Original Research Article

Investigating the Effects of Objective and Subjective Elements on the Sense of "Privacy" in the Architectural Space*

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Abstract

Cultural, identity, and personality factors are different elements that can form privacy in a different weight importance. Investigating the effective factors on creating or disturbing privacy is considered when it is analyzed and criticized in a spatial and temporal context, in accordance with the specific cultural and identity conditions. In this analysis, the effective elements and components are tested and the weight percentage and effectiveness are specified. The present study attempted to evaluate the various factors affecting privacy. For this purpose, a questionnaire was designed to identify and prioritize the components providing privacy.

This study is a descriptive-analytical design that initially studies privacy as a semantic concept of theoretical aspect with library resources and then presents a qualitative-quantitative analysis via field survey (in-depth interview and questionnaire).

According to the research case, the results of the study indicate that the perception of the sense of privacy is subject to objective and subjective elements, and this component plays a role in the perception of privacy. Objective elements are more effective when communicating with "others". In the subjective measurement section, the perceptual difference is insignificant in terms of gender. Unlike men, the statistical population of women considers the body's cover as a more effective motive in securing privacy, but "security" and its origin "others' misuse " is the main concern of the statistical population of both genders.

Keywords: *Privacy, Protect privacy, Subjective factors, Objective factors.*

Introduction and Problem Statement

In today's world where population growth has created crowded and stressful spaces, the mental pressure

caused by over-contact between individuals requires conducting research on the concepts of privacy and relationships between the sub-criteria of these principles with the artificial environment. The first step in the communication of human beings with the surrounding environment is the "environment feeling". The "sense of the environment" is the basis of "perception and understanding of the environment". The stages of

emotion, perception, and cognition include complicated processes, steps, and factors. Human being identifies tangible realities through sensation after interpretation and interpretation lead to perception, and its evolution leads to the cognition of the phenomena of the universe (Larsone, Stedman, Cooper & Decker, 2015). Man experiences a process of perception in relation to the environment and others (Mónus, 2022). Encountering the environment, one often compares the information obtained with his/her mental criteria and, shows specific behavior based on the result of this comparison (Taffakkor, 2020, 51). Thus, the subjective perception of individuals in any environment is influenced by the perceptions of the conditions governing it and affects their behavior. Perception contains messages that convey a specific feeling to the person. A set of emotions that a person perceives when encountering the environment or exposure to a space or other people creates sense. The sense of security, solitude, horror, and a sense of privacy are such examples. What is lost in our current cities is to get a sense of privacy for individuals, it can be considered one of the most important crises in different spatial areas for citizens for presence and activity. Observing privacy determines certain distances between individuals, acquaintances, strangers, different ages, and other different states for each society and culture (Pakzad, Babaei & Tajbakhsh, 2020, 157). Privacy is, in fact, a defined boundary that man perceives based on five senses with subjective-objective aspects (Gilchrist, 2012). Privacy deals with our experiences and feelings in the space and the sensory meaning of spaces. When we refer to privacy in the architectural space, concepts such as borders, walls, boundaries, and territories come to the audience's mind. The architectural space represents the world and our perception of the world begins in space, and privacy, which is an integral part of space, can show the human confrontation with the universe. The defined privacy and boundary direct his thoughts, activities, and decision–making. In addition, the psychological and social dimensions of individuals are a decisive factor in the definition of privacy from each individual's point of view: different behavioral characteristics in different individuals

prioritize and identify how privacy protection is determined in the boundary. In addition to the personality dimensions (social relations between the individual and the society), other factors also affect privacy protection; besides, these factors can provide privacy or violate the privacy of others. For example, a person's sense of security and privacy in one place has a direct relationship with the township, neighborhood, and proper architectural design. Besides, cultural and identity components, such as the living status in the social context, traditions (social and personal clothing, hijab, and modesty), external components (audio and visual confusion), climatic (lighting, temperature, and specified time of day and night) and functional components (private and public space, privacy, and boundaries) play a decisive role in design. It can be stated that the concept of privacy and its perception is a complex issue and is dependent upon various factors. Today, in Iran, the privacy defined in individual and collective activities is not good, and with this assumption, a descriptive-analytical methodology is used in the present study to determine the elements involved in the definition and protection of privacy. And what objective and subjective factors can directly or indirectly affect the priority and weight of the constituent elements?

As mentioned, investigating the effective factors on creating or disturbing privacy is considered when it is analyzed and criticized in a spatial and temporal context, in accordance with the specific cultural and identity conditions. In this analysis, the effective elements and components are tested and the weight percentage and effectiveness are specified. This study attempts to design a questionnaire to identify and prioritize the influential, protecting, and confounding components of privacy in the analytical sector based on the theoretical foundations of privacy to investigate the constituent details of internal, external, and personality components, and multilateral effects between the individual, the environment, and society in the form of attributed tables.

Research Background

"Privacy" itself and its concepts, such as solitude,

boundaries, and border give a sense of peace and desirability to human beings. Considering its role in human life, privacy has always been analyzed from various aspects in local and international papers.

In the book "Defensible Space), Oscar Newman (1996) shared some experiences by examining and observing examples of urban housing and neighborhoods regarding privacy, privacy creation, security restoration, etc. Finally, some elements such as territory creation, hierarchy, prevention of congestion, and the creation of desirable privacy are mentioned in this book with objective examples as well as conceptual diagrams (Newman, 1996). Also, in the book "Private Life and Collective Life", Alexander studied the field of architectural psychology and explored the reason for the human need for solitude in architectural environments, namely, houses (Alexander, 2009). In local papers, in the book "Public and Private Spaces of the City", Ali Madani Pour examined different spatial urban scales and investigated how to interpret and use the city's personal, individual and non-personal spaces, and then how to build public and private spaces in the city were also studies. One of the basic features of this study is the presentation of applied and diverse scales of open and semi-open urban spaces, as well as examining them in the field of human relations and interactions (Madani Pour, 2010). Various researchers have studied the concept of privacy in architecture and human life. In a study "Privacy and housing: systematic literature review research" in 2022, it was revealed that based on psychological and social structures, the need for privacy is reflected in spatial-social behavior and the houses of individuals, and the issue of housing privacy is an extensive approach, so they have examined the effective components of housing. The results show that data on social and cultural contexts of users, and social meanings attributed to existing space organizations as well as on a scale defined for activity, evaluating one's personality traits, their forms, and personalization methods, their satisfaction and preferences, and the effect of social interactions and physical characteristics are effective on the perception of privacy in the person,

which is also manifested in the house (Macedo, Walbe Ornstein & Azambuja Elali, 2022). In a PhD dissertation "Investigate the concept of privacy in contemporary Saudi houses from female perspective" in 2015, the concept of privacy in the homes of eastern Saudi Arabia has been examined in various fields such as literature, psychology and internet security. Also, the factors that lead to privacy from female perspective, and the result of the study states that women are more likely to be present in spaces with high security and privacy as they can meet their personal demands (AlKhateeb, 2015). Finally, in another study "Promote the theoretical basics of the concept of privacy in contemporary housing from the perspective of environmental psychology", Babazadeh Oskoui et al., studied the impacts and factors providing privacy in the theoretical dimension and its examples were investigated in a residential environment (residential tower). Then, by adapting the defined elements on the different types of plans designed for the Tabriz residential tower, the study attempted to analyze the effective factors on defining privacy in zoning, hierarchy and spatial boundary of the general structure of the building (Babazadeh Oskuyi, Toofan & Jamali, 2019). Thus, as mentioned, one of the gaps in many previous theoretical researches on the privacy issue is the use of theoretical basics. The semantic concepts in theoretical studies are considered when they are analyzed and criticized in a social context, in accordance with the various cultural and identity conditions. The structural and analytical examination of privacy as a subjective concept within the human and real scale of community is the most important issue examined in the present study. Direct exposure to audiences through a field survey (questionnaire) for prioritization and weighting objective and subjective elements that provide privacy is the most important feature and distinction of the present research with other researches.

Theoretical Basics
• The concept of privacy
The term "privacy" means having freedom from intrusion and interference (Ibn Faris, 1983, 184). The

difficulty of defining privacy arises from its dependence on more abstract concepts such as culture and worldview, and the frequency and diversity of cultural elements make it much more difficult to explain. This issue illustrates that in addition to objective perception, privacy is also the mental impression of each person in his cultural context, and is interpreted by this method. From this perspective, privacy can be examined as a concept in human relations as well as one of the aspects of life and the world of everyday life in space (Pirnia, 2001). Boundary, border, solitude, and territory are the subjective elements that create privacy. In the definition of privacy, it is considered as a realm of each person's life that the person expects others not to have access the information about that territory without his consent, not to enter that domain, not look at or control that territory, or others should not violate his rights in that territory (Ansari, 2007, 38).

• **Privacy features and their effects from the theorists' perspective**

Privacy creates a border and protects people's solitude rights, but it does not mean separation (Fish, 2012). Privacy is a state of being apart from others and is a bubble that creates a boundary between solitude and interaction with others (Pakzad & Bozorg, 2014, 155). Schwartz believes that tools such as doors, walls, fences, and boards prevent the unpermitted entry of others (Schwartz, 1986). According to Westin, privacy is a dynamic process. In harmony with other needs, privacy helps us to emotionally adapt to interpersonal interactions. Westin also proposes four functions (goals) of privacy: 1- Personal autonomy to prevent manipulation; 2- to be dominated or exposed to others; 3. Emotional release to prevent manipulation of emotions and dominate emotions or stresses caused by others 4. Self-evaluation to integrate the experience into meaningful patterns and personality practices into events, limited and protected communication to determine interpersonal boundaries, and sharing personal information with reliable individuals (Trepte & Reinecke, 2011, 10). In Altman's approach, three characteristics of privacy are of great importance.

First, privacy is inherently a social process. Second, a proper understanding of the psychological aspects of privacy should include the interaction of the people, their social world, the physical environment, and the temporal nature of the social phenomena, and third, privacy has a cultural context. In particular, privacy is a global culture, but psychological manifestations are specific from cultural aspects (Altman, 2003). Altman considers the spatial territory not only providing solitude but also the consolidation of social relations. The elimination of borders and territories leads to the loss of solitude, the feeling of tension and conflict in humans, as well as the psychological problems of congestion. Personal space can also be defined as the one that belongs to him and is forbidden for others. In the personal environment, it is possible to create a "privacy definition" and it can be stated that individual independence is also provided in the concept of privacy (Lang, 2002, 166). Thus, it can be stated that the privacy perception for human being is formed based on two approaches, first from objective aspects and by forming boundaries between different spatial areas, and second in the subjective side and the process being processed in the brain (Rainey, Stéphanie, Christen, Mégevand & Fourneret, 2022). As mentioned, we can divide the privacy structure into objective and subjective aspects. In the division of objective concept, being apart from others is stated as the main component of privacy and, depending on the needs and space in which man is present, experiences public, social, personal, and intimate distance (Fig. 1).

• **Privacy and its relationship with confidentiality**

Culture means the attitudes, beliefs, customs, and traditions of each society (Behzadfar, 2011, 26). Confidentiality as a subjective concept is a complex and culture-dependent issue that can be defined as a personal right on what information may convey to others. Confidentiality can also be synonymous with concepts such as character and solitude because they all induce a more fundamental concept such as arena, privacy, territory, or domain of influence (Keiwanloo & Asadi, 2013, 3). The purpose of confidentiality in the architectural and urban space is to

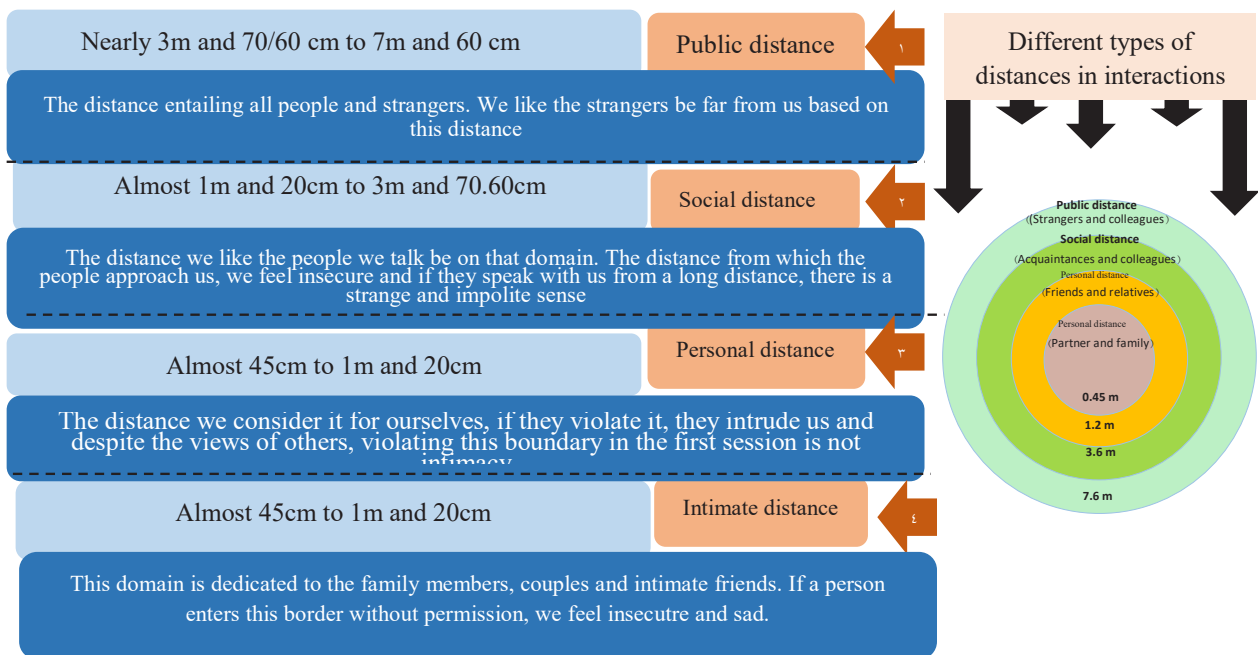| Nearly 3m and 70/60 cm to 7m and 60 cm | Public distance | ١ | Different types of distances in interactions |
The distance entailing all people and strangers. We like the strangers be far from us based on this distance			
Almost 1m and 20cm to 3m and 70.60cm	Social distance	٢	
The distance we like the people we talk be on that domain. The distance from which the people approach us, we feel insecure and if they speak with us from a long distance, there is a strange and impolite sense			
Almost 45cm to 1m and 20cm	Personal distance	٣	
The distance we consider it for ourselves, if they violate it, they intrude us and despite the views of others, violating this boundary in the first session is not infimacy			
Almost 45cm to 1m and 20cm	Intimate distance	٤	
This domain is dedicated to the family members, couples and intimate friends. If a person enters this border without permission, we feel insecutre and sad.			

Fig. 1. Investigate the distances in the privacy perception process. Source: Author adapted from Hall, 2011.

give structure to the space in such a way that the privacy of both physical and semantic aspects can be provided. Privacy in this area is more focused on the principles that shape space security and in the semantic area are features that bring dignity and value to the architectural space (Seifian & Mahmoudi, 2001, 4). Privacy, by forming protection and sense of security, creates peace for the residents and, affects the behavior of individuals as an effective component. Accordingly, the basis of individual and social behaviors is privacy and its characteristics such as solitude, personal space, territory, and congestion (Mortazavi, 2001). As mentioned in the sources, providing privacy in one place can have a direct impact on comfort and one's belonging to the environment, the belonging and comfort after which place attachment is created. Place attachment has many functions such as the feeling of control and connection with others (Low & Altman, 1992), so it can be said that attachment originates from social relations, social factors deal with the quality of interpersonal relationships and one's social status (Gifford, 1997. 114). If this concept is created in a person from subjective aspects, congestion and crowdedness that contradicts the concept of privacy

is prevented, so the defined relationships based on distance (Fig. 1) lead to privacy for an individual. Another subjective component constructs the identity border, the concept of identity means the nature of creatures. The identity of an object is a set of existential or specific features of the object that results in distinction from others (Naqizadeh, 2014, 22), so when a man has a sense of identity towards the surrounding world and others (Table 1), a defined border comes to his mind based on it.

• **Privacy and territorial behavior**

The last effective subjective component of individual behavior is the personality traits of each individual. Character is the continuous characteristic through which one regulates their interaction with others and the social environment (Kandler & Rauthmann, 2021). Thus, it can be stated that what forms the privacy perception in a person's mind is territorial behavior. Altman considers territory as an abstract process in which the individual or group interacts with others (Pakzad et al., 2020, 151). Territorial behavior is one of the monitoring mechanisms of the border between self and the other by privatization or marking the place or object, indicating that the place

Table 1. The effective factors of providing or violating privacy. Souece: Authors.

Privacy	Cultural-identity components	Internal and personality components	Functional and applied components in designs	External and indirect components
Effective elements on providing or violating privacy	The concept of residence in a specified context, cover, hijab, and modesty	Personality dimensions, the relations between an individual and society, one's behavior based on personality psychological type	Marking and determining borders and boundaries by design tools at the macro and middle scale, defining personal borders and privacy at micro-scale	Time, climate, audio-visual perceptions
	Subjective components		Objective components	

or object belongs to that person or group. Violating the territory is the unauthorized crossing of the surrounding border of a person or group. Reaction to violation and effort to protect the territory has varying degrees from a full warning to the creation of signs in the environment for physical separation (Shahcharaghi & Bandarrabad, 2015, 70). Backtel presents a clear definition of the privacy of the behavioral basis: Privacy is a behavioral basis in which behavior is established. Wall is an ideal border that prevents entering and exiting. Qualities such as the fading of vision and sound are important in creating privacy. If the privacy of the behavior basis is not adequately clarified and transparent, their definition is also difficult. If there is interference and overlapping between behavioral bases, you can build physical privacy or change the space organization (Lang, 2002). It can be said that territorial behavior is subject to the cultural norms and standards of society, and people protect it through boundaries and finally feel the desired privacy.

• **Subjective and objective components in the privacy perception**

Regarding the objective effective components in privacy perception, we can refer to observing the hierarchy pattern in the creation of space. The hierarchy in the architecture of this principle means organizing and combining spaces and elements based on their physical or functional features in a way that leads to the hierarchy of placement, use, or observation for residents (Soltanzadeh, 1993, 106), hierarchy. As an objective component of creating space, hierarchy leads to the creation of a space arena. Spatial zoning means separating space into two public and private areas as one function does not influence the other, while both can be used at the same time. It can be concluded that one of the most important solutions to create a sense of privacy and confidentiality for human being is space zoning (Heidari & Taghipour, 2018, 81). Thus, the environment and components in its context are important in creating objective privacy and the related behavior.

• **Factors affecting the behavior of individuals in private spaces**

Based on the theories presented by theorists and components influencing the definition and protecting privacy, it is obvious that there is a bilateral and cause-and-effect relationship in privacy as the occurrence of one of the influential elements can also affect other elements, or by deficiency or the creation of one, the definition of the creation or violation of privacy can be changed. In the analytical section, the research question is what are the elements affecting privacy? And which one has the most important weight in privacy protection? The analysis of the issue of privacy and its relationship with the subjective elements is intertwined with phenomena such as culture, society, identity, and personality, all of which represent the orientation and behavior in a given residential context. In other words,

whether a person feels his privacy is provided in one space, this manifests in his behavior. This behavior has a direct relationship with the components of privacy. Fig. 3 presents the factors and components influencing the bilateral relationship between privacy and behavior in a given location context.

If we consider the yellow box a specific place context, behavior and privacy are two aspects of factors and components that represent the bilateral effect of a person's behavior on a private space or to create privacy with a specific behavior, besides being bilateral, this issue is arising from the components listed in the middle of Table 1.

If we imagine a person's presence and residence in one place, some different components and characteristics can change the state of the audience, feeling, and behavior if they take place or not. One can change his behavior in the way of exposure to space and providing privacy or violating it. In examining influential factors, it may be said that the geographical location and cultural identity component may be the most important principle in the definition of privacy because the religious, customary, and social backgrounds are effectively determining a specific boundary to define and provide privacy (Shahcheraghi & Bandarrabad, 2015). Next, there are human and inherent components that define man's behavior and presence in space. Besides, the out-of-control components of the space user, such as how to design the space used on a macro, microscale and other indirect factors such as climatic conditions, temperature,

light, day or night, noise pollution or disturbance, visual violation, all are factors providing or violating privacy that have a different degree and weight ratio. These factors are briefly shown in Table 1.

Based on the effective elements in providing or violating privacy in Table 2, a questionnaire was designed to test the subjective and objective elements mentioned in a field survey. Thus, it is possible to prioritize the importance of various subjective and objective factors and determine the relevant weight percentage.

• **Field study**

The desired field design is considered to analyze the issue of privacy and its relationship with the subjective and objective elements. Since there are diverse effective elements, first, it is necessary to identify the factors that have the most weight in this relationship. Then, the test process was divided into two sections: "in-depth interview" and "questionnaire". In the first part and before designing the questionnaire, it was attempted to conduct some free interviews. The interviews were all conducted by examining the concept of privacy, about the place of residence (house), especially the personal room. By reviewing the text of the interviews, related elements that were repeated more than other concepts were identified and then were used in the second part and the main questionnaire. The statistical population of the questionnaire is 120 architectural experts of equal genders to have a valid comparison of responses in terms of gender in the data analysis stage. The process of selecting the statistical population based on repeated
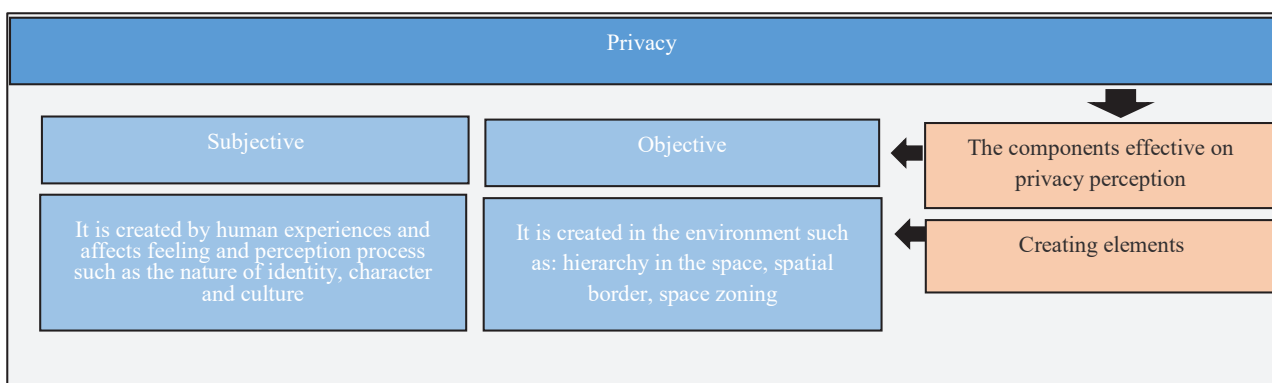

Fig. 2. Effective elements on privacy perception. Source: Authors.

Cultural component	Social component	Identity component	Personality component

Culture, as the internal compatibility of human being and the effective surrounding environment, is almost constant over time based on society's regulations, and affects other aspects of human life, including worldview, value systems, and way of living (Giddens, 2013). Culture is derived from current beliefs and thoughts in society, such as the model of confidentiality (Gifford, 1997, 117).

The combination of mechanisms that citizens use to monitor social interactions, and in other words, which behaviors are used mostly (Altman, 1976), which are defined based on social contracts and leads to creating some borders by humans such as the sense of crowding and congestion in space (Gifford, 1997). Congestion is a social situation that is the consequence of the consistent inefficiency of privacy. We feel congestion when people have approach our territory and personal space and it is impossible to control our relationships with others.

What is important in shaping identity includes worldview (religion), behavioral factors (culture, ethics, rituals), physical factors (civilization, language, signs, scientific and artistic works (Be (Behzadfar, 2011). Identity components lead to the creation of specific patterns and norms in the individual or society and give meaning to life

According to Erich Fromm

Personality is the totality of inherited and acquired qualities which are characteristics of an individual (Maylee, 2006). From Allport's point of view, personality is defined by the dynamic organization of psycho-physiological systems within a person, which determines his adaptation to the world (Schultz, 2009). The existing definitions of personality ranges from the internal processes of the organism to the visible behaviors resulting from the interaction of Individuals
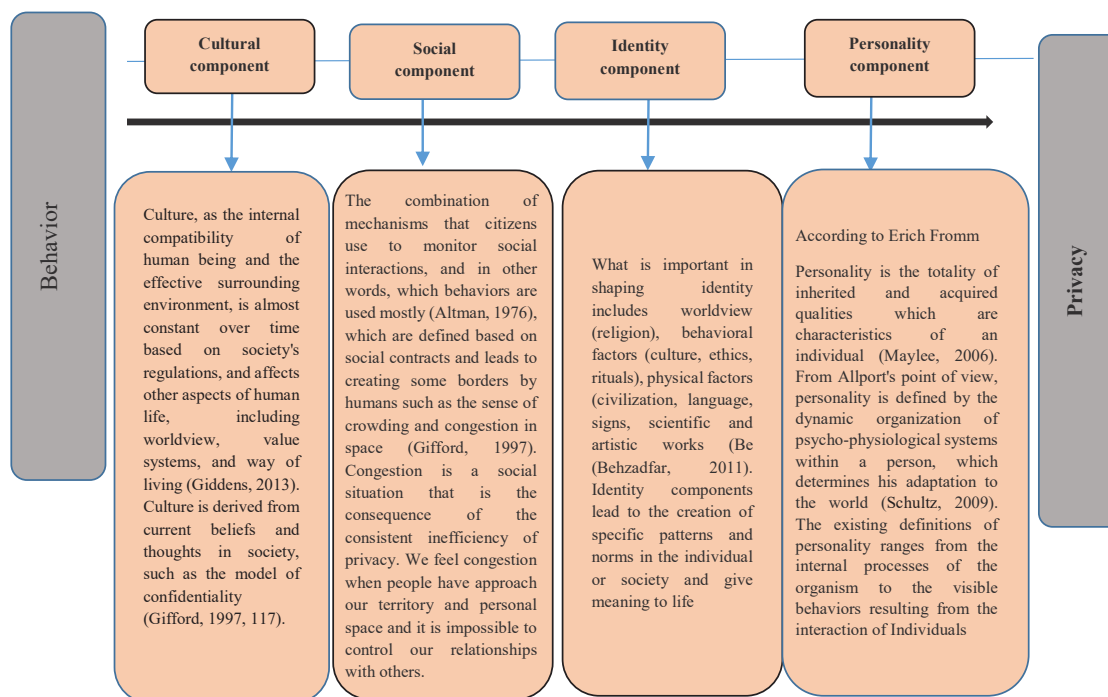
Behavior

Privacy

Fig. 3. Factors affecting the behavior of individuals in protected spaces. Souece:Authors.

elements from interviews in the questionnaire was analyzed based on two main methods. The content of the first part of the questions is about the analysis of the "motivation" and the "internal factors" of individuals regarding providing privacy. The questions are arranged to examine the extent of the effect and the "priority" of the entirely subjective and semi-subjective elements. In this section, individuals in a matrix should prioritize the importance of the elements in the degree of privacy sense. In this matrix, besides evaluating priorities, the standard deviation and the distribution of each priority are also investigated. This section consists of 6 questions, the first three questions analyze the sense of privacy from three types of motivation: finding an element that 1- An individual is afraid of losing it when his privacy is violated. 2-In providing his privacy, one intends to attain it, 3- Escaping from it by providing privacy. The other 3 questions measure one's preference and reactive conditions for privacy.

To analyze the questions in this section, all the questions were placed in a single table and formulated in three sections: the first and second parts of the data were analyzed based on gender, and in the third part, the data was analyzed without considering gender (Table 2). Then each section was investigated based on two methods. In the first method, the frequency of each item was weighed based on priority. To do this, for the first to fifth priority, the coefficients 5 to 1 are considered, respectively. Finally, based on the comparison of scores, the items are rewritten in the "ranking" column in accordance with the important priority given to each item (Table 3). Following that, based on the priority column, the data were tabulated in the rows under items to examine the standard deviation of each priority after comparing the data collection. Thus, a deviation higher than the mean indicates the confidence of the statistical population to determine the priority (Table 4).

The second and final part of the questions is dedicated to the effect of the intensity of "environmental factors" on the "sense of privacy". In these questions, some factors such as the relationship between the sense of privacy with the number of individuals interfering, the amount of light, the amount of climatic comfort, the distance, and the amount of cover in general are measured, with

the assumption of visual protection. In this section, individuals in each of the questions and by selecting one of the three "direct relationships", "reverse relationship" and " no effect" have determined the relationship between the specified factors with the sense of privacy. Like the first section, the results were examined based on gender and in relation to the total. For this purpose, two charts are drawn to clarify the results for each question. The first chart shows the total frequencies on the three mentioned items, and the second chart also depicts the share of each item by gender (Fig. 4). Finally, the comparison between the two sections was made after analyzing each section.

Discussion
• First section: Subjective factors (perceptual)
The results indicate that in both genders separately and totally, "security" is the most important sense that people search by providing privacy and at the same time by violating the privacy, they have fear of loss. In the total and men frequencys, ' concentration, "body and cover" and "observing activity" are the next priorities for protection. The statistical population of women has chosen "body and cover" more important, the second priority. Also, the distribution and standard deviation indicate their greater certainty in determining priorities. "Observing activity" as the last priority indicates that

Table 2. The total frequencies. Source: Authors.

Ranking	Score (with coefficient)	4 Man and Woman	4 Man and Woman	3 Man and Woman	2 Man and Woman	1 Man and Woman	Woman (Total)	Man (Total)	Ranking	Score (with coefficient)	5 Woman	4 Woman	3 Woman	2 Woman	1 Woman	Ranking	Score (with coefficient)	5 Man	4 Man	3 Man	2 Man	1 Man	First group of questions/Priorities	
120	3	444	0	24	20	44	32	60	60	2	244	0	8	0	32	20	3	200	0	16	20	12	12	Body and cover	Question 1
120	4	348	0	40	52	28	0	60	60	4	180	0	16	28	16	0	4	168	0	24	24	12	0	Observing activity	
120	2	448	0	12	36	44	28	60	60	3	208	0	8	24	20	8	2	240	0	4	12	24	20	Concentration	
120	1	536	0	4	12	28	76	60	60	1	280	0	0	4	12	44	1	256	0	4	8	16	32	Security	
480			0	80	120	144	136	240	240			0	32	56	80	72			0	48	64	64	64		
120	3	348	28	20	32	16	24	60	60	4	152	16	8	24	12	0	3	196	12	12	8	4	24	Growth	Question 2
120	4	312	28	20	56	4	12	60	60	4	152	12	16	24	4	4	4	160	16	4	32	0	8	Space ownership	
120	2	484	0	12	12	56	40	60	60	2	244	0	4	8	28	20	2	240	0	8	4	28	20	Autonomy	
120	5	288	24	52	24	12	8	60	60	3	160	8	28	8	8	8	5	128	16	24	16	4	0	Self-evaluation	
120	1	540	0	8	12	12	88	60	60	1	280	0	0	8	4	48	1	260	0	8	4	8	40	Security	
600			80	112	136	100	172	300	300			36	56	72	56	80			44	56	64	44	92		
120	3	372	0	36	52	16	16	60	60	3	196	0	12	32	4	12	3	176	0	24	20	12	4	Evaluation and judgement by others	Question 3
120	4	344	0	60	28	20	12	60	60	4	156	0	40	8	8	4	2	188	0	20	20	12	8	Internal detection	
120	1	540	0	4	8	32	76	60	60	1	272	0	0	4	20	36	1	268	0	4	4	12	40	Others misuse	
120	2	388	0	32	36	44	8	60	60	2	212	0	8	16	32	4	3	176	0	24	20	12	4	Conspiracy of aliens	
480			0	132	124	112	112	240	240			60	60	64	56			72	64	48	56				
120	3	372	0	48	32	20	20	60	60	3	204	0	12	24	12	12	3	168	0	36	8	8	8	Leaving	Question 4
120	2	484	0	8	16	60	36	60	60	2	252	0		8	32	20	2	232	0	8	8	28	16	Verbal protest	
120	1	496	0	4	28	36	52	60	60	1	260	0		12	16	32	1	236	0	4	16	20	20	Change in space (having curtain or closing door)	
120	4	320	0	68	32	12	8	60	60	4	152	0	40	12	4	4	3	168	0	28	20	8	4	Condition toleration	
480			0	128	108	128	116	240	240			52	56	64	68			76	52	64	48				
120	1	492	0	20	4	40	56	60	60	1	240	0	12	4	16	28	1	252	0	8		24	28	Alone/Closed door	Question 5
120	3	412	0	20	40	48	12	60	60	2	232	0		16	36	8	3	180	0	20	24	12	4	Presence of others at home/closed door	
120	2	456	0	12	32	44	32	60	60	3	212	0	8	20	24	8	2	244	0	4	12	20	24	Alone/open door	
120	4	312	0	72	36	0	12	60	60	4	164	0	32	20	0	8	4	148	0	40	16	0	4	Presence of others at home/open door	
480			0	124	112	132	112	240	240			52	60	76	52			72	52	56	60				
120	1	588	0	0	0	12	108	60	60	1	296	56	4				1	292	52	8				Visual	Question 6
120	2	512	0	0	4	80	36	60	60	2	256	16	44				2	256	16	44				Audio	
120	3	376	0	0	104	16	0	60	60		188		8	52			3	188		8	52			Smelling	
360			0	0	108	108	144	180	180			72	56	52					68	60	52				

Table 3. Weighted frequencies. Source: Authors.

First group of questions/Priorities		1	2	3	4	5	Score (with coefficient)	Ranking
		5	4	3	2	1		
Question 1	Body and cover	12	12	20	16	0	200	Third
	Observing activity	0	12	24	24	0	168	Fourth
	Concentration	20	24	12	4	0	240	Second
	Security	32	16	8	4	0	256	First

Table 4. The deviation examination data. Source: Authors.

First group of questions/Priorities		1	2	3	4	5
		Man	Man	Man	Man	Man
Question 1	Body and cover	12	12	20	16	0
	Observing activity	0	12	24	24	0
	Concentration	20	24	12	4	0
	Security	32	16	8	4	0
		64	64	64	48	0

basically others' awareness of activity is insignificant. In response to the question of what they search for privacy, individuals have chosen "autonomy", "growth", "ownership of space" and "self-evaluation" after security. It seems that people provide conditions for autonomy and growth by protecting concentration. The third question of the prioritization of the element that individuals escape with privacy providing shows that security is in the first place to avoid "others misuse". In the next priorities, and totally, the "conspiracy of aliens", "evaluation and judgment by others" and "internal detection" have been placed with little distance from each other.

The data indicates that when privacy is violated, the priority of the reaction is to have "space changes". In the next priorities, "verbal protest", "leaving" and "tolerance of the status" are the selected item of the sum of men and women. The last priority "condition tolerance" and the item "leaving" before it indicates that people do not tolerate privacy violations. The scores in the women's frequency show that "tolerance of the situation" is the last priority, with certainty and a high difference from the other items.

In one of the questions in this section, it was attempted to analyze the sense of privacy as half-subjective and half-objective. Its subjection section, "alone" and "not alone" and the objective section, evaluate these conditions in the spatial imagination of a "closed" and "open" room. The results indicate that totally, in the "alone and with the closed room" conditions, the highest level of privacy is experienced. The items, "alone- open door", "the presence of others at home- open door" and "the presence of others at home- closed door" are the next priorities. It seems that the factor "alone", as the main element of the sense of privacy, and then, "the closed door", has the greatest impact on the sense of privacy. Thus, the subjective element is the primary condition and the financial status is less effective on the sense of privacy.

The final question in the first part of the questions attempts to determine the importance of privacy in the senses of five senses in which privacy providing is important in this regard. As a result, in the sum of men and women, "visual privacy" is the main privacy concern for individuals. Then, "audial privacy" and "smelling privacy" are important, respectively. It can be concluded that visual privacy is the most important factor in creating one's subjective privacy, and one feels secure by the effective elements of providing privacy.

• **Section section: Objective factors (Physical)**

The second part of the study evaluates the impact of environmental factors such as hierarchy in space, spatial boundaries, and space zoning based on the number of individuals violating one's privacy rights, light level, climate comfort, distance, and cover in perceiving the physical sense of privacy. According to analyzes on the effect of physical components on the perception of privacy, it can be stated that, regardless of gender separation, 50 % of the statistical population believes that the components of light, climatic comfort, cover, and distance of individuals play a role in privacy. 33 % of the statistical population of women state that there is a direct relationship between privacy and these components, and 23 % of men are opposed to this relationship, so,

Reaction to privacy violation				Reaction to privacy violation				Reaction to privacy violation				Escape				Tendency to acquire				Fear of losing		
Female	Without separation	male		F	Without separation	M		F	Without separation	M		F	Without separation	M		F	without separation	M		F	without separation	M
1	Visual	1		1	Alone-closed door	1		1	Change in space	1		1	Others misuse	1		1	Security	1		1	Security	1
2	Audio	2		2	Alone-open door	2		2	Verbal protest	2		2	Others conspiracy	2		2	Growth	2		2	Concentration	2
3	Smell	3		3	Others presence-closed door	3		3	Space Leaving	3		3	Evaluation and judgment	3		3	Autonomy	3		3	Body and cover	3
				4	Others presence-open door	4		4	Tolerating condition	4		4	Internal detection	4		4	Space ownership	4		4	Observing activity	4

Fig. 4. Prioritization of the elements of the first (subjective) section with and without gender separation. Source: Authors.

it can be concluded that 50 % of the population had a positive opinion about the relationship between privacy and the physical elements effective in creating its sense. In measuring the light component as an element in the environment, 70 % without gender segregation emphasized the value of light as an important component in important qualitative perception that the share of women accounts for 51 % of the total frequencies. The component of light is more important than men in the sense of security and privacy compared to that men. There is a direct relationship between the measurement of climatic and privacy components, and in this case, like the light factor, the share of women is greater than that of men. 37% of total frequencies are dedicated to women. To measure the relationship between privacy and cover, the results show that 67 % of people consider the cover to be an effective factor in the perception of privacy, in which the share of men is 34 % and women's share is 33 %. In the previous question, it was found that the majority of people consider cover (Hijab) to be more effective in the sense of privacy. In the next question, the "being seen" factor is eliminated to question the effect of the cover regardless of the presence of others. Statistics show that most people consider the impact of cover to be conditional on visual communication. In the next

question, to examine the relationship between distance and the sense of privacy, 90 % of the frequencies and more certainly than the other factors were assigned to the direct relationship, and the remaining 10 % indicates no effect, and in the statistics of gender separation, It seems that women are more likely to consider distance as the condition of privacy. In the final question, it was attempted to measure the relationship of an environmental factor, regardless of cover and body in visual protection. In response to this question, 60 % of people acknowledged that in the case of visual protection, the rigidity of openings and walls does not affect privacy. Thus, the main concern in providing privacy is "not being seen". However, 37 percent of individuals considered the wall rigidity even in the case of visual protection as necessary. This indicates that, apart from awareness of protection, some people find the rigidity of walls more necessary, rather than without function, and from a subjective perspective (Fig. 5). The charts show that environmental factors often have a direct relationship with the sense of privacy and the reverse relationship only has significant relationships in the number of people. In terms of gender separation, the frequency difference is only observed in this question, and the other factors indicate the equality of the frequency ratio. Therefore, based on what has

been analyzed so far, it can be stated that subjective and objective factors are jointly effective on the perception of privacy sense for individuals, and privacy merely subjective or objective is not meaningful and the presence of these two components gives man a sense of security and peace.

Conclusion

According to theorists and studies on theoretical basics, concepts such as security, privacy, territory, boundary, limit, behavioral territory, and privacy are closely related to how the audience encounters the environment, and in some components, they are overlapping and all attempt to have access to a similar result: the feeling of satisfaction, the pleasure, and comfort of the audience in the place. This statement does not depend only on physical and environmental factors, but providing and defining each one is formed in a given identity, cultural, social, and personality field. The city, neighborhood, and house, as three macro scales to micro scales, are the places where humans seek to gain pleasure and peace.

In response to the main question of this study, "What subjective and objective factors can directly or indirectly affect the priority and weight of the constituent elements

of privacy", "it can be said, there is a bilateral relationship between privacy and behavior that is dependent upon personality, identity, social, and cultural components and objectively is influenced by environmental components such as space structural elements, spatial hierarchy, zoning in space. Based on the subjective components, it can be said that this perception is affected by human experiences, and in investigating influential factors, it should be said that the geographical location and cultural identity component is the most important principle in the definition of privacy. The religious, customary, and social backgrounds are important factors in determining a specific boundary for defining and protecting privacy. As the main concept of research, privacy is influenced by various conditions. As mentioned, the privacy providing or violating factors each have a different weight and ratio, and each can form a certain amount of privacy providing or its violation, depending on the specific context.

According to the questionnaire and field survey, it was found that the audience considers "security" as their most important priority for privacy protection. In other words, the sense of "security" is not only the priority of people to protect it, but they attempt to increase it. Placing the "others misuse" as a priority that individuals tend to
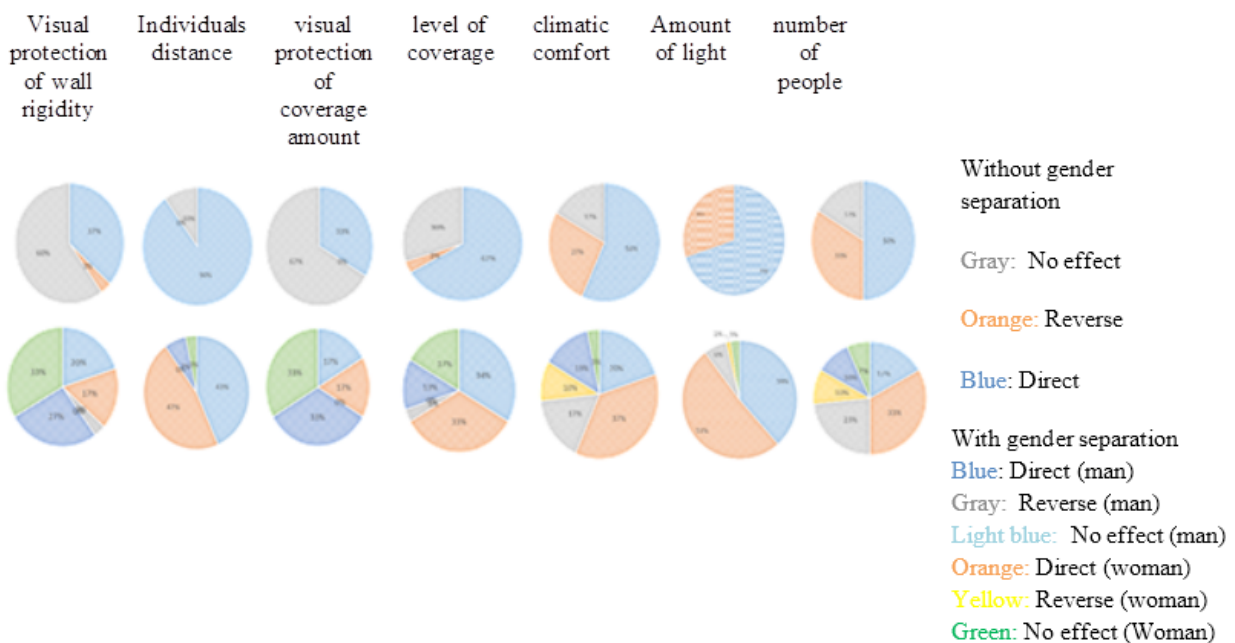

Fig. 5. Measure the success of physical components on the effect of a sense of privacy on individuals. Source: Authors.

escape, indicates that "security" is highly important in this item. In fact, the respondents attempt to prevent and protect the "security" and "the aliens' question". The item "body and cover" in question 1, instead of "concentration" in the second priority of women's statistical population, indicates that "security" mostly protects "body" rather than "concentration".

The results of the second section show that the "direct relationship" in half the questions had a large number of frequencys. This indicates that objective elements also have a direct impact on the sense of privacy. The interpretation of the questions also confirms this and indicates that the amount of light, climatic comfort, cover, the distance of the individual, and visual protection is involved in the perception of privacy. Finally, it can be said that the objective and subjective components jointly contribute to the process of human privacy, so that the objective elements are more effective when communicating with "others" and in the subjective section of privacy, perceptual difference by gender is insignificant. Unlike men, the statistical population of women considers the body's protection and cover as a more effective incentive in securing privacy, but "security" and its origin "others misuse" is the main concern of the statistical population of both genders.

References list

• Alexander, A. (2009). *Britain's New Towns: Garden cities to sustainable communities.* London: Rouledge.

• AlKhateeb, M. S. (2015). *An Investigation into the concept of privacy in contemporary Saudi houses from a female perspective: a design tool* (Unpublishe Ph.D. Thesis in Architecture), Bournemouth University, USA.

• Altman, I. (1976). Privacy: a conceptual analysis. *Environ Behav,* 8(1),7–29.

• Ansari, B. (2007). *Privacy rights.* Tehran: Universities Humanities Organization.

• Babazadeh Oskuyi, S., Toofan, S. & Jamali, S. (2019). Promoting theoretical foundations of the concept of privacy in contemporary housing from the perspective of environmental psychology, Milad residential tower in Tabriz. *Bagh Nazar*, 16 (79), 61-72.

• Behzadfar, M. (2011). *Hoviyat-e shahr negahi be hoviyat-e shahr-e tehran* [City identity, a view of Tehran's identity]. Tehran: Shahr publication.

• Fish, W. (2012). *Sensory design philosophy* (Y. Pour Ismail Trans.), Tehran: Hekmat Publications.

• Giddens, A. (2013). *Modernity and Self-Identity: Self and Society in the Late Modern Age.* Californiya: Stanford University Press.

• Gilchrist, A. (2012). *Objective and subjective sides of perception.* In Gary Hatfield & Sarah Allred (eds.), Visual Experience: Sensation. Californiya: Stanford University Press.

• Gifford, R. (1997). *Environmental Psychology; Principles and Practice.* Boston: Allyn and Bacon.

• Hall, E. (2011). *Hidden dimension* (M. Tabibian, Trans.) Sixth Edition. Tehran: Tehran University Publications.

• Heidari, A. A. & Taghipour, M. (2018). Analysis of confidentiality in traditional houses based on mass to space ratio). (Case sample: Single courtyard houses in hot and dry climates). *Architectural Journal of Hot and Dry Climate,* 7(8), 77-99.

• Ibn Faris, A. (1983). *Mujam al -Maqis al -Allogah* (Research: Abdul Salam Muhammad Ibin Haron). Qom: Qom Islamic Propaganda Office.

• Kandler, Ch. & Rauthmann, J. F. (2021). Conceptualizing and Studying Characteristics, Units, and Fits of Persons and Environments: A Coherent Synthesis, *European Journal of Personality*, 36(3), 293–318.

• Keiwanloo, M. & Asadi, M. (2013). *Investigate the role of identity in organizing and designing residential spaces (Case study, Residential complexes in Bojnourd urban development).* The Papers on Architecture and Urban Development and Sustainable Development. Mashhad: Khavaran Higher Education Institute.

• Lang, J. T. (2002). *Creating Architecture Theory: The Role of Behavioral Sciences in Environment Design.* (A. Einifar, Trans). Tehran: University of Tehran. Institute of Publishing and Printing.

• Larsone, L. R., Stedman, R. C., Cooper, C. B. & Decker, D. J. (2015). Understanding the multi-dimensional structure of pro-environmental behavior. *Journal of Environmental Psychology,* (43), 112–124.

• Low, S.M., Altman, I. (1992). Place Attachment. In: Altman, I., Low, S.M. (eds) Place Attachment. *Human Behavior and Environment,* (12),1-12.

• Mónus, F. (2022). Environmental education policy of schools and socioeconomic background affect environmental attitudes and pro-environmental behavior of secondary school students. *Environmental Education*, 28(2),169-196.

• Macedo, P. F., Ornstein, W. & Azambuja Elali, G. (2022). Privacy and housing: research perspectives based on a systematic literature review, *Journal of Housing and the Built Environment*, (37), 653-668.

• Madani Pour, A. (2010). *Public and private spaces of the city.* Tehran: Pardazesh and urban planning company.

• Maylee, R. (2006). *Personality: construct, creating and evolving.* Tehran: University of Tehran.

• Mortazavi, Sh. (2001). *Ravanshenasi-ye mohit va karbord-e an* [Environmental psychology and its use]. Tehran: Shahid

Beheshti University.

• Naqizadeh, M. (2014). *Hoviyat-e shahr (Mabani, Moalefe-ha, Jelveh-ha)* [City identity (basics, components, and effects)]. Second edition. Tehran: Academic Jihad.

• Newman, O. (1996). *Rutgers University United States. Creating Defensible Space.* Washington D.C: U.S. Dept. of Housing and Urban Development Office of Policy Development and Research.Dept. of Housing and Urban Development Office of Policy Development and Research.

• Pakzad, J. & Bozorg, H. (2014). *Alefbay-e Ravanshenasiye mohit baray-e tarrahan Alefbay-e* [The alphabet of environmental psychology for designers]. Tehran: Armanshahr Publications.

• Pakzad, J., Babaei, M. & Tajbakhsh, M. (2020). *Alefbay-e ravanshenasiye mohit baray-e tarrahan* [Alphabet of spatial qualities for designers]. Tehran: Armanshahr Publications.

• Pirnia, M. K. (2001). *Sabkshenasiy-e memari-ye iran* [Iranian Architectural style, Gholamhossein Memarian]. Tehran: Pazhuhande-Memar Publishing.

• Rainey, S., Stéphanie, M., Christen, A., Mégevand, P. & Fourneret, E. (2022). Brain Recording, Mind-Reading, and Neurotechnology: Ethical Issues from Consumer Devices to Brain-Based Speech Decoding, *Sci Eng Ethics*. (26), 2295-2311.

• Schultz, A. (2009). *Personality theories.* Tehran: Homa publication.

• Schwartz, S. H. (1986). *Universals in the Content and Structure of Values: Theory and Empirical Tests in 20 Countries.* In M. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 25, pp. 1-65). New York: Academic Press.

• Seifian, M. K. & Mahmoudi, M. R. (2001). Confidentiality in Iranian traditional architecture. *Hoviyatshahr*,1(1),3-14.

• Shahcheraghi, A. & Bandarrabad, A. (2015). *Mohat dar mohit: karbord-e ravanshenasi-ye mohity dar memari va shahrsazi* [Being surrounded by the Environment: Application of Environmental Psychology in Architecture and Urban Development]. Tehran: University Jihad Organization, University of Tehran.

• Soltanzadeh, H. (1993). *Tazaha-ye vorodi-ye khane-ha-ye tehran-e ghadim* [Entrance spaces of old Tehran houses]. Tehran: Cultural research office.

• Taffakkor, S. (2020). *Explain the criticism model of public anthropogenic environment based on synomorphic theory (Traditional market case study and contemporary shopping centers)*, (Unpublished Ph.D. Thesis in Architecture). Islamic Azad University, Research Sciences Unit.

• Trepte, S. & Reinecke, L. (2011). *Privacy online: Perspectives on privacy and self-disclosure in the social web.* New York: Springer Publishing Company, Incorporated.

• Westin, A. (1979). *Privacy and Freedom.* New York: Atheneum.