away from pedestrians and cyclists sight (creating optimal visual privacy)	Greenery	45–55	Women
	Circular arrangement (suitable for collective privacy)	Aggregator		
	Protection from weather conditions (rain or sunshine)	Climate		
Sitting on the bench	Noticeable entry and accurate definition	Permeability lighting	Over 55	Men
Playing–Exercising	Providing optimal visual privacy using metal fences or vegetation cover around sports fields	Greenery	Below 25	
	Possibility of personalising the environment in the green areas of the park	Sense of belonging/possibility of contemplation in space	35–45	Men
Standing up	Being close to sports fields and the entrance (People waiting for friends, etc.)	Aggregator	All ages	Men
Taking photo	Around signs and along trees to set beautiful backgrounds	Legibility	25–35	Men
Lying down	The behaviour only possible in the green areas	Greenery	35–45	Men

times of the year and for specific purposes. However, in a permanent pattern, people use these urban spaces without any purpose and only spend their daily leisure time. As this study considers daily leisure time in urban parks, so only permanent patterns of use of the spaces are taken into account. The results are as follows:

- Most behaviours regarding privacy happen along with the defined entrances of the park and in crowded areas;
- Most people choose pergolas to have collective privacy; in keeping with Robson's viewpoint: people prefer fixed positions and furniture.
- Individual privacy is generally formed on benches and along main paths;
- Sitting on the ground usually occurs near green spaces designed by shrubs, both individually and collectively;
- Collective privacy for team games occurs in green spaces or sports special grounds;
- Lying down to look up at the sky, one of the behaviours providing individual and collective privacy, occurs in green areas, generally, in a space away from the other's physical and visual access.

Among the environmental parameters, environmental aggregator, security, the possibility of contemplation in space, sense of belonging, and spatial permeability have the most impact on providing individual and collective privacy in urban parks, and these conditions can satisfy people's desire to use them for leisure. This means that when people

feel they are not being looked upon by others, they can have a personal space, and they consider it appropriate for their privacy; they engage in social behaviours considering the amount of visual accessibility. Accordingly, security and the possibility of not being looked upon by the others in the park (without disturbance) are the most significant factors that people consider in providing a suitable space for privacy. This issue is more evident among women than men. Table 4 presents the types of privacy behaviours in urban parks as well as environmental factors affecting them.

## CONCLUSION

Today, urban communities are faced with living in the confines of apartments and lacking open space to spend leisure time. Consequently, one of the strategies of urban managers and planners is to provide suitable places for citizens to spend their leisure time. Parks and urban open spaces assume this role in modern cities whereby people can connect with nature, get away from the hustle and bustle of urban life, and identify and grow their talents through grasping the opportunities. Where such spaces do not offer themselves for people to use, they are not available for enjoying leisure time; therefore, this can turn out as a social problem in urban communities. "Too much privacy" provided in the open spaces can at times increase crime possibilities. Therefore, providing appropriate privacy is one of the significant factors behind the tendency to use urban parks. As privacy is a reciprocal behaviour between

**Table 5.** Design strategies to create proper environments for users' privacy (Authors)

	Parameters	Design guidelines
Increasing privacy in urban parks	Aggregator	<ul style="list-style-type: none"> <li>• Circular arrangement with a support angle of more than 45 degrees</li> <li>• Placing furniture near dense greenery and nodes to increase privacy</li> <li>• Designing pergolas with different size</li> <li>• Using semi-open spaces in the park</li> <li>• Predicting resting spaces in green areas</li> </ul>
	Legibility	<ul style="list-style-type: none"> <li>• Considering the signposts in the park, esp. in the nodes</li> </ul>
	Permeability	<ul style="list-style-type: none"> <li>• Creating defined paths within green areas with elements such as trees or signs</li> <li>• Increasing access to the surrounding areas (access routes, entrances)</li> </ul>
	Greenery	<ul style="list-style-type: none"> <li>• Using a variety of vegetation with different sizes in diverse areas of the park</li> <li>• Using tall trees without screening the ground from lights during the night</li> </ul>
	Lighting	<ul style="list-style-type: none"> <li>• Installing lights in the green areas of the park to create security</li> <li>• Lighting placed on floors and walls</li> </ul>
	Climate	<ul style="list-style-type: none"> <li>• Designing awnings, open and semi-open pergolas for different seasons</li> </ul>
	Security	<ul style="list-style-type: none"> <li>• Placing furniture in a good sight</li> <li>• Using short and high lights to provide security under trees at night</li> </ul>
	Possibility of contemplation in space	<ul style="list-style-type: none"> <li>• Using elements and signs at the park</li> <li>• Predicting visual corridors to different signs</li> </ul>
	Sense of belonging	<ul style="list-style-type: none"> <li>• Design pergolas with suitable furniture that can be personalised</li> <li>• Predicting seats in cozy spaces with a good view of the surroundings</li> <li>• Placing the benches in a semi-closed space with green edge enclosed on three sides and open in one side (forward)</li> </ul>

the individual and the environment, it enables one to control relationships with others. In open urban spaces, this issue can result from a range of factors which can be generally categorised as environmental and human ones. Environmental factors such as aggregation space, the possibility of contemplation, a sense of belonging, suitable weather conditions, and a greenery landscape encourage people to have optimal privacy and spend their time in urban spaces. In human parameters, age and gender have the most significant influence on their privacy. Future research is to be conducted with an emphasis on the human characteristics that affect privacy. In confirmation of the definition of privacy proposed by Gifford (2000), the possibility of contemplation in space provides privacy, and this parameter has been proposed as the second influential component. If the physical environment cannot create privacy, people will show verbal or non-verbal behaviours so this study focused on the environmental factors affecting the provision of desirable privacy in open urban spaces and Table 5 presents the design strategies that create suitable social environments with desired privacy. The present study, in addition to previous studies conducted in the field of privacy, found that different levels of privacy are observed in urban spaces. With emphasis on the behaviour of individuals and environmental parameters, the effect of the environment on the privacy of individuals was followed and a more comprehensive theoretical framework was used than in previous studies. In addition to environmental components, human components were also examined.

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