

# Evaluating The Effect of Social Housing Design Sub-Components on Users' Place Attachment (Case Study: Shiraz)

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## Abstract

Considering the important role of environmental psychology in the design of space, especially in human living spaces, the current research has been carried out with the aim of identifying the most influential sub-components of social housing design in relation to the place of their users and providing design solutions that suit them. Place attachment creates emotional bonds between people and their living spaces, and affects the sense of belonging and desire to be present in the users and causes more productivity of the spaces. The research method used was descriptive-analytical with the method of collecting information in the form of library and survey studies with the help of relevant scientific texts as well as researcher-made questionnaires. After collecting the texts related to the topic and categorizing the components related to the topic, a researcher-made questionnaire was developed and its validity was determined by Delphi method by experts and its reliability was determined through Cronbach's alpha. Questionnaires were answered according to Cochran's formula by 387 users of social housing complexes in Shiraz who were randomly selected. It should be mentioned that the investigated residential complexes were identified with the help of Expert Choice 11 software based on the AHP model. The data from the questionnaires were analyzed by Excel, SPSS and SMARTPLS software with the help of Anova, Bootstrapping and multiple regression tests. The findings indicated that the perceptual, semantic-cognitive component had the greatest impact on users' place attachment, and all its tested sub-components had a significant impact on users' place attachment, and the physical-environmental component ranked second in terms of significant impact on place attachment of users has played a role.

**Keywords:** Environmental Psychology and Social Housing design; Place Attachment; Residential Complex Design; Sociology and Architecture; Place Dependence; Residential Architecture of Shiraz.

## 1. Introduction

One of the important and influential meanings in the relationship between man and the environment, which has also attracted the attention of designers, is "place attachment" (Pirbabai et al., 2015; Hernández, 2021), which as a multidimensional concept with personal dimensions, psychological and spatial process, is Checked. Until today, studies have been conducted in the field of "place attachment" and experts in various fields of design, psychology, environmental psychology, sociology and communication have conducted many researches and analyzed the environmental and human dimensions of this relationship (Pirbabai et al., 2015).

Among the places with which people are connected, their place of residence and life is considered among the most prominent places that can be examined at various levels, including: home, neighborhood, city, and wider levels (Fornara et al, 2019). But until today, there has been little understanding of the formation of the attachment of users of residential spaces; So that this issue has reduced the loyalty, efficiency and use of residential spaces, less than what it should or could be.

On the other hand, housing, as one of the most important basic needs of mankind, plays an important role in his protection and security, and as a determining element in the social organization of space, it plays an important role in the formation of individual identity, social relations and collective goals of people (Durand-Lasserre & Royston, 2002). The limitation of the dimensions of the interior space of residential environments is due to the growth of urbanization, the increase in land prices and construction costs (Bokharai, 2023), which unfortunately endangers the psychological security, health and quality of life of citizens (Kafashzadeh and Sabri, 2021). Attachment to a residential place shows the feeling of belonging that people have towards their residential neighborhood. These emotional links are especially related to memories, experiences and important events in people's lives. Attachment to residential environments is important because it facilitates collective action, promotes organizational participation, encourages investment, and provides a favorable opportunity for social growth and development of residential areas (Amirkafi and Fathi, 2011). Therefore, the following research has been carried out with the aim of: determining the most influential sub-

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components of social housing design in relation to place, focusing on social housing in Shiraz city (as one of the metropolises of Iran) and providing design solutions according to them.

The questions of the upcoming research are as follows:

- 1- What is the relationship between the design components of social housing and place attachment? 2- What are the most influential subcomponents of social housing design on place attachment?

## **2. Research Background**

Azadi et al. (2017) in a research with a field research method with a descriptive-analytical approach have come to the conclusion that place attachment among children of Bazarche neighborhood of Qasrdašt has no relationship with their gender and type of residence and "emotional attachment", "mental image" , "sense of place" and "identity with place" are considered to be effective factors in the emergence of attachment. Khodaei et al. (2014) in a descriptive-analytical research have come to the conclusion that the component of sense of identity to the place has the most impact among the components affecting the place attachment in teenagers. Saadati et al. (2019) in a descriptive-analytical research have come to the conclusion that ownership, comfort qualities and physical durability of the house, furniture and interior equipment of the house and positive emotional relationships in the house including the internal factors and the external appearance of the house, satisfaction with the neighborhood And the quality and reputation of the neighborhood is one of the external factors influencing the formation of residents' attachment to the house. Talischi and Rezaei (2019) in a research with a survey research method have come to the conclusion that the public open spaces of the faculties have a significant effect depending on the location of the students. This effect can be explained mainly through meeting spaces whose desirability is intertwined with the presence of artistic or architectural elements and desirable green spaces and can be effective in increasing social interactions among students. Faridi Foshtomi et al (2021) in a descriptive-analytical research have come to the conclusion that the satisfaction index has an effect on tourists' attachment and as a result their loyalty to the tourist destination of Rasht. Habibian & Hataminejad, (2020) in a descriptive-analytical research have come to the conclusion that place identity is considered as the most effective dimension of place attachment on the vitality of urban neighborhoods. In a descriptive-analytical research, they have come to the conclusion that marital status and household income level have a positive effect and population mobility has a negative effect on place attachment. Monsef et al., 2021 in a descriptive-analytical research have come to the conclusion that attachment to the neighborhood has the lowest correlation with attachment to the city and home; That is, in addition to the fact that the attachment to the neighborhood has decreased in today's cities, this attachment also plays a small role in creating a person's attachment to other spatial scales and more importantly,

the city. Ahmadi et al. (2021) in a research with a combined method and using multi-case research strategies have come to the conclusion that newcomers due to the physical factors of architecture such as; Color, texture, facade of buildings, scale and night light are attracted to the urban spaces of Isfahan and due to urban physical elements including; Flooring, furniture, existing uses, dimensions of the space, cleanliness and access are encouraged to re-appear in the space. Arghiani and Mirhashmi (2022) in a descriptive-analytical research have come to the conclusion that the component of sense of dependence, social support and strong emotional connection with the place are considered to be the most important physical components affecting the sense of attachment in the open space of the residential complex, and spaces without safety and Darkness is one of the most important factors for lack of place attachment among residents. Peyvastehgar and Akbari (2021) in a descriptive-analytical research have come to the conclusion that place attachment develops before place identity, and the bond with the house is stronger than the bond with the neighborhood, but the attachment and identity with the city is stronger than either of them. is Ebrahimi Masouleh et al. (2023) in a research with a quantitative-survey method have come to the conclusion that attachment to a place leads to increased satisfaction and, as a result, the improvement of the rural landscape in Masouleh. Nematiazar et al (2023) in a descriptive-analytical research have come to the conclusion that there is a significant relationship between the effective factors in creating attachment and people's satisfaction with living in high-rise buildings. Kashi et al. (2023) in a descriptive-analytical research have come to the conclusion that spatial attachment caused by urban physical changes has dimensions such as: non-physical stimuli, its speed and extent, type of physical changes, psychological responses. feelings and psychological motivations) and practical responses that are formed in the form of a specific time and place.

Considering that so far, researches have been conducted in the area of place attachment for children and teenagers, as well as in the area of house uses, markets and urban neighborhoods, it is appropriate to address the issue of place attachment in the field of social housing design. In addition, it is necessary to determine the most effective sub-components affecting social housing residents' place attachment and compare the results of the research with the results of other researches.

## **3. Theoretical Framework**

### *3.1. Terminology of social housing*

According to Oxley, the concept of suitable housing is a housing that, in addition to meeting the needs of users for shelter, does not have negative side effects either for individuals or for society. Side effects include things such as: the production of physical diseases and all kinds of mental diseases due to the lack of facilities, as well as the creation of grounds for crime and delinquency (Oxley,

2000). Table 1 shows the theorists' opinions about the concept of home and residence.

Table 1  
Theorists' opinions about the concept of home and residence

Theorists	Theories
Mohammad Karim Pirnia	The house, a place without discomfort for the residents, has a lot of variety inside the house without creating a feeling of boredom
Seyyed Hossein Nasr	Beauty and usefulness in architecture comes from the principle of unity, in all aspects of life, architecture faithful to building materials, energy supply, the main forces of nature such as: light and wind, by recreating silence, the harmony of pristine peace.
Mohammadreza Haeri	The first space experienced by humans with a sense of spatial belonging
Ali Madanipour	Home is a personal space and a territory, a place to be protected from natural elements and the interference of others in the private sphere, the house as the main institution of society and a place that shapes identity and is rooted in memories, the border between private and public spheres, a symbolic meaning, a product of common agreements between the members of the society, giving identity to the fields of life, supplying the biological and cultural needs
Darab Diba	The transmission of architectural concepts and principles throughout history, with the culture of a land, the compliance of the architectural form with the environmental and philosophical characteristics, the role of time in the nature of the transformation of the structure of human life, as the main pillar, the new space that conveys meaning, by rejecting imitation of foreigners and repetition of forms The past, a dynamic and creative view, paying attention to the fundamental, cultural and artistic factors of the expression of ideals, the history of culture, taste and thought and the art of a society.
Hojjat Vitruvius	Home, life-enhancing and life-enhancing place; containing the flow of the spirit of life Home, the realization of the ideal environment
Schultz	It is one of the most objective centers in the human personal world, as a center for human existence, that is, the place where a child learns and refines her existence, the place where humans leave from there and return there again.
Moore	The center of the world for its residents and the most significant building in consolidating the place for its neighborhood
Rapaport	Housing, an institution to respond to a complex set of goals, has a cultural construction, its shape and organization are influenced by culture.
Le Corbusier	The covering that establishes communication between the environment and outside and biological phenomena
Cooper	The house is a reflection of seeing man through himself, as a symbol of himself
Gifford	According to the cultures, its spatial order, expressing the social relations of its residents
Heidegger	To settle down means to be in peace, with the duty of maintenance and protection
Eliade	Settling equals holiness and home, holy; Home of cosmological symbolism
Hall	Home, the critical space of the family
Gaston Bachelard	Home, the place of future making and dreaming

(Author taken from Khakpour et al., 2015; Zarghami and Sadat, 2016; Kochakiyan et al., 2018; Khatibi et al., 2017)

Housing has different meanings from different perspectives: social, psychological and economic. Table 2 shows this.

Table 2  
Housing from different points of view (author taken from Faqihi Farahmand, 2018)

Housing from different perspectives	Description	Resources
Housing from a social perspective	Human being is a social being who needs to form a family and as a result needs housing to protect the family and determine the framework of the family	Ghorbani, 1995; kendall, 2004
Housing from a psychological point of view	Desirable housing provides an environment with mental peace	Ghorbani, 1995
Housing from an economic point of view	A type of investment with economic meaning	kendall, 2004

Housing poverty in the urban areas of Iran has manifested itself in the form of informal housing and is developing (Athari, 2005). Social housing is a special type of housing provision, which is basically done by the local or national government with the aim of housing low-income groups (Meshkini et al., 2017). The concept of social housing, which is also known as: public, government and affordable housing, emerged, grew and developed in European industrialized countries at the beginning of the 20th century (Lund, 2011). It is not easy to accurately

define the concept of social housing. This concept becomes more complicated when its content changes from country to country. Usually, the term "rental social housing" is used equivalent to social housing; However, in some countries, housing cooperatives and specific parts of real estate are compatible with social housing criteria. Social housing is proposed as one of the solutions of social support in the field of housing. The increasing growth of the urban population in developing cities has prompted governments to respond to the needs of a large

part of the population, who are generally considered to be vulnerable sections of the society, through social housing. In fact, social housing is a tool for the implementation of social housing policy (Rajaei et al., 2016, pp. 9 and 30). In general, it can be said that social housing is a housing for the use of poor or homeless people or those with economic problems or immigrants,

which is built with the aid of the government and with its support in a minimum area and with minimum facilities. Social housing from the perspective of thinkers Various thinkers and theorists have presented theories about social housing, which can be seen in summary in Table 3.

Theorists' opinions about social housing

Theories	Resources
A special type of housing provision, provided primarily by local or national government and aimed at housing low-income groups.	Meshkini et al., 2017
Due to the social goals, based on acceptable minimums and sometimes lower than the standards of the housing consumption pattern, the users include: young couples, low-income groups and families without a guardian, the residence of users with a maximum 30% of your income in these houses as rent Social housing according to housing policy makers: units with a useful infrastructure area of 50 square meters, mass construction, construction with the participation and intervention of the government, especially in urban centers.	Pourmohammadi, 2012, pp. 134-135
Social housing, one of the solutions of social support in the field of housing; providing affordable housing for the needy; Consideration of how social housing projects benefit the housing sector (for example, by bringing together expertise related to management); Integrating social housing with other policies, especially government employment, urban planning and transportation; Social housing planning with a long-term perspective and according to the demographic trend and according to the increasing trend of elderly people in the society; Integration of social housing with other types of housing with the aim of avoiding community segregation in residential areas; Attention to capacities with the aim of reducing inequalities in welfare and income; avoiding social polarization; mutual support to achieve common goals; feeling of belonging to a similar society; strengthening bonds and social trust between people (social capital); Integrity and civic responsibility	Rajaei et al., 2016, pp. 30;40-41;125
Dealing with social deprivation; Linking social housing with employment opportunities in the region for the possibility of achieving social integration (through the labor market)	Kingsley & Turner, 1993; Stewart, 1992
Public, government and affordable housing	Lund, 2011

In general, it can be said that social housing is considered a type of housing that governments usually provide with their support for the use of its users, including: financially vulnerable sections of the society, which has minimum possible construction, equipment and facilities. Semantic, perceptual-cognitive component and its sub-components in social housing design

Table 4 shows the semantic, emotional and perceptual-cognitive sub-components affecting the design of social housing. According to the conducted researches, it has been determined that the semantic and perceptual-cognitive sub-components effective on social housing design include: focal points, signs, bed to meet needs, etc.

Table 4

Semantic and perceptual-cognitive sub-components affecting the design of social housing

Component	Subcomponents	Resources	Subcomponents	Resources
Semantic and Perceptual-cognitive	Focal points	Kharabati & Yazdanfar, 2017; Haqqani & Majidi Hatkeloui, 2021	Desire to attend	Mojtabavi et al, 2022b
	signs		Pleasant weather	Gustafon, 2001a
	Symbols and symbols	Sajjadzadeh, 2013	Continuity of space and time (similarity of the place of life to the place of childhood, similarity of the weather of the place of life to the weather of childhood/historical reminders/memories/feeling of peace)	Manzo & Devine-Wright, 2016, pp. 222; Zamani & Honaravar, 2018
	A platform to meet needs	Hojat et al, 2017	solitude	Kharabati & Yazdanfar, 2017
	The response of the environment to leisure needs	Hajiparvaneh, 2016	Memories	Riley, 1992; Hajiparvaneh, 2016; Kharabati & Yazdanfar, 2017; Hojat et al, 2017; Mojtabavi et al, 2020; Mojtabavi et al, 2022a; Mojtabavi
	An indicator of social dignity	Hojat et al, 2017		
	Sensory experiences	Hajiparvaneh, 2016		
	Visual richness	Ghannad et al, 2022		

Component	Subcomponents	Resources	Subcomponents	Resources
Semantic and Perceptual-cognitive				et al, 2022b
	Territory/Privacy/Personal Freedom	Hajjiparvaneh, 2016; Kharabati & Yazdanfar, 2017; Mojtavavi et al, 2020; Mojtavavi et al, 2022b	The absence of the dark side of attachment to the place (not having negative experiences and memories from the background of living in housing, not having a feeling of inferiority, having the right to stay)	Manzo & Devine-Wright, 2016, pp. 232, 237-238
	Paying attention to Maslow's pyramid on the third level (reflecting the identity of the residents, the house increases the sense of homogeneity between family members, the sense of family belonging to the house, the residential unit induces a sense of returning home for family members, the house, the existence of interest in living at home)	Azemati et al, 2017	The possibility of walking and physical movement	Koohsari et al, 2023
	Attention to Maslow's pyramid at the fifth level: self-actualization (possibility of developing talents and skills)		Paying attention to Maslow's pyramid at the fourth level: respect and self-esteem (the sense of dignity of family members from living at home, the sense of self-confidence of the family through living in their housing unit, home, fostering the ability to achieve goals among family members, the value of individuals among family members Based on the spaces, the family members' feeling of being valuable due to living at home and the family's sense of health during living at home)	
	place belonging	Pourjafar et al., 2016; Hajjiparvaneh, 2016		
	Spatial identity			
	Spatial dependence	Pourjafar et al., 2016	The character of the place	Kamalipour et al, 2012
	Reputation of the place	Kamalipour et al, 2012	The face of the place	Kamalipour et al, 2012

#### 4. Place Attachment

Many thinkers have expressed opinions about the concept of "place attachment". In Table 5, these ideas are summarized, categorized and presented

Table 5  
The point of view of different theorists about place attachment

Theorists	Theories	Theorists	Theories	Theorists	Theories
Shumaker & Taylor (1983)	Positive emotional dependence between person and place, influenced by social groups, physical desirability, person's personality and the position received from the place of residence.	Shamai (1991)	One of the scales of sense of place	Lalli (1992)	place attachment to place, part of place identity
		Hummon (1992)	Emotional involvement with place	David M. Hummon (1992)	Emotional engagement with place
		Low (1992)	A person's cognitive and emotional connection with a specific territory	Brown & Perkins (1992)	The creation of dynamic and long-lasting positive links over time and sometimes unconsciously among individuals or groups with social-physical environments.
Proshansky & Fabian & Kaminoff (1983)	Interactions of feelings, beliefs, knowledge and behaviors in reference to a place	Low & Altman (1992)	Symbolic connection with a place, giving emotional and common cultural sense meanings to a specific place, subject or mentality with time variation	Jacobs (1995)	A deep human characteristic, the concept of giving a place a home
				Twigger-Ross & Uzzell (1996)	An effective connection or link between a person and a specific place
			Emotional attachment	Klatenborn	Affective complex relationship

Theorists	Theories	Theorists	Theories	Theorists	Theories
Brown & Werner (1985)	Place attachment and identity as a common concept	Bonaiuto et al (1999)	to a particular place, becoming a person as a part of the identity of the place, the result of that feeling and interest towards the place	(1997)	with the physical environment
				Milligan (1998)	A person's emotional connection with the environment giving meaning to that environment by the person
Vaske & Kobrin (2001)	Dependent on two concepts: place identity (emotional attachment) and place dependence (functional attachment) to be operationalized.	Stedman (2003)	A dimension of the overall sense of place, positive emotional dependence between place and person	Jergensen and Steadman (2001)	Place attachment and identity, dimensions of a higher order concept
				Giuliani (2003)	Creating connections between people and meaningful environments
Kyle, graefe & Mannin (2005)	Place identity is part of place attachment	Kyle, Graefe, Manning & Bacon (2003)	The limit led to self-identification by the environment and valuing it	Hernandez, Hidalgo & Salazar-Laplace (2007)	Communicating effectively with a certain territory and as a result, staying in that territory and feeling safe and comfortable
Hidalgo & Hernandez (2001)	A positive emotional relationship between a person and a particular place (tendency to maintain closeness to a place: the most important characteristic of that place)	Scannell & Gifford (2004)	A person's sensory connections with a place based on "self" and the person's internal interactions, depending on the person's level of social belonging	Hernandez (2007)	Place attachment and place identity, two different ways of relating to places
				Scannell & Gifford (2010)	Establishing a link between a person and her meaningful environment
				Florek (2010)	Effectively connecting people with places
Morgan (2010)	Experience an impactful and long-term connection with a specific geographical point and the meaning associated with this connection	Manzo & Devine-Wright (2013)		The emotional bond between a person and the physical environment around her causes: awakening of personal identity, giving meaning to life, facilitating communities and influencing performance.	

(author taken from Hashemnezhad & et al, 2013; Pourjafar et al., 2016; Rahimi et al., 2017; Rahimi (a) et al., 2017; Ahmadi et al., 2021)

4.1. Influential components in place attachment

According to various theories, researches and sources, various components and sub-components are effective in

place attachment. In Table 6, these items are categorized and presented.

Table 6  
Place attachment subcomponents

Component	Subcomponents	Resources	Component	Subcomponents	Resources	
Local identity	Continuity	Rahimi et al, 2020	Attachment and social bonds	Social relationships and interactions	Riger & Lavrakas, 1981; Fried, 1963; Lewicka, 2009; Kharabati & Yazdanfar, 2017; Mojtabavi et al, 2020; Haqqani & Majidi Hatkeloui, 2021	
	Meaning					
	Distinction					
	Pride	Habibian & Hataminejad, 2020		Attachment	Creating passive and active social interaction and areas for relaxation	Moulay & Ujang , 2021
	Self-identity					
	Homogeneity					
	sense of place					
Local identity	memories	Riley, 1992; Kharabati & Yazdanfar, 2017; Hojat et al, 2017; Mojtabavi et al, 2020; Mojtabavi et al, 2022 a; Mojtabavi et al,	Attachment	Social bond	Gudarzi Soroush & Ghorbani, 2015	
				Social symbol	Scannell & Gifford, 2010	
				Quality of interaction	Rahimi et al, 2020	
				The amount of interaction		
	Characteristics					

Component	Subcomponents	Resources	Component	Subcomponents	Resources		
		2022b	and social bonds				
	Individual and collective memories and values	Haqqani & Majidi Hatkeloui, 2021		Spatial interaction	Manzo & Devine-Wright, 2016, pp. 13		
				Place extraction (random meeting of friends, meeting, etc.)			
	The ability to perceive and imagine the place	Hojat et al, 2017; Rahimi et al, 2020		Collective efficacy (empowerment)	Manzo & Devine-Wright, 2016, pp. 80		
	Feeling attractive and understanding the invitingness of the place	Rahimi et al, 2020		Neighborliness	Manzo & Devine-Wright, 2016, pp. 81		
	Creating a pleasant feeling due to being in the place			Citizen participation	Manzo & Devine-Wright, 2016, pp. 82		
				Man and place interaction	Daneshpour et al, 2009		
	Spatial dependence	Satisfaction with the place		Kharabati & Yazdanfar, 2017; Zamani & Honaravar, 2018; Eidi, 2019; Rahimi et al, 2020; Habibian & Hataminejad, 2020; Mojtabavi et al, 2020; Lee & Jeong, 2021	Attachment and social bonds	The social capital of the place	Manzo & Devine-Wright, 2016, pp. 83-82; Lee & Jeong, 2021
						Family ties	Gustafon, 2001a; Brown et al, 2003
						Seasonal celebrations	Brown et al, 2003
Getting to know the residents			Riger & Lavrakas, 1981				
Proximity and ease of travel of relatives and friends			-----				
Spatial dependence	your property	Rahimi et al, 2020; Habibian & Hataminejad, 2020; Lewicka, 2009; Brown et al, 2003		A positive conversation about where to live from others	-----		
	Duration of residence/stay time The length of stay after each visit	Riger & Laverkas, 1981; Shumaker & Taylor, 1983; Lewicka, 2009; Nielsen et al., 2010; Knez, 2005; Erkip, 2010; Nientied et al, 2019		Participation in the process of creating a place	Rivilin, 1987		
				Participation (ability to participate in activities)	Mojtabavi et al, 2020; Daneshpour et al, 2009		
	Behavioral loyalty (favourability and place preference)	Ahmadi & MehrJou, 2020		The intimacy of the local community	Zamani & Honaravar, 2018		
				Collective behaviors	Kamalipour et al, 2012		
	Past and present: interest in family roots	Manzo & Devine-Wright, 2016, pp. 64-65		Number of relatives			
				Daily encounters			
	Past and present: interest in historical (traditional) places.			Collective possessions			
	The superiority of				Information and communication technologies	Manzo & Devine-Wright, pp. 39; Brown et al, 2003	
					Emotional bond	Habibian & Hataminejad, 2020	

Component	Subcomponents	Resources	Component	Subcomponents	Resources
	the residential complex where you live compared to the surrounding residential complexes	Manzo & Devine-Wright, 2016, pp. 74	Emotional attachment	cognitive link	Manzo & Devine-Wright, 2016, pp. 13
	Biological patterns and changes (suitable climate)	-----		Realization of place (enjoying the place) Creating a place (doing the most suitable planning and design for the place due to the hope of improving it)	
				Place improvement (preserving the location and improving it)	

**5. Research Methodology**

The research method used in the current study was descriptive-analytical with the method of collecting information in the form of library and survey studies with the help of books, articles and related written sources as well as researcher-made questionnaires. After collecting

the related materials and categorizing the components related to the topic, a researcher-made questionnaire was developed and its validity and reliability were determined by experts and Cronbach's alpha, respectively, using the Delphi method (Table 7).

Table 7  
Reliability of the questionnaire "Evaluation of social housing design features"

Components	Questions	Cronbach's alpha
Semantic and perceptual-cognitive	13	0/0/878
Place identity	6	0/791
Spatial dependence	7	0/844
Attachment and social bonds	10	0/825
Emotional attachment	4	0/0/815

According to the Cochran formula, the questionnaires were randomly distributed among 387 users of social housing complexes in Shiraz who were selected with the help of Expert Choice 11 software based on the AHP model (the full description of which is given in the first author's treatise) (Table 8). It is worth noting that the names of social housing in Shiraz, their locations, the

number of units and blocks, and their districts in accordance with the districts of Shiraz are specified in Table 8. This information has been provided by taking information from the Road and Urban Development Department of Fars Province and personal communication with relevant officials. Also, pictures 1 and 2 show a selection of pictures of the two investigated complexes.

Table 8  
Information related to the investigated social housing

The Name of Social Housing		Location	Number of Units	Number of Blocks	Shiraz Districts
Eskan	Eskan 1	Shiroudi Blvd., Forsat Shirazi Square, Fazel St., Dana St	200	10	7
	Eskan 2	Shiroudi Blvd., Forsat Shirazi Square, Fazel St., Alley 9	224	14	
	Eskan 3	Shiroudi Blvd., Forsat Shirazi Square, Fazel St.,	224	17	
	Eskan 4		272		
Esar		Mianroud, West Baharestan Blvd	375	8	9
Bo-Ali	Bo-Ali 1	Shiroudi Boulevard, Zamzam Crossroads	336	21	7
	Bo-Ali 2		288	18	
	Bo-Ali 3		288		
Salman Farsi (Eram)		Salman Farsi Street (Pirmia)	540	34	3
Sadaf	Sadaf 1	West Abu Nasr Boulevard, Alley 22	132	12	11
	Sadaf 2	West Abu Nasr Blvd., Mououd St	365	30	



Fig. 1. A collection of pictures of Ekan 2 residential complex



Fig. 2. Collection of pictures of Bo-Ali Complex 1

The data from the questionnaires were analyzed by Excel, SPSS and SMARTPLS software with the help of Anova, Bootstrapping and multiple regression tests. It is worth mentioning that the independent variable of the research is social housing design components and perceptual, semantic-cognitive sub-components and the dependent variable of the research is place attachment.

## 6. Results and Discussion

Table 9 shows the results of Anova test analysis. Table 9 shows the significance of variance analysis, which was used due to the presence of more than two housing groups under investigation. It shows the between-group variance (the average dispersion of data in different groups, for example, accommodation, oysters and other housings under investigation) and the intra-group variance (the average dispersion of data within each group, for example, accommodation 1 to 4 and so on).

Table 9  
 Anova analysis results

Model		Sum of squares	Degree of freedom	Mean square	F statistic	Decision criterion (sig)
1	Intergroup variance	126/434	6	21/072	254/967	0/000 <sup>b</sup>
	Within-group variance	31/406	380	0/083		
	total sum	157/840	386			
a. Dependent Variable: Place attachment						
b. Predictors: (Constant), functional-behavioral, individual-human, political-economic, cultural-social, physical-environmental, semantic, perceptual and cognitive components						

According to the test result in table 9 and that the significant value is less than 0.05, we conclude that there is a significant difference between the average of the

desired data in the area of attachment to the desired location and components among the groups and within the groups. .

In Table 10, it can be seen that by entering all the data simultaneously in the software, a significant impact has been placed on the semantic, perceptual-cognitive and physical-environmental components, respectively. In fact, multiple regression test was used to investigate and test the above hypothesis. To reveal the role of each of the independent variables, we use the Beta column, which

according to the regression coefficients in Table 10 and Figure 3, as seen, the semantic, perceptual-cognitive component has a greater impact (compared to the functional components- behavioral, cultural-social, physical-environmental and political-economical) in place attachment of the users and after that the physical component has the greatest effect.

Table 10  
Summary of multiple regression test along with regression coefficients

Model	Non-standard coefficients		Standardized coefficients	t statistic	Meaningfulness
	Non-standard B weights	Standard deviation	Standardized beta weights		
1	regression constant	-0/818	0/172		
	individual - human	0/039	0/044	0/022	0/371
	political-economic	0/042	0/030	0/035	1/403
	Cultural-social component	0/079	0/041	0/050	1/927
	Semantic, perceptual and cognitive	0/616	0/040	0/581	15/261
	physical-environmental	0/394	0/053	0/276	7/433
	Functional-behavioral	0/073	0/041	0/060	1/781

Dependent variable: place attachment

Figure 3 shows the fitting of the conceptual model in a meaningful state using the output of the bootstrapping test, which contains the influence of the questions (+) and

the analyzes performed and (P Value) dimensions of the dependent variable and the independent variable.

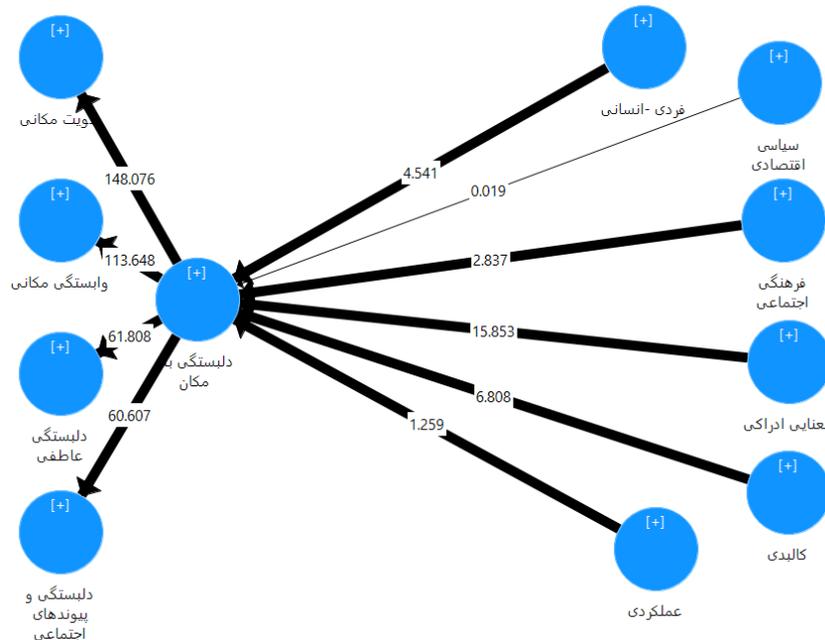


Fig. 3. Fitting the conceptual model in meaningful mode

Considering that the most influential component in place attachment is the perceptual, semantic-cognitive component, the sub-components of this component were analyzed statistically. The resulting regression coefficients in Table 11 show that the sub-component "sense of belonging - sense of belonging" has a greater effect (compared to other sub-components) in place attachment

of users, and after that the sub-component "sense of belonging - spatial identity" has the greatest effect; But in general, by entering all the data simultaneously in the software, all the sub-components have had a significant impact on the place attachment (significant coefficient less than 0.05, which means there is a relationship between the place attachment and the sub-components).

Table 11  
 Summary of multiple regression test along with regression coefficients

Model	Non-standard coefficients		Standardized coefficients	t statistic	Meaningfulness	
	Non-standard B weights	Standard deviation	Standardized beta weights			
1	Regression constant	0/624	0/095		6/564	0/000
	Desire to attend	0/061	0/024	0/084	2/533	0/012
	Place affiliation - sense of belonging	0/139	00/020	0/244	6/892	0/000
	The face of the place	0/071	0/020	0/112	3/585	0/000
	Social dignity	0/097	0/026	0/135	3/708	0/000
	A platform to meet needs	0/060	0/024	0/083	2/540	0/012
	Sense of belonging - spatial identity	0/164	0/027	0/241	6/135	0/000
	Absence of negative affective memories	0/100	0/025	0/125	3/945	0/000
	Sensory experiences	0/074	0/030	0/077	2/466	0/014
	Continuity of space	0/065	0/027	0/077	2/388	0/017

a. Dependent Variable: Place attachment

## 7. Conclusion

The current research was carried out with descriptive-analytical method with the help of information gathering method in the form of library and survey studies using books, articles and related written sources as well as a researcher-made questionnaire. After collecting the related materials and categorizing the components related to the subject, a researcher-made questionnaire was compiled and its validity and reliability were checked by experts and Cronbach's alpha respectively by Delphi method and according to Cochran's formula among 387 users of social housing complexes in Shiraz who with the help of software Expert Choice 11 was distributed based on the AHP model. The data obtained from the questionnaires were analyzed by Excel, SPSS and SMARTPLS software with the help of tests: analysis of variance, Anova and bootstrapping and multiple regression test.

Multiple regression analysis showed that by entering all the data simultaneously in the software, a significant impact has been placed on the semantic, perceptual-cognitive and physical-environmental components, respectively; In addition, the obtained results indicated that: 1- spatial dependence - sense of belonging; 2- sense of belonging - spatial identity; 3- social dignity; 4- The absence of influential negative memories; 5- The appearance of the place; 6- desire to attend; 7- hospitalization to meet needs; 8 and 9- Sensory experiences and continuity of space, respectively, have a greater effect on place attachment.

The results of the present study are in agreement with the results of the research of Fatah Baghali et al. (2015) who found spatial identity and emotional connection to place to be effective in creating place attachment, and the research of Jahangiri et al. and the research of Azadi et al. (2016) who considered the mental image and identity to the place to be effective factors in the emergence of children's attachment to Qasr-al-Dasht neighborhood of Shiraz and the research of Ghalenoui et al. and the dependence on the place has been introduced as having

the greatest effects on the increase of place attachment and the research of Hojjat et al. found and the research of Khodaei et al. (2016) who introduced the sense of identity to the place as having the most impact among the components affecting the place attachment in teenagers, is in line with the research of Habibian and Hataminejad (2019) who identified place identity as the most influential. The influential dimension of place attachment on the vitality of urban neighborhoods is contradictory.

In the following, according to the most influential sub-components affecting the place attachment of social housing users, solutions are presented:

Solutions for desire to be present: smartening tools and spaces and using smart systems, providing free internet in public and shared spaces, using smart urban furniture with a charging system for mobile phones, iPads, etc., continuity of space and time.

Solutions for improving spatial dependence and sense of belonging: Establishing a sense of peace in the complex; presence of temperature and air conditioning; Using various strategies in design to establish a comfortable temperature (paying attention to the direction of light radiation, using materials suitable for the climate; paying attention to the proper wind direction, reducing the temperature difference between night and day according to the climate, etc.); Helping to increase the level of user satisfaction in various ways (for example, creating diverse functional spaces, etc.); The superiority of the residential complex where you live compared to the surrounding residential complexes

The solutions of the personality of the place, the image of the place and the reputation of the place, the social arena, the emergence of social talents and skills related to the fifth level of Maslow's pyramid, a platform to meet leisure needs and such: the existence of suitable and diverse spaces and sufficient in terms of area for communication and social interactions with others, filling free time as well as doing personal things

An indicative solution for social dignity: the appropriateness of the complex with the social class of the users

Bedside solutions to meet the needs: the existence of diverse functional spaces for all strata and all people of different genders and ages; The blocks are equipped with an elevator; The presence of green spaces

Solutions to improve the sense of belonging, place identity: the presence of landscapes and green spaces; Improving services and facilities as much as possible

Solutions for sensory experiences: improving visual quality through the establishment of visual beauty and richness; The existence of green spaces for the gathering of birds and hearing their voices; The existence of various functional spaces in the campus for diverse listening experiences; existence of height difference in some spaces for sensory-motor experiences; the presence of fruit trees; The possibility of cooking offerings and such things for smelling experience.

Future researchers are suggested to address other psychological and social issues related to the architecture of residential spaces (apartments or complexes), and the relationship between the design features of residential architecture, with other important variables (for example: "social capital", "social justice" , "local dependence", "social stability", "social identity" and the like) to analyze; In addition, they can conduct research with pre-test and post-test groups to analyze the mental and psychological reactions of users by making changes in the investigated spaces.

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