Spatial-Social Place Attachment:
Impact of Spatial-Social Co-existence on Place Attachment in
Sociable Places of Architectural Schools Setting;
Case Studies: Art University and Azad University of Architecture, Tabriz, Iran

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Abstract
The present study is focused on place attachment from environmental designers' point of view. The study's aim is to offer a helpful and practical model of place attachment for its audience; this is done using the Spatial-Social Place attachment (SSPa) model. Based on this model's hypothesis, place attachment has two aspects: spatial and social; a purposeful and methodical (systematic) study of these two aspects produces reliable and practical results on the subject of place attachment for architects and environmental designers. To study and complete the proposed model, the writers selected architecture schools located in Tabriz as their behavioral settings. Based on the SSPa model, visual base systematic field studies, mental mappings, behavioral mappings, deep interviews, and direct observation of case studies were conducted. Ultimately, designing recommendations in the form of factors influencing place attachment in the faculty’s gathering places are as follows: 1) physical form; 2) activities; 3) climate; 4) views and landscapes; 5) privacy; 6) elements and furniture; 7) places in the vicinity of a gathering place. By specifying the factors influencing place attachment in behavioral-social settings, the practical outputs of this study intended for designers and architects proved the validity and efficiency of the SSPa model.

Keywords: Place attachment, Spatial-Social place attachment, Architecture schools, Sociable places, Iran.

1. Introduction
1.1. SSPa, an appropriate model for environmental designers
Attachment to a behavior setting has received considerable attention in the environmental design and environmental psychology. On one hand, place attachment is regarded as an important issue in environmental psychology (Raymond, Brown & Weber, 2010) and some researchers have tried to expand the multi-faceted and non-designing-related aspects of this issue by offering models designed based on mostly quantitative methodologies (Hamzeieha & Tabibian, 2018; ABU-GHAZZEH, 1999; TVERSKY, 2003; Hipp et al., 2015; Moos, 1978). On the other hand, according to Lang (1987), designers have complete freedom to develop pseudo-scientific theories and models with better prediction abilities in the realm of environmental design by making use of paradigmatic theoretical principles. By considering these issues, in the present study, attempt has been made to propose a comprehensive model in which two seemingly different approaches to place attachment are inclusively merged. Thus, beyond their own paradigmatic theoretical principles, designers take both social and spatial aspect into consideration in order to boost place attachment in users. Regarding these two approaches, one is related to sociologists and psychologists and another is concerned with environmental designers and architects (Whyte, 1980; Lynch, 1960; Hidalgo & Hernandez, 2001; Hummon, 1992; Moore & Graefe, 1994), are: 1. place attachment influenced by people’s social relationships, personal relationships, behavior patterns, mentalities, mentions, and beliefs; all of these factors can be considered as one approach called “Social Place Attachment”; and 2. place attachment influenced by physical architectural elements, spatial configuration, form, and geometry; all of these factors can be categorized under one approach called “Spatial Place Attachment” (McMillan & Chavis, 1986, p. 9; Mannarini et al., 2006; Francis et al., 2012; Mehta & Bosson, 2010). Therefore, in order to develop the SSPa (Spatial-Social Place attachment) model, both phenomenological and scientific paradigms have been used, i.e., comprehensive field studies based on observation and collection, and graphical and statistical analysis methods.

The main purpose of the current study is to offer a model with which designers could identify the spatial and social factors influencing place attachment and use them in designing public space. The goals of the current paper are as follows:
1. Offering a spatial-social place attachment model
2. Offering and explaining multiple methodologies for studying this model and arriving at practical results for users
3. Finally, in addition to confirming the efficiency of the proposed model for designers, a list of

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recommendations for managing people’s attachment to behavioral-social settings will be presented.

1.2. Sociable places, an appropriate case study to be analyzed using SSPa model

A group of studies has shown that the concept of place attachment is closely related to place identity (Proshansky, Fabian, & Kaminoff, 1983, p. 59). Place identity is a cognitive structure which contributes to the social identity process (Pretty, Chipuer, & Bramston, 2003). Therefore, place attachment is realized in accordance with the definition of place identity in sociable places (Hay, 1998; Uzzell, Pol, & Badenas, 2002; Hernandez et al., 2010); and this is one of the reasons why sociable places were chosen to study place attachment in public spaces.

Generally, sociable places have the main characteristics of a behavioral setting. (Fig. 1) There are four reasons for this (Carmona et al., 2010; Gehl, 2010; Madanipour, 1996; Whyte, 1980; Lynch, 1960): first, these places are behavior-bound; that is, they provide appropriate contexts for the right social behaviors and relations to occur between people. Second, their configuration indicates the spatial and formal features of the place. Third, they are time-bound; that is, they provide a context for various behaviors and events in different time periods (Spartz & Shaw, 2011). Fourth, these places are effective in shaping the users’ mental images (Shamsuddin & Ujang, 2008; Schulz, 1991); therefore, in these places, both the spatial and social aspects can attach people to a place.

Fig. 1. Analyzing the meaning of place, place attachment, and behavioral setting using the literature review.

On the other hand, sociable places are suitable behavioral settings in educational environments. Therefore, developing clearer architectural methods for designers can contribute to the socializing of students, their cognitive development, and fulfilling their individual and collective needs (Kasali & Doğan, 2010). On a macro scale of public spaces, considering the writers’ life experiences, sociable spaces in faculties of architecture and collective needs (Kasali & Doğan, 2010). On a macro scale of public spaces, considering the writers’ life experiences, sociable spaces in faculties of architecture and so on. These places play an important role in bonding people to the premises especially in educational environments (Abu-Obeid & Al-Homoud, 2011).

1.3. Literature review

The ways in which people interact with each other and places are important for both environmental designing and behavioral sciences (Rolliero & Piccoli, 2010). Experiencing the place has been studied from different aspects such as a sense of place (Husserl, 1954; Jorgensen & Stedman, 2001), place dependence (Stokols & Shumaker, 1981), community sentiment (Hummon, 1992), sense of community (McMillan & Chavis, 1986), and community identity (Puddifoot, 1994). Among all these aspects, the idea of place attachment is a shared concept (Altman & Low, 1992; Brown, Perkins, & Brown, 2003; Giuliani, 2003; Herma, SalazarLaplace, & Hess, 2007; Hidalgo & Hernandez, 2001; Knez, 2005; Lewicka, 2005; Manzo, 2003).

1.3.1. Place attachment

Place attachment is a process (SUGIHARA & EVANS, 2000) and a multi-faceted and the complicated phenomenon which includes several aspects of people-place bonding and also deals with mutual effect and emotions, knowledge, beliefs, and behavior in reference to experiencing a place (Altman & Low, 1992; Chow, 2008); this phenomenon has been studied by many researchers (such as Billig & Zorkraut, in press; Giuliani & Feldman, 1993; Low, 1992; Mesch & Manor, 1998). Place attachment is an emotional bond between the individual and the environment (Sattarzadeh, 2018; Fried, 2000; Hidalgo & Hernández, 2001; Altman & Low, 1992; Relph, 1976; Schumaker & Taylor, 1983; Tuan, 1974; Tuan, 1977; Qian, Zhu & Liu, 2011). This environment includes the constructed and the social place as well.

1.3.2. Social attachment to a place

Some mentioned studies formulate a place attachment as a social phenomenon following the same rules as place identity (Tajfel, 1981; Tajfel & Turner, 1979; Twigger-Ross & Uzzell, 1996). Also, some researchers stress the fact that behavioral aspects such as social participation and activity remarkably influence the development of place attachment (BILLIG, 2006). According to these studies, social attachment to a place is a fundamental aspect of place attachment.

1.3.3. Spatial attachment to a place

Place attachment can strengthen the relationship between an individual and a behavioral setting (Hidalgo &
Hernandez, 2001; Hummon, 1992; Moore & Graefe, 1994); this issue has often been overlooked by researchers of social sciences (Creswell, 2003) and this makes it necessary to study spatial attachment to place. In fact, a user is attached to a behavioral setting when his functional needs are met (Williams et al., 1995; Korpela, 1989, Korpela et al., 2009) and that place incorporates the triple elements of cognitive, affective, and conative types simultaneously, which is undoubtedly a result of spatial qualities and formal characteristics in that place (Jorgensen & Stedman, 2001; Low & Altman, 1992; Scannell & Gifford, 2010; Kyle, Jun & Absher, 2014).

**Place** is made up of three broad and interrelated parts: first: form and spatial configuration or physical settings; second: meanings, attitudes, and beliefs influenced by the individual’s internal psychological and social processes; and third: behaviors and activities carried out in the place (Canter, 1977; Relph, 1976; Canter, 1997, Smaldone, Harris, & Sanyal, 2005; Stedman, 2003; Stokols & Shumaker, 1981). (Fig. 2)

1.3.4. The base model

In the current study, Scannell and Gifford’s model (2010) has been used as the theoretical framework (Fig. 3) and the SSPa model has been developed based on this model and also the field findings of this research.

2. Materials and Method

2.1. Case studies

Gathering places have been analyzed in two architecture faculties: Tabriz Islamic Art University located in downtown Tabriz, and Islamic Azad University of Tabriz located 12 kilometers east of Tabriz. These two faculties have been chosen for the following reasons: 1. considering the group and workshop activities, there is an intimate social relationship between students in architecture faculties. Therefore, these places are good cases for the SSPa model; 2. One of the study methods in the present paper is mental mapping; because of their familiarity with sketching and graphic presentation and expression, architecture students can offer better and more practical drawings. Since both colleges are based in Tabriz and students in both faculties have the same major, our study’s variety in terms of culture and also educational degree and major was reduced and this will help homogenize the cases as much as possible. Another important parameter is the different architectural style of these two colleges; the building of Tabriz Islamic Art University’s faculty of architecture is a classic collection of ancient houses dating back to more than 150 years ago which have been rehabilitated for current use. The presence of central courtyards inside this building has caused most of the gatherings to occur in the spaces related to them. In comparison, Islamic Azad University’s faculty of architecture has a modern building aging around 15 years and most of its gatherings are held in indoor spaces. This variety of spatial makes the results of our research more comprehensive and valid. (Fig. 4)
These data were collected between February 2014 and January 2015. The approximate number of students in Tabriz Islamic Art University was 285 and in Islamic Azad University of Tabriz 365 and in total, 650 based on year-student. Gender distribution, which follows the rules and regulations of the Iranian system for university student admission, was %51 male – %49 female (due to an equal university student admission system for both genders in two semesters) for Tabriz Islamic Art University and %57.5 female – %42.5 male for the Islamic Azad University of Tabriz. The students’ ages range from 18 to 34. According to statistics provided by the faculties, %85 of students in the Islamic Azad University of Tabriz and %65 of students in Tabriz Islamic Art University was natives to East Azerbaijan province, and %25 of them were from neighboring provinces with very similar cultures and backgrounds; therefore, a large part of the cultural variables of the study can be excluded.

2.2. Methodology in general

In the SSPa model (section 1-1), methods for case studies are chosen in a way that both spatial and social aspects are included. Therefore, studies are done in the following two scopes:

1. Study of observable cases:
   a. Physical form of behavioral settings;
2. Behavior and activities of users. Field observation methods, mapping, pictures, and 3-D models, daily note taking and behavior mappings (BM) for recording users’ behaviors and the relationships between these behaviors and the physical form of behavioral settings are recommended.
3. Study of non-observable cases:
   a. Ideas and thoughts;
4. Satisfaction level and opinions about the current status. Methods such as deep interview with close-ended questionnaires and mental mappings for users’ mental and cognitive studies are recommended. (Fig. 5)

2.3. Methodology for observable case studies

2.3.1. Observation

In the study of sociable places, due to having both behavioral and cognitive approaches (Gehl, 2013), it is necessary to carry out planned and systematic field observations before starting to design (COSCO, MOORE & ISLAM, 2010). To do so and to create a comprehensive list of users’ activities, certain site zones are monitored. (Fig. 6) The monitoring is repeated until no new behavior or activity occurs in the spaces (in the case of this paper, it took three months). The recorded behaviors are necessary for encoding and qualitatively analyzing mental mappings. (Table 1)

2.3.2. Behavior mapping

Behavior mapping is an unobtrusive, direct observational method for recording the location of subjects and measuring their activity levels simultaneously (COSCO, MOORE & ISLAM, 2010). Results help researchers understand the behavioral dynamics of the built environment (Bjorklid, 1982; Kinoshita, 2007; Moore, 1978; Moore, 1986; Moore, 1997).
Behavior mapping now provides environment–behavior researchers with an efficient method for gathering, processing, analyzing, and representing data. The methods merged behavior observations with GIS mapping (Golicnik & Thompson, 2010) in order to create databases of an empirical environment-behavior interactions that were directly connected with spatial patterns.

Behavior mapping is based on the concepts of behavior setting (Barker, 1976; Heft, 1998) and affordance (Gibson & Pick, 2000; Gibson, 1986). Behavior settings are composed of people, physical components, and behavior. Linking setting type and level of physical activity is essential for understanding the impact of design (Trost, Ward & Senso, 2010).

Behavioral mappings were collected in two faculties over the course of one year. Considering the students’ lesson plans and their presence hours in the faculty and their free time, behavior collection timetable was carefully set. Collections were done in all four seasons on 9–15 April 2014, 23–29 June 2014, 17–23 October 2014, and 13–19 December 2014. All collections were done three days a week from morning until evening with an emphasis on busy hours in the faculty. All the information was both recorded on base maps and behavioral tables.

### Table 1
Table show the activities carried out by individuals at faculties under study: Preliminary field observations completed the list of activities.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Male</th>
<th>Female</th>
<th>Activity</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow walking</td>
<td>🕳️</td>
<td>🖐️</td>
<td>Group game</td>
<td>🖐️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Fast moving</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Feeding a cat</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>cycling</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Dancing</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Sitting on the floor</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Sitting under a tree</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Sitting on the podium</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Doing homework</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Sitting on the bench</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Snowball fighting</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Sitting at the edge of the pond</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Water playing</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Standing</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Singing/ Listening to music</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Speaking</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Exhibition</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Smoking</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Class outdoor</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Reading</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Sitting on stairs</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Writing</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Sitting in front of a window</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Sketching</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Working with laptop/cell phone</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Taking photos</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Eating fruit</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Eating/Drinking</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Walking together</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Talking on the phone</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Sitting together</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Making models</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Lying</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
<tr>
<td>Inspecting</td>
<td>🕳️</td>
<td>🕳️</td>
<td>Lying on the bench</td>
<td>🕳️</td>
<td>🕳️</td>
</tr>
</tbody>
</table>
2.4. Methodology for non-observable case studies

2.4.1. Mental mapping

Mental mapping is one of the most valuable tools for studying mental models (Hannes, Janssens & Wets, 2009). The relation between cognitive factors and mental map properties is widely recognized in agent-based modeling literature (Arentze & Timmermans, 2000). These models make it possible to predict potential dangers beforehand, to foresee what might happen in future (Kaplan & Kaplan, 2009; Kaplan & Kaplan, 2005).

Since place users in our case studies are architecture students, all mental mappings are neat sketches and handwritten directions with valuable information about form, climate, neighborhood, and the like. (Table 2)

Due to participation restrictions in the mental mapping method and the number of students in the faculties, a total of 120 mental mappings were collected (approximately 20% of students in the two faculties for each year-student). 70 of these students were from Tabriz Islamic Art University (60% female and 40% male; 10 freshman students, 20 sophomore students, 30 junior and senior students, and 10 M.A. students) and 50 of them were from Islamic Azad University of Tabriz (52% female and 48% male; 5 freshman students, 15 sophomore students, 20 junior and senior students, and 10 M.A. students).

At this stage, people were asked to sketch a sociable place in their faculty to which they felt the most attached. They were totally free in choosing their presentation method, but because of their education in architecture, they were asked to present their information in the form of plans, façades, section, perspectives, diagrams, and other sketch-related concepts. This helped the sketches become relatively uniform and ultimately made it easier to analyze and document them.

2.4.2. Deep interview and questionnaire:

Through conducting deep interviews and qualitative analyses on mental mappings, invaluable results can be acquired in the field of cognitive studies (Boğac, 2009). A total of 100 people were deep interviewed (60 students from Islamic Art University and 40 from Azad University) and all of the participants had sketched their mental mappings before. All the deep interviews were recorded and analyzed along with their mental mappings using the ATLAS.ti application. In these types of research methods, people’s unwillingness to do deep and long interviews affects the number of participants. These restrictions help us understand why so few people participated. All the deep interviews were conducted after the sketches were completed and they were recorded with the participants’ permission. The focus of these conversations, within the framework of deep interview, was based on the literature, field observations, and predetermined BM and was also about an individual’s sketch. The topics covered in deep interviews are faculty’s behavioral-sociable settings, individual’s satisfaction with and attachment to faculty, architectural physical form, climate conditions, view and perspective, activities and behavior, privacy, furniture, and functions in the vicinity of the settings. For instance, part of a deep interview with a student and his sketch (Fig. 7) are provided:

- Question: What do you think of faculty’s gathering places?
  - Answer: This faculty, with its traditional architecture and good interaction with its green spaces, has great potential for student gatherings … I daresay that one of the most important factors that makes students attached to a faculty is its abundant collective spaces.

- Question: So you define gathering places as directly related to place attachment?
  - Answer: Yes, that’s definitely the case.

- Question: What changes do you think are necessary to be made in the faculty environment?
  - Answer: Changes in the form of walls for increasing privacy and green spaces and the like.

In addition to the deep interview, 200 questionnaires with close-ended questions were filled out by students to increase the accuracy of the SPSS statistical quantities analyses. 120 of the students were from the Islamic Art University and 80 of them from Azad University. It was attempted to include an equal number of students from all majors as much as possible. These questionnaires consisted of three parts: a. information about users’ satisfaction with their faculty environment; b. form preferences for sociable places; and c. users’ expectations and cognitive experiences from the environment.

3. Material’s Analysis

The material is analyzed under the following three categories:

1. Analyzing the material resulting from field observations; the results were used to study the relationship between people and the environment. Classifying data in GIS made a considerable part of field information available for analysis. These data eventually formed the codes and keywords in mental mapping and questionnaires.

2. Qualitative analysis of mental mapping; qualitative analysis of sketches and questionnaires was done by ATLAS.ti. The codes extracted from mental mappings using software features were assigned to the elements discussed in the sketches. Finally, factors for design recommendations were extracted using the relationships defined between the elements.

3. Analyzing deep interviews and questionnaires; similar to the qualitative analysis of mental mappings, deep interviews were analyzed and acted as a complementary database alongside mental scaling to complete the list of factors affecting sociability. Questionnaires with close-ended questions were analyzed using quantitative analysis, frequency, and degree of importance of factors. Finally, the SSPa model and the important factors were discussed and confirmed.
Table 2
Examples of mental mappings and sketches drawn by students answering the question of features of an ideal sociable place in a university.

<table>
<thead>
<tr>
<th>Mental mapping sketch</th>
<th>Participant information</th>
<th>Mental mapping sketch</th>
<th>Participant information</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Mental mapping sketch 1" /></td>
<td>Male, 8 semester architecture student, Azad University</td>
<td><img src="image2" alt="Mental mapping sketch 2" /></td>
<td>Female, 6 semester architecture student, Art University</td>
</tr>
<tr>
<td><img src="image3" alt="Mental mapping sketch 3" /></td>
<td>Female, 4 semester architecture student, Azad University</td>
<td><img src="image4" alt="Mental mapping sketch 4" /></td>
<td>Male, 5 semester architecture student, Art University</td>
</tr>
<tr>
<td><img src="image5" alt="Mental mapping sketch 5" /></td>
<td>Female, 6 semester urban design student, Azad University</td>
<td><img src="image6" alt="Mental mapping sketch 6" /></td>
<td>Male, 4 semester architecture student, Art University</td>
</tr>
<tr>
<td><img src="image7" alt="Mental mapping sketch 7" /></td>
<td>Male, 5 semester architecture student, Azad University</td>
<td><img src="image8" alt="Mental mapping sketch 8" /></td>
<td>Female, 2 semester architecture senior student, Art University</td>
</tr>
<tr>
<td><img src="image9" alt="Mental mapping sketch 9" /></td>
<td>Female, 2 semester architecture student, Azad University</td>
<td><img src="image10" alt="Mental mapping sketch 10" /></td>
<td>Male, 8 semester architecture student, Art University</td>
</tr>
</tbody>
</table>
Fig. 7. An example of a sketch whose deep interview was presented above. In this sketch, many points are mentioned. All these concepts have been used as input in ATLAS.ti application after being coded.

Fig. 8. A table showing some records of a daily observation in Qadaki House, in Architecture Faculty of Tabriz Art University and the example of a map of layers of daily records for three different days.

### 3.1. BM analysis and field observations

Data resulted from observations and behavioral collections were layered through GIS for ease of analysis. (Fig. 8) Using GIS causes the observations to be classified under several layers such as gender, time, age, time spent at a behavioral setting, movement direction, temperature, wind, dryness, sunshine, and shade. People’s activities are analyzed based on these factors. Then, based on frequency of behaviors (Table 3) and using appropriate analytically GIS-dependent queries, qualitative, environmental and behavioral analyses were conducted. Here, queries refer to conditional and logical sentences such as: specify (in a behavior mapping) the people who are sitting on the bench under the trees’ shade near the pool.
Table 3
Sum of number of people involved in activities in three broad period of observation for all two observed architectural faculty in Tabriz.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Tabriz Art University</th>
<th>Tabriz Azad University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
<td>All</td>
</tr>
<tr>
<td>Slow walking</td>
<td>42</td>
<td>28</td>
</tr>
<tr>
<td>Fast moving</td>
<td>24</td>
<td>15</td>
</tr>
<tr>
<td>cycling</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Sitting on the floor</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Sitting on the podium</td>
<td>44</td>
<td>38</td>
</tr>
<tr>
<td>Sitting on the bench</td>
<td>43</td>
<td>30</td>
</tr>
<tr>
<td>Sitting at the edge of the pond</td>
<td>21</td>
<td>17</td>
</tr>
<tr>
<td>Standing/ Speaking</td>
<td>47</td>
<td>52</td>
</tr>
<tr>
<td>Smoking</td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td>Reading</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>Writing</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>Sketching</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>Taking photos</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Eating/Drinking</td>
<td>31</td>
<td>38</td>
</tr>
<tr>
<td>Talking on the phone</td>
<td>32</td>
<td>40</td>
</tr>
<tr>
<td>Making models</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Inspecting</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Group game</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>Feeding a cat</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Dancing</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Sitting under a tree</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Doing homework</td>
<td>21</td>
<td>32</td>
</tr>
<tr>
<td>Snowball fighting</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>Water playing</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Singing/ Listening to music</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>Exhibition</td>
<td>41</td>
<td>59</td>
</tr>
<tr>
<td>Class outdoor</td>
<td>22</td>
<td>25</td>
</tr>
<tr>
<td>Sitting on stairs</td>
<td>33</td>
<td>12</td>
</tr>
<tr>
<td>Sitting in front of a window</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Working with laptop/cell phone</td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td>Eating fruit</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td>Walking together</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Sitting together</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>Lying on the bench</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Fig. 9. An example of coded mental mappings analyzed in the ATLAS.ti application.

3.2. Mental mapping analysis

ATLAS.ti is the tool used for qualitative analyses in this paper. The procedure is as follows: 1. First, sketches were inputted as graphical data called “primary documents” into ATLAS.ti (Hannes, Janssens & Wets, 2009). 2. Then, all the elements in the sketches, whether directly related such as furniture and green spaces or indirectly related such as the premises and so on, were coded based on the codes and keywords resulting from field observations (section 1-3). These codes are referred to as Codes and Quotations inside the application. (Fig. 9); 3. In the coding stage, writers’ comments based on field observations, implied relationships (links) between codes,
and each element’s belonging to main categories (family; for instance, different types of physical forms for behavioral settings in sketches were categorized under the physical form family) were attached to each code. This helped us to create links and hyperlinks between the elements of sketches. It should also be noted that these links ultimately helped us define the relations between important factors, categorize them and provide a list of design recommendations for gathering places.

Because of the importance of mental mapping (MM) qualitative analysis, more explanation is necessary. A total of 41 codes were used in mental mappings; these codes (Fig. 10) are the results of matching the concepts extracted from field observations and mental mappings with graphical concepts expressed in the sketches. It should be remembered that in analyzing these documents a code might have been used differently by people; for instance, a space with corners in the physical form might be represented differently in plans, views or cuts of a sketch. Then, based on the frequency of codes, the bar chart in Fig. 10 was created.

This chart indicates that %80.83 of students interviewed using mental mapping method believe it is necessary to have green spaces and trees in the gathering places of the faculty. Semi-open spaces (%48.3) and shaded spots (%47.5) were also among the important items for students in their mental mappings. Having comfortable chairs for sitting, semi-public space, changing the height of a gathering place to make it noticeable, and creating a good view (listed from the most to the least important respectively) were among the other important items in mental mappings. Having a view of busy paths (%32.3), private spaces (%31.6), corners and recesses (each about %32), and being close to aquatic elements such as pools (%32.5) were among the items pointed out in the sketches. After analyzing the frequency, the results of defining logical relations between concepts and codes led to link and hyperlink outputs. These output links are very helpful since they are comprehensive and reveal the hidden relations between the concepts. (Fig. 11)

For instance, in their mental mappings, %25 of students connected the activity of “sitting on a bench” directly to faculty gathering places. Most of the time, recesses are in the vicinity of trees and green spaces or have a beautiful landscape such as a water fountain; it is obvious that the right choice for this place would be benched. Such a place...
will often be in shade and also close to functional elements such as lamp posts. Considering the analyses conducted and the logical output hyperlinks, all the analyzed parameters can be categorized under 9 groups (each group consisted of similar concepts) called Code Families. (Fig. 12) Based on this; the architectural physical form was the most important factor in creating an ideal gathering place with %91.66. Comfortable chairs (%55), an acceptable level of privacy (%31.66), appropriate activities and behaviors for forming a gathering place (%28.20), a good view of the surroundings and also being indoors/outdoors (%26.66), climate and peace conditions (%26), pleasant surroundings and being close to people-friendly places (%25), and population density with %10 were the important factors for the students interviewed using the mental mapping method. (Fig. 12) All the information about subsets of each of these code families and also the importance and priority of each code can be seen in Figure 11.

3.3. Analysis of deep interviews and questionnaires

In the analysis of deep interviews, MM analysis procedure was repeated with the only difference that input data (primary documents) were audio files of participants being interviewed. Outputs from these analyses along with outputs from previous parts increased the accuracy and value of the analyses and reduced the possible data and analysis deficiencies of the sketches. These deficiencies might be a result of people’s inability to properly express their thoughts graphically or even their unfamiliarity with some of the concepts which were discussed and extracted during the deep interviews. By combining these two methods for identifying cognitive data, users’ thoughts and expectations from a faculty’s behavioral settings connected with the place attachment was extracted.

The questionnaires with short and closed answers were analyzed using SPSS. A total of 200 questionnaires were filled out and 120 of them participated in the sketches and the rest were people who either were not interested in sketching or being interviewed. Frequency analysis based on categories of questions in the questionnaires can be seen in Table 4. Based on this table, the importance of each subset of effective factors, such as architectural physical form which has 5 subsets of recesses, ridges, linear and corner-shaped, corner-shaped with semi-open form, and circular without a corner, is expressed in the form of percentages. In the bellow of Table 4, the degree of importance of all the 7 factors influencing ideal sociable places are listed. The 7 degrees of importance shown based on a student’s faculty are very many, many, many-average, average, average-little, little, and very little. As can be seen, factors related to views and landscapes are of the highest importance to most users; having benches for sitting or key environmental elements such as green spaces, and after that, architectural physical form of the studied behavioral setting, come next in the order of importance for users. According to the results of a quantitative analysis of the questionnaires, %36.8 of Tabriz Islamic Art University students consider their faculty’s gathering places acceptable while %46.1 of Islamic Azad University students have an average level of satisfaction with their faculty’s gathering places; these statistics of students’ satisfaction indicate that sociable places in Islamic Art University are two times more popular than Islamic Azad University. With an analysis of questions, it becomes clear that interest in gathering places and, as a result, reinforcement of place bonding or attachment because of these behavioral settings, is %32.7 in Tabriz Islamic Art University (with an average of %83.7 and more in total) while it is %10 in Azad University (with an average of %75 and more in total); these statistics, in addition to proving students’ satisfaction with and having a high place attachment in the sociable settings of Tabriz Islamic Art University, indicate that place attachment, as mentioned earlier in the literature review section, is directly related to community context settings and people tend to be in busier places which is a sign of success for their community factors. Cognitively and semantically speaking, increasing a behavioral setting’s population, in addition to attracting more people, will increase place attachment in university environment as well; of course, there is a small percentage of students who prefer less crowded places. In sum, two essential conclusions that can be drawn here are: 1. a behavioral setting’s success in attracting crowds is directly related to people’s attachment to that place; and 2. most people tend to be in or join busier behavioral settings (in both public and semi-public places).
4. Results and Discussion

Based on the analyses of this paper, the elements affecting the place attachment in the behavioral settings of architecture faculties were evaluated. These factors can have different effects on people’s gatherings when they are grouped together collectively (i.e., all the factors being involved simultaneously). For instance, a part of the results of this study are as follows: spaces with a semi-open form with shade and in the vicinity of green spaces and trees will have the highest degree of sociability. After sociability spectrum, having a view of busy paths, spaces having more privacy and corners and recesses, and also being close to water fountains and pools are the most important factors in making a place more sociable. Also, in studying the factors separately, it was revealed that physical architecture form has the highest effect on sociability and after physical form, furniture, a decent level of privacy, ability to satisfy users’ functional and behavioral needs, having a good view of the surroundings, and peaceful climate conditions are the most important factors.

In this part, when the SSPa empirical model is used, these factors can be categorized under two groups of spatial factors affecting place attachment and social parameters resulted by behaviors and beliefs affecting place attachment. (Fig. 13) Based on this, factors such as physical form, good climate conditions, view and perspective are categorized under spatial place attachment, and concepts such as privacy and activities in the behavioral settings are categorized under behaviors and beliefs related to users’ social attachment to a place. Also, suitable furniture and surroundings affect users’ behaviors, activities, and mental-cognitive beliefs. Based on the following figure which is a schematic conclusion of results, these factors are interacting with and dependent on both spatial and social aspects of place attachment and
in most cases, it is not possible to draw boundaries between them. They are interrelated and define place attachment together and this makes it necessary to consider the SSPa model.

By expanding the results of this paper’s case studies, the general parameters affecting sociability of a behavioral setting, as an important factor for place attachment, can be provided. It should also be noted that recommendations are merely used for the sake of categorizing factors not prioritizing them; it is obvious that the importance and effect of these factors can differ in other case studies. The general factors are as follows:

1) The physical form of a behavioral setting directly affects the frequency of people’s gatherings. Different types of physical form in the present study are: a. physical form having a recess in the main wall; b. physical form having a ridge in the main wall; c. having a linear and long physical form (these three have corner-shaped spaces often with semi-open forms); d. circular forms, without corners and an almost identical place value for the whole gathering space; e. surfaces with different heights. 2) Users’ activities can increase or decrease their willingness to gather round. Such prominent observed activities are: a. standing, walking, and talking; b. sitting on the ground, platforms, or benches; c. eating, drinking, and smoking; d. reading, writing, sketching, and other activities related to university assignments; e. using technological tools such as cellphones, and laptops, and playing multi-player games. 3) Climate conditions can also affect a behavioral setting’s spectrum of sociability. Climate conditions for indoor and outdoor environments are as follows: a. indoor place without access to the outside (with fixed and controllable climate); b. semi-open space (such as a window front or a balcony which can be both sunny and shady but having access to outdoor climate is important for users); c. outdoor place with a sunny or shady part. 4) View and perspective of a sociable behavioral setting (from inside or vice versa) can affect a sociable setting’s level of sociability. Some of the views and perspectives considered by the writers of this paper are a. having a good and complete view of the surroundings; b. not having a complete view from inside when looking outside or vice versa; c. having a view of busy paths and entrances. 5) The amount of privacy in sociable places is a response to the users’ cognitive, mental and behavioral needs and is an attempt to satisfy these needs. Categorization of observations regarding the levels of privacy are: a. public space; b. private space (which can be out of reach as well); c. semi-public space; d. an exclusive space (e.g. a specific group of classmates, certain gender, etc.). 6) Elements, features, furniture, and facilities inside a sociable place are important because they satisfy mostly functional needs. It is possible that a place has the factors necessary for gatherings but if that place cannot satisfy users’ functional needs, such as not having appropriate furniture, it will have a lower level of sociability. Some of the most important forms of furniture are as follows: a. a place for sitting (bench, platform, cement blocks, stairs, around a fountain, and the like); b. natural elements such as trees, plants, and water; c. functional or noticeable elements (such as lamp posts, floorings, etc.). 7) Proximity to other places and users, referred to as the proximities and premises of a gathering place, can affect the level of sociability in that place: a. proximity to places selling food or drinks (buffets, coffee shops, water fountains); b. proximity to indoor and educational spaces (such as classrooms and ateliers); c. proximity to natural or artificial entertainment areas such as green spaces, fountain, etc.

Fig. 13. The complete SSPa model with its 7 peripheral factors.
Based on the ideas offered in literature review, this conclusion can be completed as follows:

when a behavioral setting has an appropriate architectural physical form (considering each study’s unique case(s)), it will create spatial place attachment (based on behavioral mapping); on the other hand, the more a group of people frequent a place and, as a result, increase the chances of having relations with one another, the more they become social place attachment to that place (according to the information provided by questionnaires and observations). Based on the information provided by mental mappings and also the way sociable places are formed and the way people use them, it could be inferred that place attachment is in fact a set of spatial and social attachments for people and all these interrelated attachments together create a Social-Spatial Place attachment (SSPa).

In other words, based on the SSPa model, a behavioral-sociable setting can be explained using the factors offered in this model so that by changing these factors, the spectrum of sociability in a place changes as well; for instance, it changes from a very sociable place to a less sociable one; and since this behavioral setting has become an inseparable part of place and place attachment, it will influence place quality, sense of place, and the degree of attachment to place; these are a set of spatial and social factors influencing place attachment which were explained under a more comprehensive model called Spatial-Social Place attachment (SSPa).

5. Conclusions

The present article was an analysis of an important topic in studies of environmental psychology called place attachment, and its aim was to present and discuss a model called Spatial-Social Place attachment (SSPa). Decades of studies in environmental psychology have produced various theories and theoretical models with notable implications for psychology and sociology; however, since one of the main audiences for these results are architects and environmental designers, there is a need for models which are more palpable for architects. Criticisms offered by architects regarding most of current models are either content- or method-related. In terms of content, the results of most models are filled with so many different theoretical aspects, conceptual complexities, and abstract ideas that translating them into architectural jargon, which is a jargon of form and body, is very difficult and time-consuming, with mostly unacceptable results. In order to resolve this issue, we need a model which can express theoretical and cognitive results of environmental psychology accurately and can reflect the research contents in architectural form and other architecture-related aspects. The next dominant problem is the methods offered for studies. Most analyses are done quantitatively using quantitative analysis tools such as SPSS. But because of the nature of these studies, quantitative analyses work best when they are conducted together with qualitative analyses, various surveying methods, and field studies in direct contact with users. Therefore, the approach presented in this paper, with an eye on place attachment model, has practical and palpable results for architects and is systematic and visual base methods, as well. Based on this, systematic studies of place attachment, places, and sociable places were conducted. Using the visual base systematic approach and also the framework theoretical model, place (because of its body- and form-related features and also because if reflects meaning, attitude, and behavior) was studied as the most effective factor in creating place attachment. Based on this, place attachment has two aspects: spatial and social; therefore, the best case studies for evaluating SSPa’s accuracy are behavioral-sociable settings in faculties of architecture. Using the proposed model, the writers started to study place attachment in their case studies with a systematic methodology hoping to produce architectural output. According to many references and statistical studies of faculty users, there is a direct relation between place attachment and sociability. The writers collected and studied behaviors, attitudes, meaning, form, and other factors influencing place attachment using the methods discussed in this article. Ultimately, using the SSPa model, which is based on merging place attachment spatially and socially with the configuration of sociable places, design recommendations were developed in the form of factors affecting place attachment in gathering places of a faculty. (Fig. 13) The final 7 factors, which are in turn made up of different subsets, are: 1) architectural physical form of a behavioral setting; 2) activities influencing the formation of a sociable place; 3) climate-related facilities; 4) views and landscapes; 5) privacy of a sociable setting; 6) elements, features, furniture, and facilities of a gathering place; 7) places in the vicinity of a gathering place.

References

Reconnecting with the natural world (pp. 271–298). Cambridge, MA: MIT Press.


