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Promoting theoretical foundations of privacy concept in contemporary housing from perspective of environmental psychology, A Case study of Milad Tabriz Residential tower*

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Abstract

Problem statement: In many cases, the lack of space causes the people's loss of the comfort and sense of territory. It further leads to unwanted spatial communication with each other. Physically, on the boundary of the space, if it is not an obstacle to communication, it causes olfactory communication, visual, audio, access, and violation of all types of privacy and ultimately violates the privacy of users.

Research objectives: The present article aims at improving the theoretical foundations of the concept of privacy by determining the factors affecting the provision of privacy in contemporary housing space from the point of view of environmental psychology. Environmental psychology studies human behavior in order to perceive the relationship between privacy and social life.

Research method: This research is a descriptive-analytic type with a research method of logical reasoning.

Conclusion: The architectural representation of the spatial arenas, spatial boundaries, in-between space, hierarchy, spatial depth in responding to human needs: safety, respect, introversion, and the realm of contemporary housing are summarized. The main result of the research on 6 types of different types of units from the residential tower of Milad Tabriz indicates that the control of spatial communication in the architectural design leads to the control of behavioral communication in human interactions, which is one of the most important factors in providing types of privacy, including visual freedom, access, ... and ultimately mental privacy in contemporary housing.

Keywords: *Privacy, Environmental psychology, Spatial Communications, Housing, Communication control.*

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Introduction

Housing as one of the real phenomena and the second human need after food is one of the first issues, with which human beings are always dealing, and he is endeavoring to change it, and find the right, reasonable and thoughtful response for it (Jowzi & Jafarinasab, 2014, 603). "Housing" is a noun referring to a place, as conjugated in Arabic from "Maf'al" and equivalent of the word "house", which means the place of resting and residence (Hamzenezhad & Sadrian, 2014, 59). Housing as a location for human life is interacting with other dimensions of life. Each residential area should be built considering various family structures and different spatial and social needs and, while having its own spatial and social characteristics, it shall provide a unique environment for the individual (Asefi & Imani, 2016, 57). The residential space should be able to provide the necessary conditions for the individual growth of every family member, whether the youth or the elderly. Both small and old, e.g. every person at home should be able to find a suitable space and the necessary privacy for doing their activities and getting comfort and peace according to their mental and emotional needs (Eghbali & Hessari, 2013, 54). In addition to providing personal needs, housing should also satisfy qualitative and social needs (Pourdeihimi, 2011, 14). Housing has a profound effect on health, social welfare, and economic efficiency (Jiboye, 2010, 307). Humans always interact with their physical environment and affect it (Saffarinia, 2011, 68). Thus, it is essential to focus on the environment to provide health and wellbeing for humans. In this regard, the recognition of human beings, characteristics of their living environment and the relationship between these two factors are important (Emamgholi, Ayvazian, Zademohammadi & Eslami, 2013, 23). Environmental psychology and its related disciplines study human behavior to understand the relationship between privacy and social life (Memarian, Hashemi Toghroljerdi & Kamalipour, 2010, 2). Considering the sensitivity and importance of the

housing issue, the present study necessitates the importance of addressing privacy issue, in terms of psychological aspect and architectural basics and principles, moreover, this study is accomplished to answer the following questions:

How it is possible to integrate the concept of privacy into the architecture of contemporary housing spaces from an environmental psychology point of view?

What is the place of architectural space relationships in defining privacy in the contemporary housing space?

Problem Statement

Unfortunately, the quantitative aspects of housing are much more considered than its psychological and qualitative aspects nowadays. Users do not have desirable mental relaxation in their houses. If the architectural design is not aligned with environmental psychology, it will lead to many psychological consequences for individuals. Spatial communication among individuals is a complicated system of the tendency to proximity, escaping neglect and ignorance and so on. For this reason, the space constructed by architecture cannot be designed only with regarding the mathematical space, but it is necessary that the design of space be in such a way to strengthen all these socio-psychological communications or not at least disturb them (Grütter, 2014, 179). Historical housing not only provided the security for its residents, but also it provided a desirable space for family and personal activities, in such a way that others not only weren't able to disrupt their security but also they weren't even tempted to take a such measure. The general concept of contemporary residential buildings not only does not convey this feeling and security to the minds of residents and people but also forces them to live in their self-made prisons. As a result, residents do not feel safe and secure (Naghizade, 2008, 118-119). In some cases, the interference of residential spaces

with each other and other public spaces are to the extent that spatial privacy has become ineffective and architects are only drawn towards superficial, cortical, and formal spatial diversity. In such places, there is no sense of territory and entry into a private space distinct from public space. The entrance space is generally interfaced with the living room, hall, and even kitchen. In comparison with private spaces, the spatial satisfaction of the public rooms is much lower, because many surfaces of public spaces are not used efficiently (Noghrekar, 2008, 539). The unlimited borders of spaces, in many cases, in addition to not paying attention to the theoretical and ideological foundations of the community could lead to the loss of privacy and comfort required for individuals living in a certain space. It also causes visual, olfactory, auditory, and psychological communication between various spaces (Naqizade, 2006, 224). The main objective of

this research is to recognize the forgotten principles of privacy in the architecture for exploiting and enhancing the quality of the privacy types subject in Iranian housing. As It is worth noting that the afore-mentioned principles have deep harmony and these are interwoven with the Iranian culture and topics of indigenous anthropology, which are forgotten and ignored due to the alterations in the housing pattern within recent years.

Hypothesis

The main hypothesis of this article is that: "Expressing the concept of privacy (types of privacy) by defining architectural space communications can be effective in promoting the quality of human behaviors in contemporary housing". In previous discussions and studies, the term "privacy" has been often conceptualized regardless of the semantic and physical aspects of architecture, while in the present

Table 1. Privacy from the viewpoint of scholars in the field of sociology, psychology, and architecture. Source: AlKhateeb, 2015.

Scholars	Viewpoints
Proshansky	Emphasizing performance of increased freedom of choice and person or group control on their activities
Rapoport	Privacy as a mechanism for preventing unwanted interactions and access to optimal interaction
Altman	Privacy, selective access control
Ziporyn	Emphasizing privacy control aspects
Bok	Emphasizing privacy control aspect and protection from unwanted access by others
Hall	Defining Proxemics theory of privacy capability
Newell	Privacy as a temporary condition in separating types of public property
Fahey	Privacy as the boundary between the person, environment, and aliens
Pedersen	Importance of privacy about opening and closing barriers and its functional characteristics
Margulis	Privacy as control of the relationship between the person and others
Edwards	Privacy as a cultural representative
Hisham Mortada	Privacy depending on sex segregation and separation between the private life and public communication
Al-Thabab	Privacy about the relationship between indoor private and public spaces

study, the privacy notion is strongly considered by explaining types of privacy, namely, accessibility, auditory, olfactory and visual. The hypothesis with an emphasis on the relationship between the architectural space in contemporary housing and its analysis intends to find a threefold relationship between the concepts of privacy, architectural body, and individual as well as interpersonal behaviors. The main demand of the proposed hypothesis is the emergence of transcendental human behavior in the social interactions of contemporary housing, which was tested during the research.

Research background and explanation of the term "privacy"

Privacy is a broad conceptual term, combined with multiple aspects of our lives. In Arabic, "Harim" (equivalent to "privacy") is from the root of "H-R-M" and it means prohibition and exacerbation (Ibn-e Faris, 1983, 184). In Dehkhoda's *Loghat-Nama,* privacy means "something they support and fight over" *(Loghat-Nama*, 2011, s.v. "Harim"). Privacy has been conceptualized by several philosophers, psychologists, sociologists, and architects. Many studies of social behaviors associated with the environment focused on the concept of privacy related to cultural, behavioral, environmental space, privacy in housing, and other areas of privacy (Altman & Chemers, 1985, 1; Altman, Vinsel & Brown, 1981). Psychologists attempt to recognize this conceptual term and perceive the factors involved in its concept and form. Below, different viewpoints on privacy are presented (Table 1).

Research foundations
• Environmental psychology

Environmental psychology, as a branch of psychology, emphasizes the psychological analysis of human behaviors in the environment and explores the research associated with human behaviors and the impact of effective factors on the perception and understanding of the environment (Naghizadeh & Ostadi, 2014, 5). According to Proshansky, environmental psychology is a field that deals with interactions and relationships between people and their environments (McAndrew, 2015,1).

The interdisciplinary knowledge of environmental psychology was developed from the interaction between two disciplines, namely, behavioral science and architecture, while the design theories were devised based on the needs and perceptions of humans from the living environment (Emamgholi et al., 2013, 23).

According to Graumann, environmental psychology complements public psychology. Given the rapid advancement of technology accelerating the impact of human and environment on each other, new environmental-behavioral issues are formed every day for contemporary humans, which are solved adopting the knowledge of environmental psychology. The rites, customs, values, as well as social and cultural criteria, are matters of interest in this field (Shahcheghi & Bandarabad, 2016, 19).

• Human Spirits Concerning Privacy

Lack of attention to human spirits and efficiency of designs for human behaviors in residential complexes and lack of attention to the meaning and philosophy of the house, considering the economic aspect and profitability of housing and its misuse for the realization of material interests, have led to neglecting quality criteria of housing and its impact on users. The environment must be able to meet human needs. Many scholars consider the recognition of human needs as the basis for the analysis of relationships between humans and environments (Shahcheraghi & Bandarabad, 2016, 33). Some human needs are closely related to privacy. Maslow has proposed a hierarchy of needs with variable intensity ranging from the strongest to the weakest. According to Maslow's classification, the third need of humans is safety and the fourth is social respect and dignity. This classification provides a suitable framework for thinking of environment design and

the issues considered by designers (Lang, 2017, 96). Moreover, safety is one of the main and most important needs of humans, which has a specific position in space, environment, both intellectually and mentally, and also in different exoteric and esoteric fields, and in short, in all areas of life (Naghizadeh, 2006, 369).

For example, neighbors should be safeguarded from the eyes, traffic and pollution caused by passage to upstairs (Naghizadeh, 2008, 311). In addition to the needs mentioned in Maslow's pyramid of needs, some scholars have said that attention to spiritual needs is very important (Shahcheraghi & Bandarabad, 2016, 33). Among these, introversion can be noted. The term "introversion", from the moral and mystical points of view, contains meanings and concepts such as being reticent, the tendency to internal feelings, and avoiding to show those feelings as pretension (Memarian, 2007, 12). Communication with privacy can be seen as moving from outside to inside. To increase communication, all the senses should be used to briefly define introversion as a lack of attention from the interior space of the building to the exterior environment (Nari Ghomi, 2010, 70).

Introversion looks for the preservation of the environmental privacy, in which physical conditions with the support of thought, meditation, and worship have reached a decent order to achieve its origin and find the inner peace (Saifian & Mahmoudi, 2007, 9). Also, according to Lang, territorial behavior is one of the behaviors that are effective for privacy configuration between ourselves and others. The territorial behavior is considered as one of the mechanisms for observing the boundary between ourselves and others which is realized through the privatization or marking a place or object, denoting that the marked place or object belongs to that person or group. This contributes to meet the physical and social needs for exhibiting defensive reactions if the territory borders are violated (Altman, 2016, 136). Territorial encroachment refers

to the illegal crossing of the borderlines around an individual or group. There are various degrees of reaction to encroachment and efforts to preserve the territory, such as complete warning signs for physical separation and isolation (Shahcheraqhi & Bandarabad, 2016, 70).

Research methodology

It is a case study using a mixed research method that includes descriptive-analytical methods of the logistic reasoning analysis method.

Collecting information in theoretical discussions is in "documentary research" (both in library and electronic) by studying hard and soft documents. The resources used in this method include scientific articles, books and information networks, so the tool used is note-taking. Other instruments in this research are architectural drawings that provide physical information on spatial configuration.

The sample of the selected plans was related to Milad Tabriz Residential Tower, with the area of about 45000 square meters and 23 structural storeys and two interconnected towers, which was under construction in El-Goli road, behind Metro Station 1 (Fig. 1 & 2).

There are 6 different types of plans for the 207 residential units in this tower.

Analysis of data and findings

According to the research carried out about the issue of privacy, the classification of domestic and foreign scholars is presented in Table 2.

In the residential units of Milad Tower, spatial communication through spatial proximity and in-between space provides a variety of communication, including visual, audio and olfactory (Fig. 3).

If there is no control for those communications, it will violate all types of privacy and, thereby, violation of the psychological privacy of users is expected.

By less visual, smelling and hearing communication and access to the spatial areas with the surrounding

a) A type plan   (a   b) B type plan   c) C type plan

d) D type plan   e) E type plan   f) F type plan
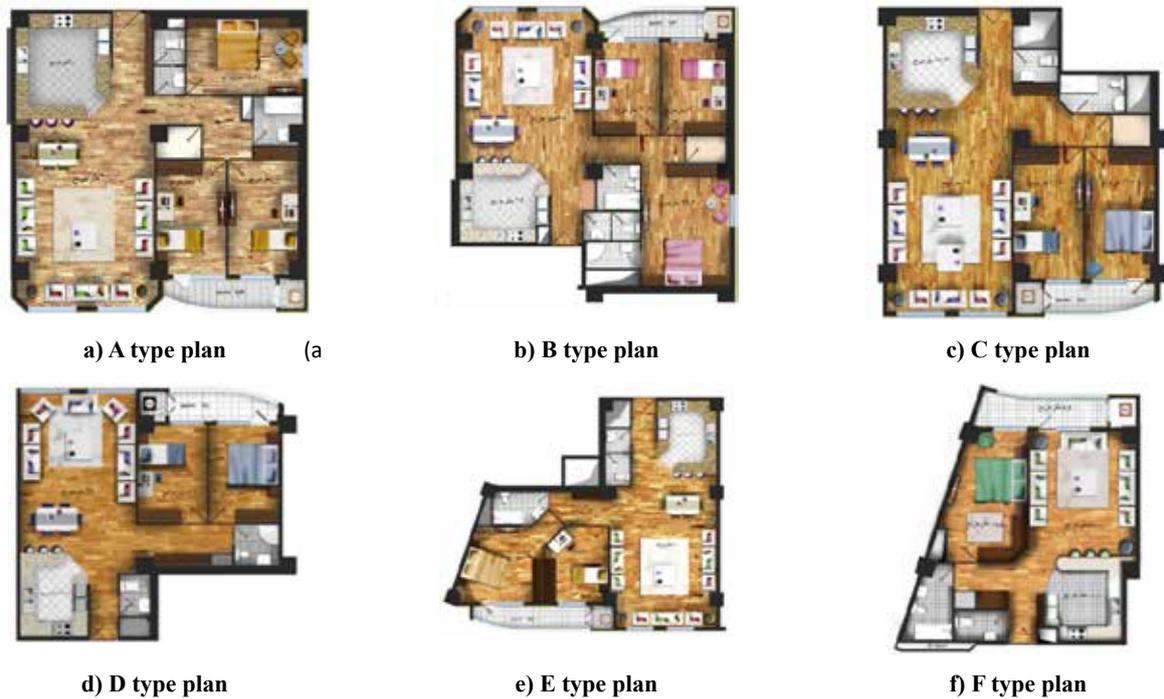
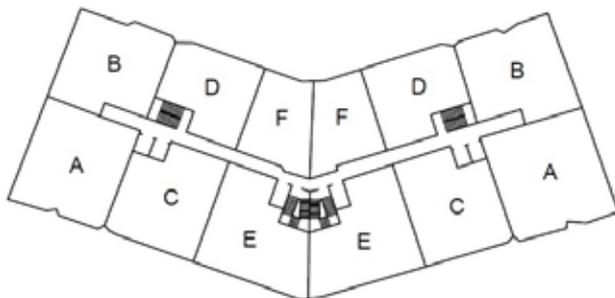Fig. 1. Six different types of plans in Milad Tabriz Residential Tower apartments. Source: Armedal Tavarizh, 2018.

Fig. 2. Six different types of plans and their positions in the complex plan. Source: Armedal Tavarizh, 2018.
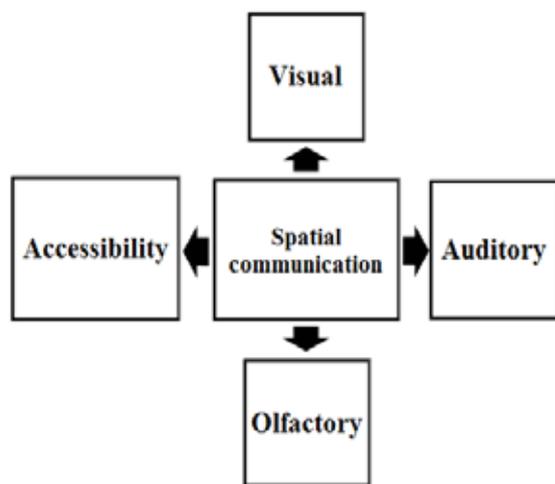
Table 2. Different dimensions of privacy from viewpoints of scholars. Source: authors

Name of Scholar	Dimensions of Privacy
Schuster (1976)	Privacy in lifestyle Privacy in events Privacy in identity
Burgoon (1982) Parrot Burgoon, Burgoon & LePoire (1989)	Physical Psychological Social Intelligence
Naghizade (2006)	Auditory privacy Olfactory privacy Tactility privacy Gustatory privacy
Saifian and Mahmoudi (2007)	Physical privacy Semantic privacy
Pease (2013)	Intimate privacy Personal privacy Social privacy Public privacy

Fig. 3. Types of spatial communication in contemporary housing. Source: authors.

Table 3. Audio and visual communications in various types of plans in Milad Tabriz Residential Tower apartments. Source: authors.
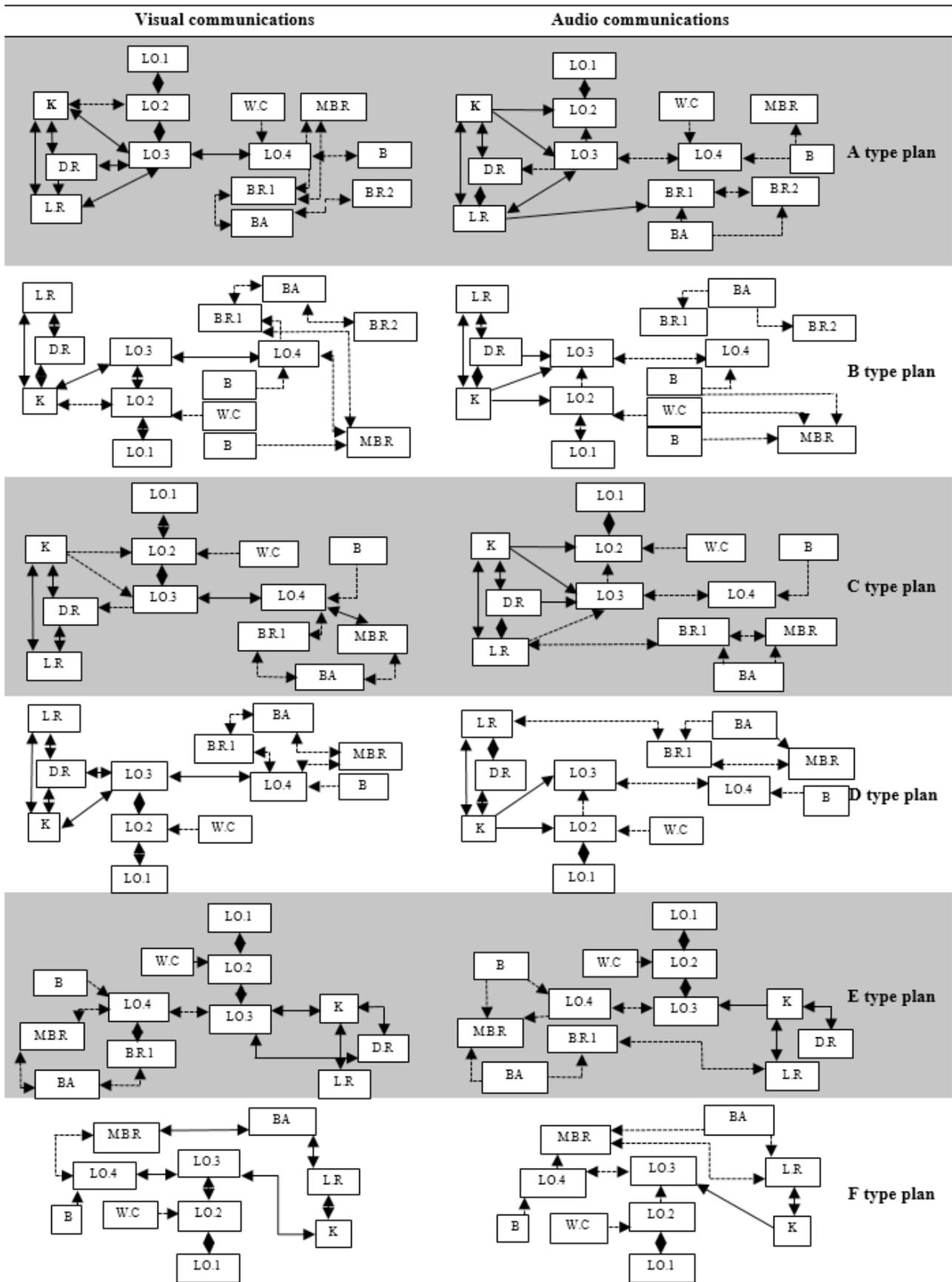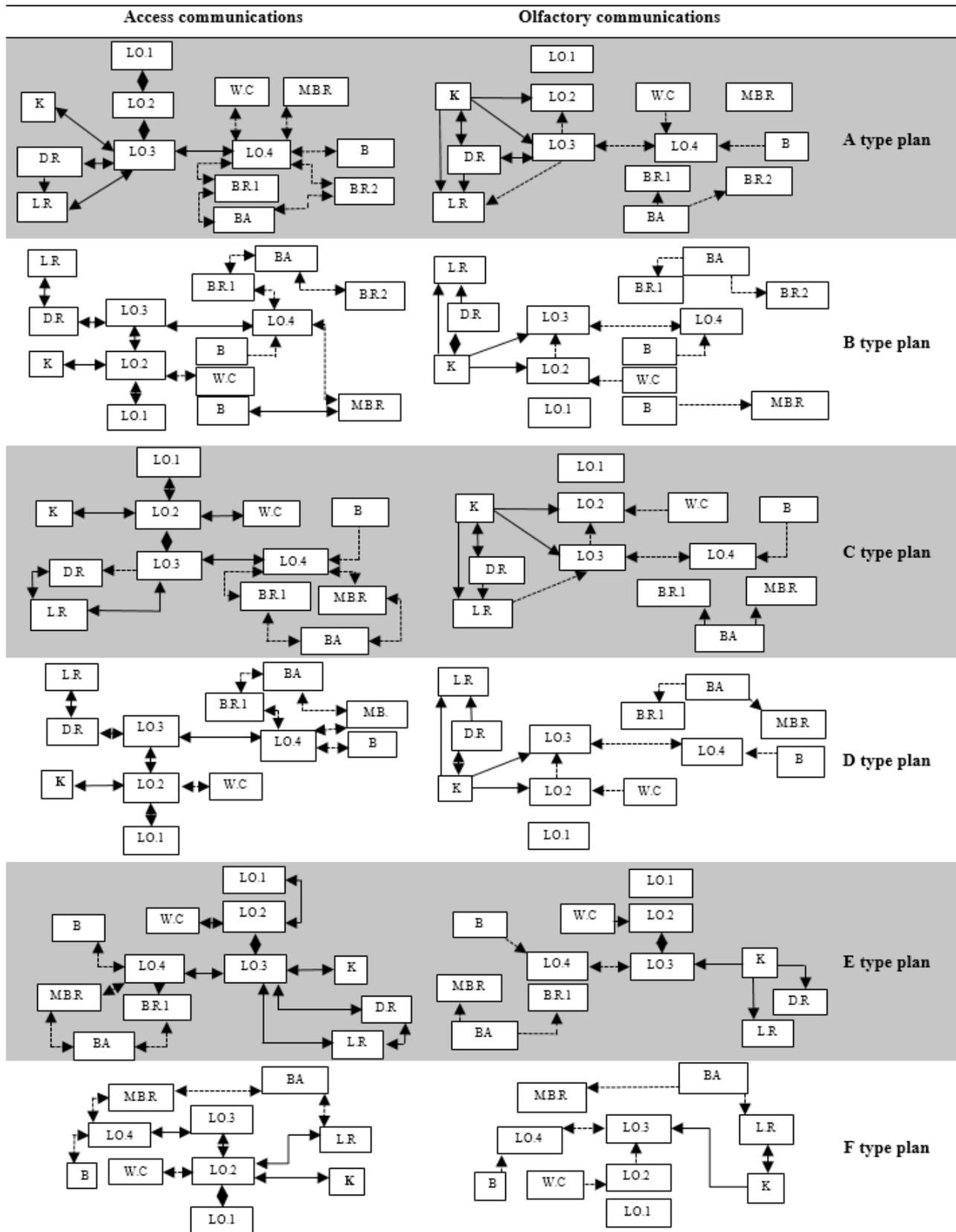
Table 4. Olfactory and access communications in various types of plans in Milad Tabriz Residential Tower apartments. Source: authors.

spaces, the independence of spaces increases. All theorists agree that privacy can have the concept of being acceptable, the same as being close to others. The important thing is living and working in a regulated setting that allows a person to supervise access to others (Gifford, 1999, 68).

Various types of spatial communication in a variety of plans are analyzed separately in Tables 3 and 4. The abbreviations used in these tables are as follows:
- Outdoor pre-entrance: LO1;
- Indoor pre-entrance: LO2;
- Private sector pre-entrance: LO3;
- Second pre-entrance in Private sector: LO4;
- Living and sitting room: L.R;
- Kitchen: K;
- Master bedroom: M.B.R;
- Children's bedroom: B.R;
- Water closet: W.C;
- Bathroom: BA.

Items that violate access to units in Milad Residential Tower due to inappropriate communications include:
- Uninterrupted access communication from pre-entrance to the living room;
- Uninterrupted access communication of units to the entrance space of each other;
- Uninterrupted access communication from the dining room to the kitchen;
- Uninterrupted access communication between the dining room and the bedrooms;
- Uninterrupted accesscommunication between the entrance and the bedrooms.

Spaces are also interconnected through smells. Some smells are pleasant to humans while they are not. Sense of smelling and olfaction affects humans' interactions in the environment (Shahcheraghi and Bandarabad, 2016, 7). The following olfactory communications can be considered in the spatial structure of the Milad Tower units:
- Smell communications between dining room space and the open kitchen
- Smell communications between the units and the joint facility and ventilation channel.

The following visual communications can also be considered in the spatial organization of the units in the residential tower:
- Visual communications between the entrance and the interior space of the units;
- Visual communications of units with each other's entrance space;
- Visual communications between the dining room and the kitchen;
- Visual communication between the dining room and the bedrooms;
- Visual communications between the dining room and the bathroom;
- Visual communications of the bedrooms with one another.

Chemaaye and Alexander believe that there should be physical boundaries among members of the family while they should be free and independent and come together or be separate from each other depending on the circumstances.

They emphasized the importance of a particular home for the family, in which parents and children can be separated visually and auditory when necessary (Altman, 2016, 48).

Uncontrolled audio communication among spaces can result in the violation of audio privacy and thus violate the psychological privacy of users iwn residential units. The following audio communications can be considered in the spatial structure of this residential tower units:
- Audio communications between outside and the inside of the building
- Audio communications between units of floors and the jointed/shared wall
- Audio communications among each storey units through floor or ceiling
- Audio communications between the parents and children bedrooms' spaces
- Audio communications between bedroom and living room spaces
- Audio communications among the bedroom and kitchen spaces

- Audio communications of the bedroom with public-use spaces
- Audio communications between the dining room and public-use spaces of the building

Given the concepts proposed by sociologists, psychologists, and architects regarding the privacy and the human spirits in relation to privacy, the mechanism of achieving privacy in residential architecture from the perspective of environmental psychology is illustrated by Fig. 4.

Control allows an individual to communicate with others through a particular way for expressing personal desires, identities, and powers. Meanwhile, it allows a person to be comfortable and safe from violation and interference of others. The private sphere provides equilibrium for the perception of one's self and communication with others by making a balance between what should be private and what could be public (Madanipour, 2008, 88).

Conclusion

The relationship between humans and their surrounding environments has always been one of the designers' concerns. In contemporary housing, organizing and designing environments in correspondence with human needs in terms of privacy can promote life quality and increase humans' sense of satisfaction with the surrounding environment. Houses shall have privacy, which could protect the users from being unwanted seen and heard, penetration of noise and olfactory pollution, etc. At the same time, users should enjoy the companionship of their family members as well as neighbors. However, users do not have a desirable level of psychological tranquility in their houses. Thus, it is required to design and develop spaces in which people could achieve one of their needs, i.e. sense of security and peace. This is the duty of architects to be fully aware of the behavioral issues of their audience to stop the negative effect of their architectural activity on the spirit of space

users. Therefore, the design of housing architecture can be the same as the design of human life. Below, the strategies for achieving the concept of privacy are presented from the perspective of environmental psychology (Tables 5 and 6).

Comforting the family members and developing an appropriate relationship among them require accountability to the users' psychological needs, attention to hearing, vision and olfactory communication, space accessibility considering
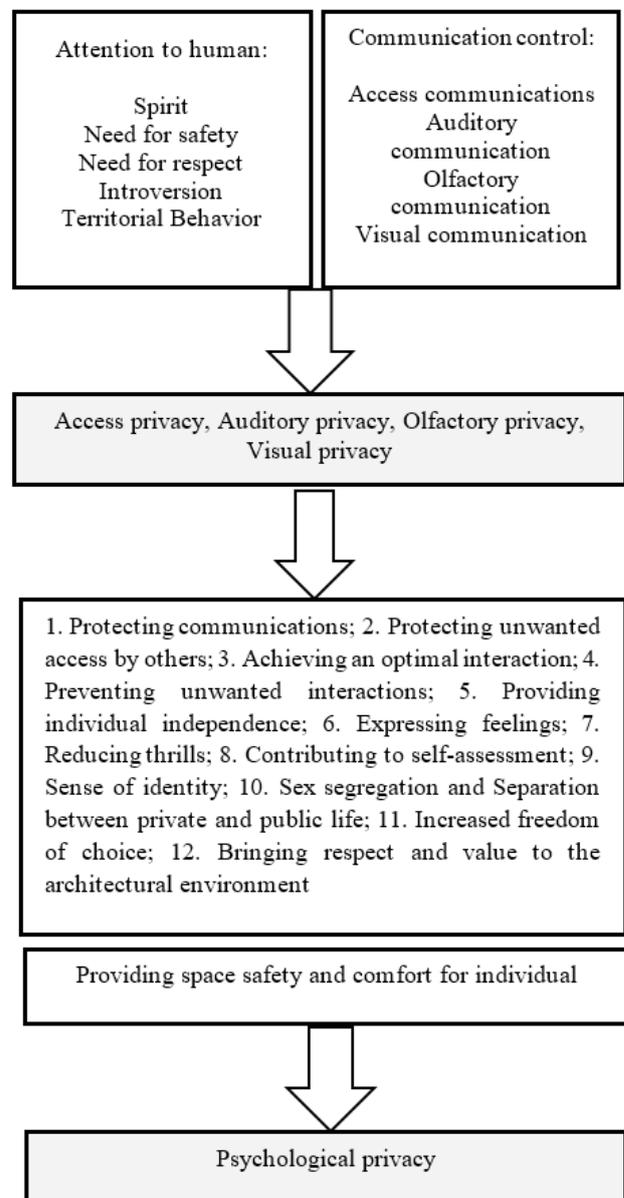

Fig. 4. Mechanism of access to privacy in the residential architecture. Source: authors.

the concept of territory, prioritization of space establishment in line with spatial independence, more prominent designing of territorial borders via spatial structuring, in-between space design and in-depth attention to spatial depth and spatial hierarchy. Controllability of spatial communications and application of solutions for achieving humane needs have a significant role in the maintenance of family as well as the personal boundary in the special system of contemporary housing. The more the control given to the users in terms of the development of private territories, the higher the probability for achieving a safe place and boundary for the residents would be; as a result, residents' satisfaction could be met to the more degree.

Concepts governing spatial communications in contemporary housing is effective for the perception of types of privacy; eventually, it strengthens or weakens the psychological privacy of users. The outcome emphasizes the importance of paying attention to spatial communications as a major effective factor for the level of privacy in the spatial organization of contemporary housing. Considering the main study problem described in the form of psychological defects of the contemporary residential environment and taking into account the main research hypothesis which seeks to find a spatial definition for explaining, describing, and strengthening the meaning of privacy as the development of architectural relations of contemporary housing, it is possible to present the outcome of the research as follows:

Table 5. Human spirits in relation to privacy in order to achieve the concept of privacy from the perspective of environmental psychology. Source: authors.

Concept	Characteristics	Objectives	Results
Need for safety	Relationship of this need with the social and physical abilities of environment (privacy, solitude, personal space)	-Providing the second human need (Maslow's hierarchy of needs)	Psychological privacy
Need for respect	- Having a high value to one's self and others. - Such as need for privacy and respect	-Providing the fourth human need (Maslow's hierarchy of needs)	Psychological privacy
Introversion	- Tendency to the internal feelings - Paying no attention to the appearance and having focus on inside - Lack of attention of inner space to outer environment - Giving true value to the inner core	-Reaching one's origin -Finding inner peace - Original inner comfort -Protecting the inner truth	Visual privacy Environmental privacy Climate privacy Psychological privacy
Terriotorial behavior	- A mechanism for privacy configuration - A behavior to use limited space - Right of defense against the disturbance - Sense of individual ownership to the physical space	-Strengthening the sense of being distinct - Strengthening the sense of individual identity - Providing the physiological needs -Providing the aesthetic needs	Access privacy Psychological privacy

Table 6. Important concepts in spatial communications of contemporary housing for achieving the concept of privacy from the perspective of environmental psychology. Source: authors.

Concept	Characteristics	Objectives	Results
Spatial sphere	- Finding the correct location of space spheres - The most basic step in determining the territories - Following the certain hierarchy	-Providing a personal space - Achieving self-esteem - Providing psychological needs - Efficiency of building activities	Access privacy Visual privacy Auditory privacy Psychological privacy
Spatial boundary	- An instrument for separating two spaces - Visual barrier - Auditory barrier - Safety factor and spatial order - Promoting permeability and establishing a social relationship	- Communication and differentiation - Avoiding disturbance, noise, and confusion in the spheres	Visual privacy Access privacy Olfactory privacy Auditory privacy Psychological privacy
in-between space	- Providing transfer from one domain to another - Contributing to grading and inner consistency of spheres - Paying attention to the size of other major domains - Contributing to the process of forming surrounding spaces - Spatial separator and organizer	-Connecting the surrounding spaces - Communication with surrounding spaces - Avoiding a sudden entrance into the space - Achieving optimal psychological and physical preparation	Access privacy Visual privacy Psychological privacy
Hierarchy	- Providing a classification in accesses - Determining the limits of spaces and communication elements - Contributing to gradual passage from a territory to another - Establishing hidden spatial continuity	-Mental preparation to enter the original space - Forming sustainable values of safety and comfort	Access privacy Visual privacy Psychological privacy
Spatial depth	- Number of spaces passed from the source to the specific space - Having a semantic-social depth	- Separation of privacy types - Social hierarchy	Access privacy Psychological privacy

Paying attention to the human needs, safety, introversion, etc. and cognitive cultural definitions accepted in the field of privacy and territory, in addition to the economic constraints of the present space and native-cultural architectural design strategies play a key role in developing the quality of human behaviors in the social environments of biological communities.

This design strategy will be taken into account to meet human needs, such as safety, introversion, and territorial behaviors through taking advantage of the indicators of the science of environmental psychology considering spatial sphere, spatial boundary, in-between space, hierarchy, and spatial depth.

The Architecture of spatial privacy in contemporary housing in accordance with the family-centered principles and sublime human status influenced by social and interactive systems of individual and society, should be regarded as one of the practical achievements of the present research.

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