



Investigating the Contribution of Socio-Physical Structure of Neighborhoods on Residents' Sense of Attachment

Mahallelerin Sosyo-Fiziksel Yapısının Mahalle Sakinlerinin Bağlılık Duygusuna Katkısının Araştırılması

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ABSTRACT

The progressive increase of the urban population, the construction of residential complexes, and the fact that more attention is paid to the physical aspects of design than to the social aspects have consequences such as the alienation of the individual from the place and the reduction of place attachment. In this respect, place attachment is considered an effective bond that allows people to establish deep emotional interaction with their living environment. This is a crucial factor in improving residents' satisfaction, especially in large cities that experience a high influx of immigrants. The purpose of this article is to identify the physical and social characteristics of place attachment and how they contribute to residents' satisfaction. To achieve the research objective, a theoretical framework based on place attachment theories was established, and 4 residential neighborhoods in the city of Karaj, Iran, were assessed. Hundred and eighty residents from 4 major neighborhoods volunteered to participate in the study. For this purpose, a mixed method was used. The results show that the differences in the degree of place attachment indicate the influence of social and physical factors. However, compared to the physical dimension, the social dimension plays a stronger role. Moreover, the results showed that factors such as social interactions and easy access to amenities directly contribute to residents' attachment to their neighborhoods. However, other factors have an indirect effect on attachment, such as order and maintenance, attitudes toward the neighborhood, and public participation in the neighborhood.

Keywords: Karaj, neighborhood, place attachment, residential satisfaction, socio-physical structure

ÖZ

Kentsel nüfusun giderek artması, konut komplekslerinin inşa edilmesi ve tasarımın fiziksel yönlerine sosyal yönlerinden daha fazla önem verilmesi, bireyin mekâna yabancılaşması ve mekâna bağlılığın azalması gibi sonuçlar doğurmaktadır. Bu açıdan mekâna bağlılık, insanların yaşadıkları çevre ile derin duygusal etkileşim kurmalarını sağlayan etkili bir bağ olarak kabul edilmektedir. Bu, özellikle yüksek oranda göçmen akınına uğrayan büyük şehirlerde, sakinlerin memnuniyetini artırmada çok önemli bir faktördür. Bu çalışmanın amacı, yere bağlılığın fiziksel ve sosyal özelliklerini ve bunların mahalle sakinlerinin memnuniyetine nasıl katkıda bulunduğunu belirlemektir. Araştırma hedefine ulaşmak için, yere bağlılığın kuramlarına dayalı teorik bir çerçeve oluşturulmuş ve İran'ın Karaj kentindeki dört yerleşim bölgesi değerlendirilmiştir. Dört büyük mahalleden 180 mahalle sakini çalışmaya katılmak için gönüllü olmuştur. Bu amaçla karma bir yöntem kullanılmıştır. Sonuçlar, yere bağlılık derecesindeki farklılıkların sosyal ve fiziksel faktörlerin etkisini gösterdiğini ortaya koymaktadır. Ancak, fiziksel boyuta kıyasla sosyal boyut daha güçlü bir rol oynamaktadır. Ayrıca sonuçlar, sosyal etkileşimler ve olanaklara kolay erişim gibi faktörlerin mahalle sakinlerinin mahallelerine bağlılıklarına doğrudan katkıda bulunduğunu göstermiştir. Bununla birlikte, düzen ve bakım, mahalleye yönelik tutumlar ve halkın mahalleye katılımı gibi diğer faktörler bağlılık üzerinde dolaylı bir etkiye sahiptir.

Anahtar Kelimeler: Karaj, mahalle, mekana bağlılık, konut memnuniyeti, sosyo-fiziksel yapı

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Introduction

Residents constantly interact with their living environment, neighborhood, and city at various levels. Such interaction leads to positive and negative feelings evoked by the environment. In this regard, people evaluate the place where they live positively, either because of the amenities and opportunities that the environment offers or, in some cases, because of a sense of nostalgia. Indeed, a positive experience of a place is a consequence of positive beliefs and emotions that individuals create and give meaning to through their interaction with the place (Davis, 2016, p. 55; Scannell & Gifford, 2017, p. 258; Zhu & Fu, 2017, p. 178). Accordingly, Altman and Low (2012) consider emotional interaction with a place as the cornerstone of user satisfaction and attachment to the place. In defining the concept of place attachment, Guthey et al. (2014) assert that individual's attachment to a place is based on their daily activities, imagination, real-life experiences, and what they read about a place. Many researchers have found that a sense of attachment to a place of residence is a critical indicator of human well-being and sustainability. For example, Sun et al. (2022) have demonstrated that older people living in a high-density urban environment make sense of well-being and place attachment by articulating their daily lives. Maricchiolo et al. (2021) emphasize that the relationship between local social identity, individual well-being, and interdependent happiness is positively mediated by place attachment and social relationships. Scannell et al. (2019) conclude that place attachment improves psychological states or well-being, leading to increased levels of place attachment. Junot et al. (2018) have shown that place attachment provides physical and psychological benefits to people and is potentially beneficial for both human well-being and environmentally friendly behaviors. Shamsuddin and Ujang (2008) discuss the significance of physical elements and activities in creating a sense of place. Other studies (Smaldone et al., 2005, p. 401; Stedman, 2003, p. 680) address the importance of a place setting's physical qualities, types of uses, and spatial activities in creating a sense of place for people and the community, especially those with long-term ties to the areas. The review of studies mentioned above shows that the place attachment psychologically considers 2 main social and physical dimensions so that the social-psychological dimensions are taken into account in connections between individuals, and physical-psychological dimensions are considered connections between the place and people. Accordingly, it can be concluded that the place attachment establishes a correspondence between the function of the physical space and the users. It is also a factor in the individual's sense of security, pleasure, emotional perception, and sense of belonging to the place. In this regard, many researchers have identified the effective factors of attachment to a place and proposed a series of conceptual frameworks. In a most applied pattern, Scannell and Gifford (2010) have introduced the social and physical dimensions as the most important factors for attachment to a place. They believe that physical features and social activities shape and influence individuals' perceptions and expectations when evaluating new environments.

Functionalism in contemporary architecture has led to the city and architecture becoming meaningless. Also, it has resulted in the reduction of the physical quality of the place, the weakening of social relations, and the sense of belonging to the place. Accordingly, the present study aims to provide a socio-physical

structure to identify the factors of place attachment in neighborhoods. To this end, the study seeks to answer the following questions:

1. To what extent do the social and physical factors contribute to residents' satisfaction with their neighborhoods?
2. Which of the social and physical factors plays the more significant role in creating an attachment to the neighborhood?

To answer the above questions, this study uses a mixed research method. In this context, in the first step, the theoretical literature on place attachment and its social and physical factors is argued. So, the data from different studies and theories on place attachment, especially in the field of the neighborhood, were analyzed. Then, the theoretical model of place attachment introduced by Scannell and Gifford (2010) was chosen to study the attachment of residents to a place. In this respect, the socio-physical factors of this model are considered and combined with socio-physical criteria from different studies to build the theoretical and conceptual model of this study. As the methodology of study, in the second step, the theoretical and conceptual models of this study are examined and compared in 4 different neighborhoods of Karaj city in Iran. Step 4 deals with the results obtained, followed by the last part concentrating on discussion, research findings, and limitations.

Literature Review

The place attachment has been widely researched and defined in various ways. In general, it involves concepts such as emotional dependence, daily activities, experiences, imaginations, the bond between person and place at multiple levels, the person as an element of place identity, the attitudes and behaviors of individuals toward their environment, the emotional connection between people and their environment, and the interactions between affect and emotion, knowledge, beliefs, behaviors, and actions related to a place (Altman & Low, 2012; Guthey et al., 2014, p. 258; Leckman et al., 2006). In this regard, several models of place attachment have been proposed to provide a framework for how people develop attachments to places. The study conducted by Scannell and Gifford (2010) suggests a three-dimensional framework for place attachment that provides meaningful structure to the various definitions in the literature (Figure 1). This framework proposes that attachment to place is a multidimensional concept with person, psychological process, and place characteristics dimensions. From this model, it can be argued that a particular setting becomes a place for an individual because of the activities occurred within its boundaries, which are then associated with the place. Therefore, to create more efficient places, it is necessary to understand the different meanings that a neighborhood has for its residents. Hence, in the model introduced by Scannell and Gifford (2010), the place is considered the most significant dimension of attachment, which is divided into 2 social and physical components.

Regarding the physical factor of place attachment, studies have highlighted the physical characteristics of places, such as the context of the place, available services, facilities, location, relationship with the environment, and accessibility (Lestari & Sumabrata, 2018). Another study has found positive effects of the presence of urban recreational spaces, pubs, stores, and cafes on the development of emotional attachment to the neighborhood (Madgin et al., 2016, p. 681; Tezer & Bingöl, 2021). Lewicka (2010) has cited the size of housing as a factor that indirectly influences

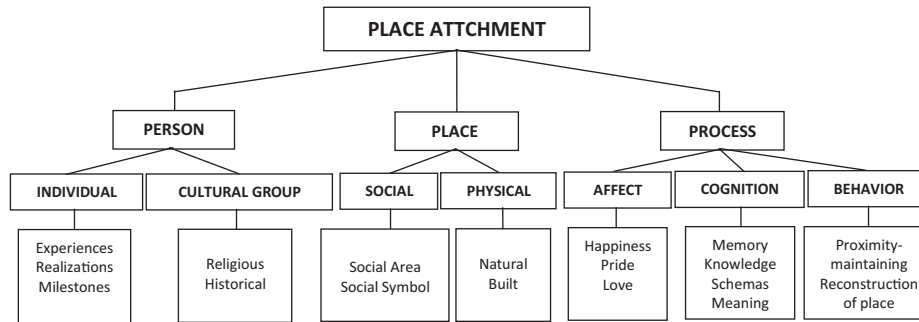


Figure 1.
The Three-Dimensional Model of Place Attachment was Introduced by Scannell and Gifford (2010).

attachment to a place. Talen (2000) believes that public spaces affect place attachment and residents' satisfaction by integrating public spaces into residential areas, making public spaces accessible to all, and designing high-quality public spaces. Kaltenborn and Bjerke (2002) have indicated that user satisfaction is associated with physical measures of environmental attributes and that the degree of attachment to a place correlates with its perceived attractiveness. Galindo and Hidalgo (2005) have found positive effects of order and upkeep (contextualism) on preferences. Lewicka (2010) has also found a positive relationship between the perceived historic character of neighborhoods and residents' stronger attachment to their neighborhoods. As the most significant environmental attributes associated with a positive perception of a place, green spaces play a crucial role in the sense of attachment (Arnberger & Eder, 2012, p. 43; Dasgupta et al., 2022, p. 7; Łaszkiwicz et al., 2018, p. 316). Chan and Li (2022) point out some factors related to the measurement of attachment. These factors are satisfaction with neighborhood safety, satisfaction with walkability, satisfaction with street maintenance, and satisfaction with traffic density. Furthermore, openness and density have been considered physical features that indirectly affect the sense of attachment to a place and satisfaction. Some studies have shown that shared outdoor spaces and visual proximity play a significant role in neighborhood satisfaction (Hur et al., 2010, p. 56; Kearney, 2006, p. 124). Jorgensen and Stedman (2006) found that density promotes social interactions or predicts a sense of place.

As mentioned earlier, the sense of attachment does not only refer to the physical aspect of the place but the social aspects are also considered. Indeed, the positive relationship between the individual, the physical place, and the emotional satisfaction is associated with social relationships in the place. In describing the social aspects of place attachment, Burchfield (2009) has proposed 2 factors: attitudinal and systemic attachment. The attitudinal factor refers to individuals' attitudes toward their neighborhood, such as the emotional evaluation of their neighborhood and neighborhood sentiment (e.g., liking/disliking their neighborhood; whether they would miss their neighborhood if they had to move). The systemic factor refers to the extent of a person's familiarity and involvement in the neighborhood. Such a factor includes the number of social ties a person has in the neighborhood (e.g., the number of friends/relatives in the neighborhood) and the familiarity with the neighborhood (e.g., the number of residents/strangers they could identify). Some studies have revealed that attachment to a place can be acquired by staying in a place for years/or by doing an activity frequently. Toruńczyk-Ruiz and Martinović (2020) and Anton and Lawrence (2014), for

example, specifically relate attachment to a place to the length of stay. In neighborhoods with stable housing, residents report being satisfied with having friends and relatives nearby. They feel more invested in the neighborhood and are responsible for activities voucher well-being. Researchers have also found attachment to residence regarding social interactions and community activities (Fornara et al., 2010, p. 172; Soini et al., 2012, p. 127). Mohapatra and Mohamed (2013), Mihaylov and Perkins (2013), and Manzo and Perkins (2006) consider attachment to a place based on public participation in the place, the extent of engagement in social networks, and cultural exchange. Moreover, social ties are considered feelings of belonging or interpersonal connections based on shared characteristics. In this regard, Rennick (2003) believes that creating bonds between long-established and new community groups mitigates concerns or conflicts that may arise between groups. Furthermore, this can provide residents with an additional forum to communicate and potentially identify collective values and interests. Those who are more attached to their neighborhood interact more with their neighbors and watch over their communities more. Such activities promote social cohesion, regardless of how diverse community members are (Brown et al., 2003, p. 263). Another significant social factor that has been shown in studies to influence the sense of attachment is home ownership. For instance, Lewicka (2010), Eisenhauer et al. (2000), and Lund (2002) have found that home ownership affects attachment to a place indirectly and through the number of local ties. Other studies have included socio-demographic attributes such as age and education and have shown that age and education are significantly (positively or negatively) correlated with place attachment (Lewicka, 2008, p. 229; Li & Bihu, 2012). Based on reviewing the literature discussed above, 15 factors representing physical dimensions and 8 factors representing social dimensions were classified into the following table, which presents the socio-physical factors that influence the sense of attachment to the neighborhood.

As mentioned previously, in this article, the place attachment model introduced by Scannell and Gifford (2010) is chosen as the basic model to extract the place dimensions and develop the socio-physical structure for further investigation. According to the theoretical framework presented in Table 1, the conceptual model of the present study was presented as follows Figure 2.

Methodology

In line with the purposes of the present study to investigate the impact of socio-physical dimensions on residents' attachment to their neighborhood, 2 steps were taken. To delineate the theoretical and conceptual framework of the study, the first step was

Table 1. <i>Effective Social and Physical Factors in Improving Neighborhood Attachment Levels</i>		
Socio-Physical Structure of Neighborhoods		
Physical factors	Context of place	Lestari and Sumabrata (2018)
	Location in urban areas	Lestari and Sumabrata (2018); Madgin et al. (2016)
	Size of buildings in the neighborhood	Lewicka (2010)
	Integration of public spaces & facilities with residential areas	Talen (2000)
	Accessible public spaces & facilities to all residents within short walking distance	Madgin et al. (2016); Talen (2000)
	Perceived attractiveness (aesthetic, legibility, diversity, scale, compatibility)	Kaltenborn and Bjerke (2002)
	Perceived features of architecture/urban design	Kaltenborn and Bjerke (2002)
	Order and upkeep	Galindo and Hidalgo (2005)
	Preserved historical character of neighborhoods	Lewicka (2008)
	Green spaces	Dasgupta et al. (2022); Łaszkiewicz et al. (2018); Arnberger and Eder (2012)
	Neighborhood safety	Chan and Li (2022)
	Satisfaction with walkability	Chan and Li (2022)
	Satisfaction with maintenance of streets	Chan and Li (2022)
	Satisfaction with density of traffic	Hur and Nasar (2010); Kearney (2006)
Openness and density	Jorgensen and Stedman (2006)	
Social factors	Length of residence	Toruńczyk-Ruiz and Martinović (2020); Anton and Lawrence (2014)
	Attitudinal attachment (homesickness for the neighborhood, feeling of strangeness in the neighborhood, feeling of being part of the neighborhood, and desire to move)	Burchfield (2009)
	Systemic attachment (satisfaction with the lives of relatives and friends in the neighborhood and neighborhood familiarity, etc.)	Burchfield (2009)
	Social interactions and community activities	Soinie et al. (2012); Fornara et al. (2010)
	Public participation in neighborhood	Mohapatra and Mohamed (2013); Mihaylov and Perkins (2013); Manzo and Perkins (2006)
	Equal representation and common values of residents	Rennick (2003)
	Homeownership	Eisenhauer et al. (2000); Lewicka (2010); Lund (2002)
Socio-demographic attributes (age, education, etc.)	Lewicka (2005)	

to review the research and theories on attachment to place, particularly in the neighborhood domain. Then, to propose the conceptual model of study, the socio-physical factors that influence the sense of attachment were extracted and integrated into the socio-physical factors of the place attachment model introduced by Scannell and Gifford (2010). In the second step, the socio-physical structure of the place attachment model was examined and compared in 4 different neighborhoods of Karaj city, Iran. The data required for the social dimension, personal attitudes of residents, and physical dimension of the neighborhoods were collected through interviews, questionnaires, and field observation by experts. Hundred and eighty residents (93 men and 87 women, mean age=35 years) of 4 neighborhoods (each neighborhood: n=45) were randomly selected using a cluster sampling method to complete questionnaires about demographic attributes, social factors, and some physical factors of their neighborhoods.

The authors created 16 items for the questionnaire, which were distributed to participants through door-to-door visits. The questionnaire was completed throughout the week and at various times of the day. Data collection took 6 days, and each survey took 10 minutes to complete. Some questions regarding social

and physical factors were evaluated in the form of a Likert scale (very high, high, medium, low, and very low). In this context, for social dimension, factors such as homesickness for the neighborhood (*When I am not in the neighborhood, I miss it*), feeling of strangeness in the neighborhood (*I feel like a stranger in the neighborhood*), feeling of being part of the neighborhood (*This place is a part of me*), and desire to move (*I would like to leave this place*) were queried as measures of attitudinal attachment; factors such as satisfaction with the lives of relatives/friends in the neighborhood and familiarity with the neighborhood (*I like my friends and family to live in this neighborhood*) were queried as measures of semantic attachment; additionally, measures such as social interactions and community activities (*To what extent do you interact with others in your neighborhood?*), public participation in the neighborhood (*I would like to participate in neighborhood affairs*), and equal representation and shared common values of residents in the neighborhood (*To what extent do you have in common with people from your neighborhood in terms of customs?*) were evaluated. Furthermore, the questionnaires asked about some physical factors of the neighborhoods, such as satisfaction with the size of the buildings (*Do you feel satisfied with the size of your house?*), perceived attractiveness (*Are you satisfied with the services provided in your neighborhood and are*

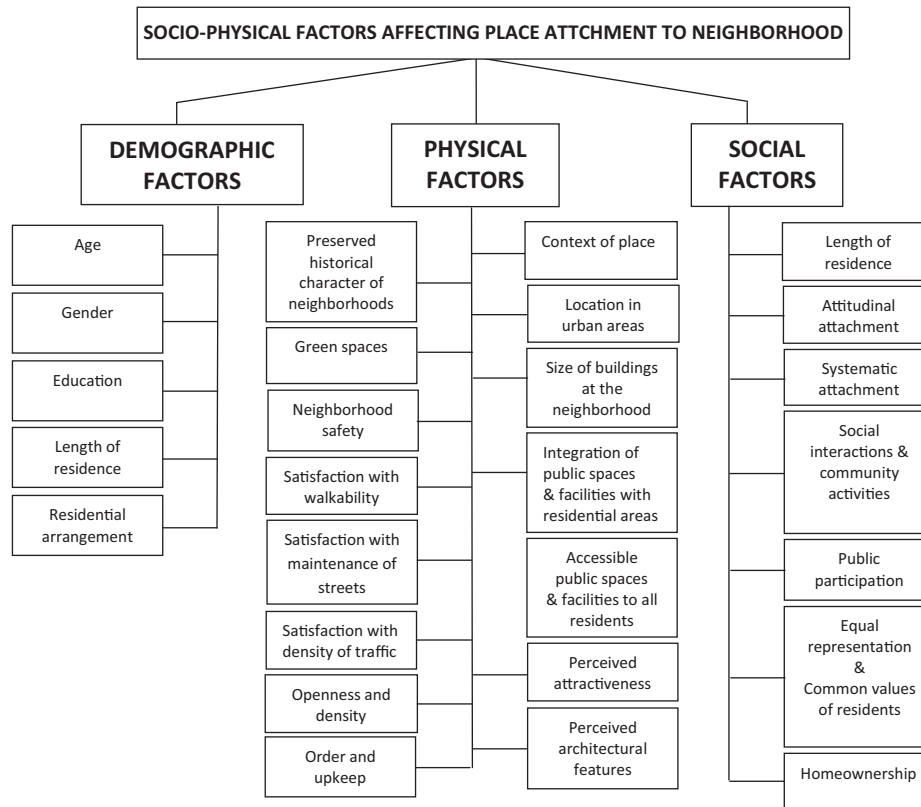


Figure 2.
The Conceptual Model of Sense of Attachment to Neighborhood (Authors).

they attractive to you?), accessibility of public spaces and facilities to all residents through short walking distances (*To what extent do you have access to green and open space outside?*), the safety of the neighborhood (*I feel safe in the neighborhood*), and satisfaction with order and maintenance (*How satisfied are you with the pollution and disorder in your neighborhood?*). To examine other physical factors, analytical field observation was conducted in 4 neighborhoods. These factors are the context of place, location in urban areas, integration of public spaces and facilities with residential areas, green spaces, and features of architecture/urban design, preserved historical character of neighborhoods, openness and density, and satisfaction with walkability, maintenance of streets and density of traffic in the neighborhood. For demographic factors, measures such as length of residence (*How many years have you lived in this neighborhood?*), homeownership (*How do you own the house?*), and socio-demographic characteristics (*How many people are in your family?*) were evaluated with an open-ended question. In the interview, 3 questions (*Which of the services provided in your neighborhood are you more satisfied? If you want to change the neighborhood for your residence, which neighborhood do you prefer? If you want to change the neighborhood for your residence, which neighborhood do you prefer?*) were asked. Indeed, the interview was a way to find the qualitative aspects and criteria of the place attachment from users' point of view so that individuals would have the opportunity to express their true feelings about neighborhood. In this regard, of each neighborhood resident 5 people (a total of 20) were randomly selected, and each interview took 30 or 40 minutes. Finally, in the third step, a comparative analysis of responses and data collected through field observation was used to examine the correlation between subjective attitudes and physical factors

and to assess the degree of attachment to each neighborhood. Inferential statistics were used to examine the parameters of the statistical population and the correlation between concepts and variables. The validity of the questionnaire was confirmed by a pilot study with 41 users of Owj neighborhood. The reliability of the questionnaire was determined to be 0.867 using Cronbach's alpha test. The mean, correlation coefficient, one-sample *t*-test, and SD were used for data analysis in Statistical Package of the Social Sciences (SPSS).

Case Study

Karaj is the second largest city in Iran, receiving a high influx of immigrants. It has a younger population compared to other cities. Four important neighborhoods of Azimiyeh (N1), Owj (N2), Baghestan (N3), and Baraghan (N4) were selected from this city to study the degree of place attachment (Figures 3 and 4). The reason for the selection of each neighborhood was the differences in the date of settlement, the size of the neighborhood, the services available, and the urban context.

- *Azimiyeh neighborhood (N1)*: The Azimiyeh neighborhood is located in the northeast of Karaj. Due to its location, it has an uneven surface with a steep slope. Due to its pleasant weather and water sources, this neighborhood has always been considered one of the most popular locations for settlement in Karaj. In recent decades, the number of residents in this neighborhood has increased, and it has become a tourist destination. Mount Nour, Karaj Baam, and numerous restaurants are considered attractions in this area.
- *Owj neighborhood (N2)*: The Owj neighborhood is located near the Alborz Mountains in the north of Karaj. This area is easily accessible via boulevards, a metro station, and the Tehran–Karaj

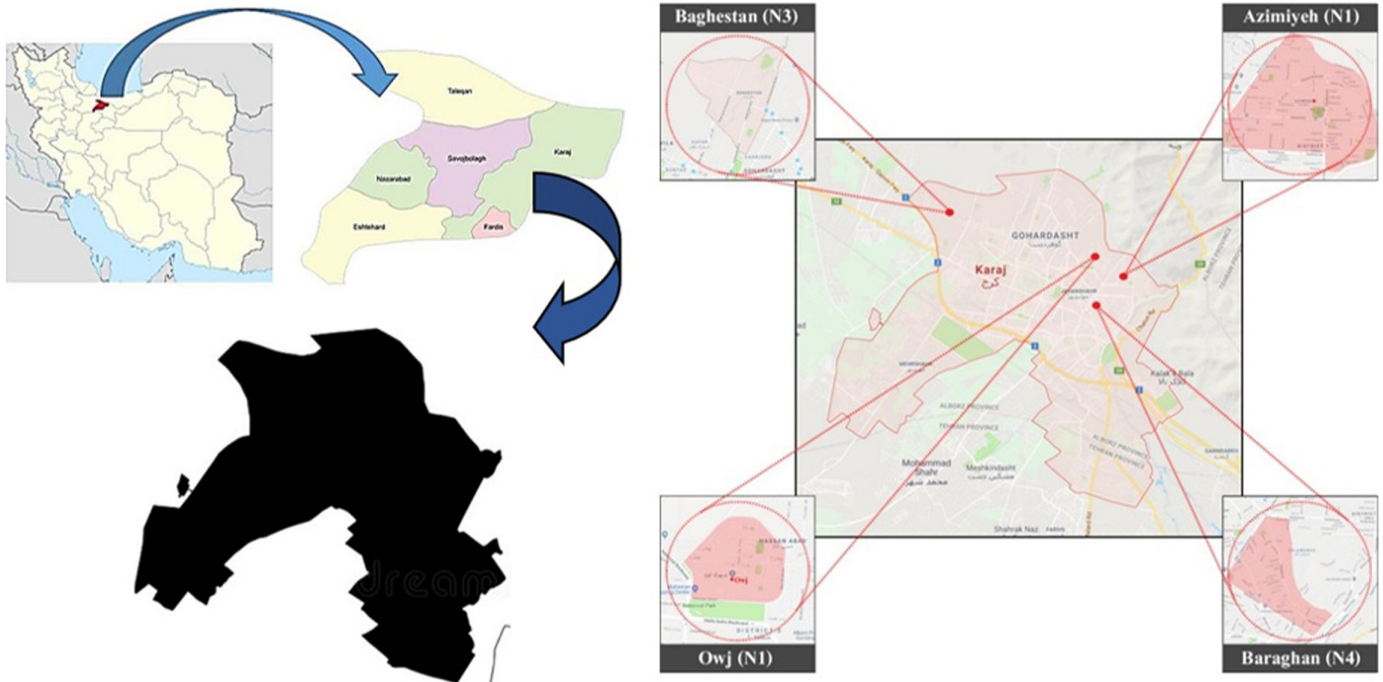


Figure 3. Location of the Neighborhoods in the City of Karaj, Alborz Province, Iran (Google Map).

highway. This neighborhood consists of some residential complexes and 3 or 4-story buildings along the main street. The main core of this neighborhood is a residential complex for the families of the armed forces.

- *Baghestan neighborhood (N3):* The Baghestan neighborhood (with the old name Baghesban) is located in the northwest of Karaj, near the village of Atashgah (one of the most famous

villages and tourist spots). This area has developed from the north and west because there are large areas of wasteland. West Baghestan is one of the newly populated neighborhoods in Karaj with a high rate of construction statistics and average-income residents. Since this neighborhood is relatively new, there are a large number of segregated lots for residential use between the residential blocks.

Neighborhood	Site Plan	Residential complexes	Public services	General view	The main access
Azimiyeh (N1)					
Owj (N2)					
Baghestan (N3)					
Baraghan (N4)					

Figure 4. The Locations of Case Study Neighborhoods (Authors).

Table 2.
Socio-Demographic Differences Between the Neighborhoods

Socio-Demographic Variables	N1	N2	N3	N4
	Azimiye	Owj	Baghestan	Baraghan
Age	34.6	30.9	36.3	38.2
Gender	60% F	35% F	50% F	40% F
Education	10% D	15% D	10% D	10% D
	25% U	50% U	35% U	40% U
	60% G	30% G	45% G	55% G
	5% H	5% H	10% H	0% H
Length of residence (year)	12.1	12.6	8.8	14.3
Residential arrangement	65% owner	75% owner	55% owner	80% owner

D = diploma graduated from high school; F = female; G = guidance school graduated; H = high school students; U = university graduated.

Table 3.
Analysis of Physical Structure of the Neighborhoods

Physical Factors	N1	N2	N3	N4
	Azimiye	Owj	Baghestan	Baraghan
<i>Context of place</i>	<ul style="list-style-type: none"> One of the most expensive neighborhoods in Karaj city It has a relatively homogeneous social context with relatively rich residents It is exposed to natural threats (e.g., flood and earthquake) due to its location on the hillside of Alborz Mountain 	<ul style="list-style-type: none"> The residential buildings in this neighborhood are mostly occupied by government employees It has been developed in the last 2 decades and has relatively affordable houses <p>It has relatively homogeneous social context with average-income residents</p>	<ul style="list-style-type: none"> Relatively new buildings with good quality & affordable houses It has heterogeneous social Context consists of immigrants and residents with different cultures and average income 	<ul style="list-style-type: none"> One of the oldest neighborhoods with Poor quality buildings <p>Heterogeneous social context consists of residents mostly from the Immigrants of Baraghan, Varian, and Darvan villages with unfavorable economic situation</p>
<i>Location in urban areas</i>	The north-east part of Karaj city	The north part of Karaj city	The northwest part of Karaj city	City center
<i>Residential building's type</i>	4–5 floor houses	3–4 floor houses	4–5 floor houses	Mostly 2-floor houses
<i>Integration of public spaces & facilities with residential areas</i>	Existence of commercial spaces only in the main axis of the neighborhood and the lack of markets in side streets	Existence of commercial spaces in the main axis of the neighborhood	Lack of available commercial spaces and markets for residents' daily or monthly needs	Adequate commercial, educational, and cultural facilities because of locating at the city center
<i>Perceived features of architecture/urban design</i>	Appealing architectural/urban design of buildings	Medium levels of attractiveness in architectural/urban design of buildings	Medium levels of attractiveness in architectural/urban design of buildings	Low levels of attractiveness in architectural/urban design of buildings
<i>Preserved historical character of neighborhood</i>	Lack of historical characteristics and values	Lack of historical characteristics and values	Lack of historical characteristics and values due to its newly constructed buildings	It has historical values and old houses due to its location in the historical and cultural part of the city
<i>Green spaces</i>	Inadequate green spaces for residents	Adequate green spaces for the residents like a local park	Lack of green spaces in comparison to the size of the neighborhood	Lack of green spaces with no local park
<i>Walkability</i>	High levels of walkability due to the appropriate spatial spread of facilities in the main boulevard of Azimiye	High levels of walkability due to the proximity of a local park	Low levels of walkability due to inappropriate spatial spread of urban spaces	Very low levels of walkability due to lack of adequate open spaces
<i>Maintenance of streets</i>	Average level	Average level	Relatively high	Weak
<i>Density of traffic</i>	High density of traffic especially on the main street due to location of commercial services that also provide the needs of other neighborhoods' residents	High density of traffic especially on the main street due to location of commercial services for residents' daily or monthly needs and narrow streets	Low density of traffic	High density of traffic due to its irregular pattern of access ways and narrow streets
<i>Openness & density</i>	Low density of constructed areas with the potential to develop in the future	Medium density of constructed areas with the checked patterns	Low density of constructed areas due to the existence of not build spaces	High density of constructed areas due to its irregular and organic development pattern

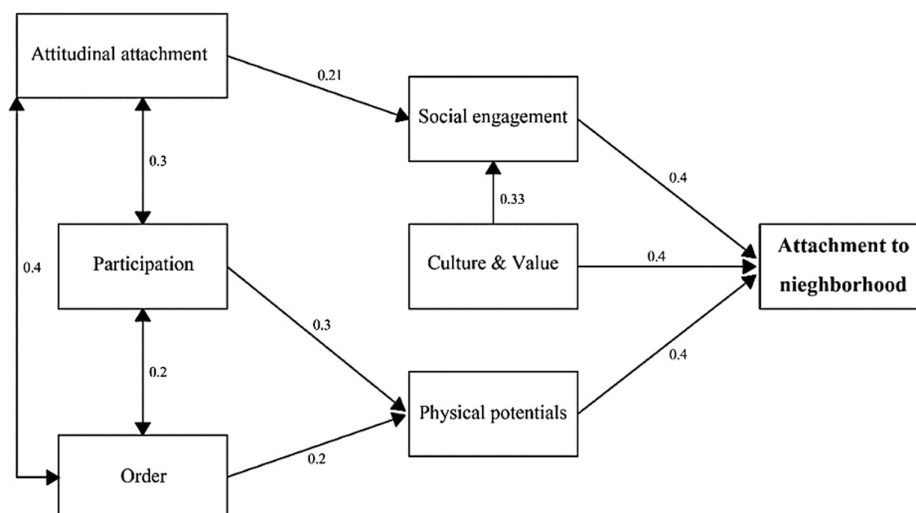


Figure 5.
The Effects of Various Independent Variables on the Sense of Attachment, Extracted from SPSS.

- *Baraghan neighborhood (N4)*: The Baraghan neighborhood is located in the center of the city. It is bordered on the east by Karaj Square, on the west by the Taleghani intersection, and north and south by Baraghan and Mazaheri streets, respectively. This neighborhood has an irregular and organic urban context. It is located near the Islamabad neighborhood, one of the poorest neighborhoods in the city. Its proximity to the Islamabad neighborhood has influenced the Baraghan neighborhood to some degree.

Results

Generally, the purpose of this study was to identify the physical and social characteristics of place attachment and their contribution to residents' satisfaction. Following the conceptual structure of the study, data collection and analysis were conducted. Accordingly, the average number of years the participants lived in their neighborhood was about 12 years. Most participants owned their homes (68.75%). About 47.5% of the participants reported having a master's degree as their highest level of education. About 37.5% had a bachelor's degree or technical degree, 10% had a high school diploma, and 5% had a doctorate or professional degree (Table 2).

The results of the observation, in which some physical components were assessed, are summarized in the following Table 3.

In Figure 5, the average degree of residents' attachment to their neighborhood is determined for each factor by Scheffe and Tukey tests in SPSS software. To determine the variables that influence the feeling of connectedness and their impact factor, the variables asked in the questionnaire were analyzed. The factors of satisfaction with the size of the building, perceived attractiveness, access to public spaces and facilities, and neighborhood safety are considered general variables of physical potential. Social interactions and community activities, and social ties and neighborhood familiarity are taken as social engagement. Other variables of feeling homesick in the neighborhood, the feeling of strangeness in the neighborhood, the feeling of being part of the neighborhood, and the desire to move are considered a variable of attitudinal attachment. Finally, the factors of equal representation and common values of residents, satisfaction with order and upkeep, and public participation in place are taken as the variables of culture

and value, order, and participation, respectively. According to the structural model identified in Figure 5, the dependent variable is influenced by several independent variables which correlate with one or 2 other variables and affect each other. The attitudinal attachment variable indirectly affects the sense of attachment to the neighborhood through the social engagement variable. Both variables, participation, and order affect attachment to the neighborhood through the physical potential variable. In addition, the culture and values variable not only directly affects sense of attachment but also has an impact on the social engagement variable and indirectly affects the sense of attachment indirectly.

According to data drawn from the questionnaires and field observations, the Azimiyeh neighborhood outperforms in 6 items of satisfaction with the integration of public spaces and facilities with residential areas ($M=4.25$), satisfaction with the size of buildings ($M=3.85$), access to public participation ($M=3.90$), neighborhood safety ($M=3.40$), the feeling of being a part of neighborhood ($M=3.60$), and perceived attractiveness ($M=3.95$). In other words, the physical condition of the Azimiyeh neighborhood is outstanding among other selected neighborhoods. The Owj neighborhood scores better on several social factors such as equality and common values ($M=3.10$) among residents, social interactions and community activities ($M=3.45$), satisfaction with the lives of relatives and friends ($M=3.05$) in the neighborhood, homesickness for the neighborhood ($M=3.70$), feeling of strangeness in the neighborhood ($M=4.50$), and the feeling of being a part of the neighborhood ($M=4.15$). Due to the existence of commercial spaces in the main axis of the Owj neighborhood, social interactions are relatively high. The Baraghan neighborhood reportedly has the highest housing duration ($M=14.30$) among the other case studies. This factor has resulted in relatively high social interactions in the Baraghan neighborhood. In contrast, the length of residence in Baghestan is the lowest ($M=8.80$), which has resulted in the fewest social interactions ($M=2.6$). After Baghestan, the Azimiyeh neighborhood has the lowest level of social interactions ($M=2.8$). This can be explained by the lack of social spaces that could have encouraged interactions between residents.

In terms of physical factors, the statistical findings indicate that neighborhood safety is relatively high for Owj ($M=3.65$) and

Table 4.
Coefficient of Correlation

		Factors	Neighborhood	Mean		SD	t	P	
Physical Components	<i>Satisfaction with size of building</i>	Azimiyeh (N1)		3.85	26.94	4.37	0.000	.445	
		Owj (N2)		3.55	24.73	5.58			
		Baghestan (N3)		3.45	24.21	5.18			
		Baraghan (N4)		3.45	24.21	5.18			
	<i>Perceived attractiveness</i>	Azimiyeh (N1)		3.95	35.32	5.26	0.000	.249	
		Owj (N2)		3.60	25.34	5.20			
		Baghestan (N3)		2.50	18.26	3.65			
		Baraghan (N4)		2.30	18.11	3.59			
	<i>Access to public spaces and facilities</i>	Azimiyeh (N1)		4.25	27.22	5.47	0.000	.020	
		Owj (N2)		3.95	27.32	5.26			
		Baghestan (N3)		3.50	24.25	5.11			
		Baraghan (N4)		3.65	25.40	5.20			
	<i>Neighborhood safety</i>	Azimiyeh (N1)		3.40	24.01	5.35	0.167	.143	
		Owj (N2)		3.65	25.40	5.20			
		Baghestan (N3)		2.65	18.38	5.12			
		Baraghan (N4)		2.65	18.38	5.12			
	<i>Satisfaction with order and upkeep</i>	Azimiyeh (N1)		3.05	23.14	5.01	0.183	.489	
		Owj (N2)		3.05	23.14	5.01			
		Baghestan (N3)		3.30	23.78	5.00			
		Baraghan (N4)		2.55	18.29	4.23			
Social Components	Attitudinal attachment	<i>Desire to move</i>	Azimiyeh (N1)		2.70	18.44	4.38	0.127	.434
			Owj (N2)		3.15	23.32	5.04		
			Baghestan (N3)		2.75	18.52	5.03		
			Baraghan (N4)		3.55	24.73	5.19		
		<i>Feeling of being part of neighborhood</i>	Azimiyeh (N1)		3.60	25.34	5.20	0.163	.354
			Owj (N2)		4.15	26.94	5.40		
			Baghestan (N3)		3.40	24.01	5.16		
			Baraghan (N4)		3.50	24.25	5.18		
		<i>Feeling of strangeness in neighborhood</i>	Azimiyeh (N1)		4.15	26.94	5.42	0.000	0.452
			Owj (N2)		4.50	27.45	5.88		
			Baghestan (N3)		3.60	25.34	5.20		
			Baraghan (N4)		3.80	26.81	4.36		
	<i>Feeling of homesick for of neighborhood</i>	Azimiyeh (N1)		3.25	23.48	5.02	0.106	.470	
		Owj (N2)		3.70	25.50	5.22			
		Baghestan (N3)		3.25	23.62	5.14			
		Baraghan (N4)		3.40	24.01	5.16			
	Semantic attachment	<i>Social ties and neighborhood familiarity</i>	Azimiyeh (N1)		2.65	18.38	4.65	0.000	.382
			Owj (N2)		3.05	23.14	4.98		
			Baghestan (N3)		2.70	18.44	3.01		
			Baraghan (N4)		3.45	24.21	5.18		
	<i>Social interactions and community activities</i>	Azimiyeh (N1)		2.80	18.52	3.25	0.204	0.120	
		Owj (N2)		3.45	24.21	5.18			
		Baghestan (N3)		2.60	18.20	5.24			
		Baraghan (N4)		3.05	23.14	4.21			
	<i>Public participation in space</i>	Azimiyeh (N1)		3.90	27.13	5.26	0.012	.363	
		Owj (N2)		3.30	23.78	4.85			
		Baghestan (N3)		3.70	25.50	5.22			
		Baraghan (N4)		2.60	18.20	4.20			
	<i>Equal representation and common values</i>	Azimiyeh (N1)		2.10	17.46	4.01	0.000	.443	
		Owj (N2)		3.10	23.25	4.98			
		Baghestan (N3)		2.65	18.38	4.65			
		Baraghan (N4)		2.65	18.38	4.65			

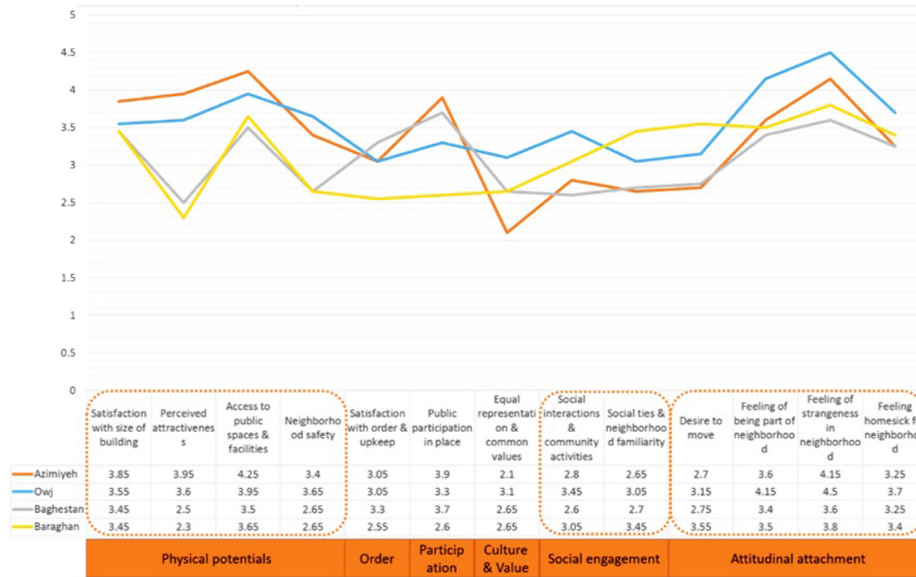


Figure 6. Mean Levels of Physical and Social Factors of Place Attachment in the Neighborhoods.

Azimiyeh ($M=3.40$) neighborhoods. In addition, the level of satisfaction with access to public spaces and facilities is high in the Azimiyeh ($M=4.25$) and Owj ($M=3.95$) neighborhoods due to the existence of commercial and retail spaces for providing residents' daily, weekly, and monthly needs. Satisfaction with recreational areas is especially high because of the proximity of Nabovat Park. Equally, in the Azimiyeh neighborhood, satisfaction with public services and facilities is relatively high due to the existence of various facilities, especially recreational spaces. On the other hand, both Baraghan ($M=2.65$) and Baghestan ($M=2.65$) are reported to have the lowest rate of safety. In Baghestan, due to the existence of numerous segregated lands among residential blocks and the lack of commercial spaces, neighborhood safety, and social supervision are low, especially during the night hours. The levels of satisfaction in both Baghestan ($M=3.50$) and Baraghan ($M=3.65$) neighborhoods are low due to the lack of public services and facilities integrated with residential areas. Although in the Baraghan neighborhood, due to the location of the old Bazar of Karaj in proximity, satisfaction with commercial facilities is relatively high, the lack of other public facilities (e.g., recreational spaces) has led to a lower level of satisfaction among the residents. As regards satisfaction with the size of buildings in the neighborhoods, Azimiyeh ($M=3.85$) and Owj ($M=3.55$) neighborhoods come first and second respectively, while western Baghestan ($M=3.45$) and Baraghan ($M=3.45$) neighborhoods represent the lowest levels of satisfaction with the size of buildings. In the aspect of perceived attractiveness, Azimiyeh ($M=3.95$) and Owj ($M=3.60$) neighborhoods come first compared to Baghestan ($M=2.50$) and Baraghan ($M=2.30$) neighborhoods due to the existence of commercial spaces in the main axis of the neighborhood, expensive and high-quality neighborhoods, appealing architectural/urban design of buildings, and high levels of walkability due to proximity of a local park.

In terms of social factors, the desire to move is relatively high in the Baraghan neighborhood ($M=3.55$) due to its inappropriate physical conditions. Although it has relatively high levels of some social characteristics (e.g., social ties and neighborhood familiarity, and equal representation and common values

Table 5. Multiple Comparisons of the Mean Level of Attachment in the Neighborhoods (Scheffe Test)

P	SD	Mean	Neighborhoods	
.74	2.04	-2.30	Owj	Azimiyeh (N1)
.32	2.04	3.85	Baghestan	
.40	2.04	3.55	Baraghan	
.04	2.04	6.15	Baghestan	Owj (N2)
.05	2.04	5.85	Baraghan	
.74	2.04	2.30	Azimiyeh	
1.00	2.04	-0.30	Baraghan	Baghestan (N3)
.32	2.04	-3.85	Azimiyeh	
.04	2.04	-6.15	Owj	
.40	2.04	-3.55	Azimiyeh	Baraghan (N4)
.05	2.04	-5.85	Owj	
1.00	2.04	0.30	Baghestan	

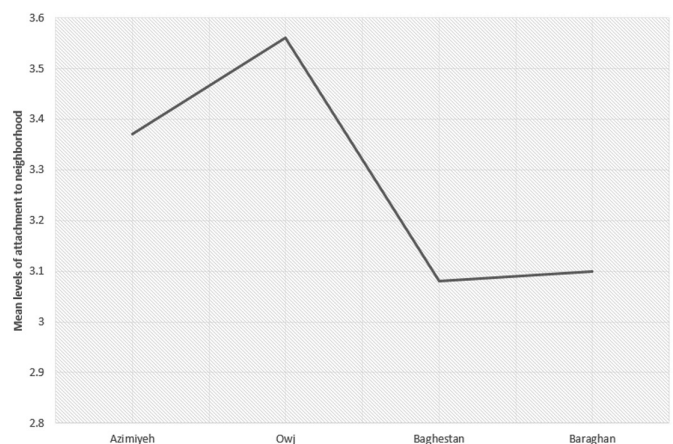


Figure 7. Residents' Average Levels of Attachment to Their Neighborhoods.

of residents that have led to a high level of feeling homesickness and a low level of feeling of strangeness in the neighborhood), the willingness to leave the neighborhood is high. After Baraghan, the Owj neighborhood has the highest level of desire to move ($M=3.15$). Data collected from interviews and questionnaires indicate that this neighborhood has the highest levels of social prestige and social characteristics, but the main reason for its resident's willingness to move is access to better physical conditions and facilities. By contrast, Azimiyeh has the lowest level of desire to leave the neighborhood ($M=2.70$) due to some physical factors (e.g., satisfaction with the size of buildings, satisfaction with the maintenance of streets and walkability, and medium density of buildings in its context). Same as Azimiyeh, the level of desire to move into the Baghestan neighborhood is low ($M=2.75$). It seems that newly constructed buildings are the main reason why people have less willingness to leave this neighborhood. Table 4 shows the physical and social status of each neighborhood in the hierarchy according to the assessment of the average level of each factor in the neighborhoods (Table 4 and Figure 6).

The results of one-way ANOVA (analysis of variance) in multiple ways for comparison of attachment levels to the neighborhoods are presented in Table 5. Considering P -value ($P < .05$), the level of attachment varies in the neighborhoods. According to the results of both Scheffe and Tukey tests, Owj neighborhood has the highest level of attachment, and then, Azimiyeh neighborhood comes second. Baghestan and Baraghan neighborhoods have the lowest level of place attachment (Table 5 and Figure 7).

Conclusion and Recommendations

Place attachment plays a great role in creating and increasing the levels of responsibility, cooperation, and well-being of residents in the neighborhoods. It also provides an effective way to improve living conditions. From the social perspective, attachment to a place provides an appropriate opportunity for residents to participate in collective activities to cope with environmental threats and common concerns. In terms of physical factors, they are known to influence the formation and continuity of human identity and socio-collective identity. Research findings indicate that the physical characteristics of neighborhoods cannot independently result in place attachment. Although the Azimiyeh neighborhood has the best physical condition rather than other case studies, the Owj neighborhood is reported to have the highest level of place attachment due to its strong degrees of social factors. In other words, compared to physical factors, social factors play a significant role in increasing the sense of attachment to a neighborhood. Accordingly, it is concluded that non-physical factors are more effective in the formation of collective memories and a sense of attachment than physical factors. Both Baraghan and Baghestan neighborhoods are placed at the lower levels of attachment to the neighborhood. Owj and Azimiyeh neighborhoods have better physical conditions compared to other neighborhoods. Integrating physical factors with proper social characteristics has resulted in higher levels of place attachment among the residents. On the other hand, even though the Baraghan neighborhood has relatively appropriate degrees of some social factors, it is placed at the lower level of place attachment due to the poor physical conditions.

Generally, the present study showed that the differences in the sense of place attachment degrees signify the influence of social

and physical factors. However, the social dimension plays a stronger role than the physical dimension. In addition, the results showed that factors such as social interactions and easy access to amenities directly contribute to residents' attachment to their neighborhoods. However, other factors indirectly affect attachment, such as order and maintenance, attitudes toward the neighborhood, and public participation in the neighborhood.

Limitations and Research Implications

Although the approach handled in this study was precise—enough to explain the results, but some flaws and limitations affect this work. For instance, the population here included 180 residents and it should be increased the number for future studies to avoid omitted variable bias. Therefore, it is suggested to future researchers to benefit from a sample of more respondents. Our findings should be interpreted in the light of their limitations. Additionally, the number of articles that we include in our meta-analysis study is relatively small as only these studies meet our inclusion criteria. In fact, not many articles have considered the socio-physical structure of neighborhoods on residents' sense of attachment to place. Therefore, the generalizability of our results is limited by these restrictions. Due to the limitations of the number of studies that are available, we have not differentiated effect size derived from place attachment as a global construct from one of its dimensions. Therefore, our results should be interpreted with caution.

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