

The Role of Faculties' Public Open Spaces on Students' Place Attachment; Case Study: Faculty of Fine Arts of University of Tehran*

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ABSTRACT

Every year, thousands of individuals leave their houses for studying in universities and experiencing a new environment. In the course of such relocation, one of the main challenges of individuals is the lack of adaptation to the new environment. The present study has been carried out with the objective of explaining the relationship between public open spaces in the faculties and the students' place attachment. Based on the study's theoretical model, place attachment is an emotional, cognitive and behavioral bond between the students and the faculty. On the other hand, the faculty's public open spaces have been defined as the resultant of the physical factors. The study's theoretical model was subjected to test in the fine arts faculty of Tehran University using the survey research method. To gather the data, use was made of a closed-ended questionnaire. Moreover, Structural Equation Modeling was the method of choice for analyzing the answers. In the current research paper, the measurement model of students' place attachment and the faculty's public open spaces were seminally tested; their fit indices were subsequently evaluated and the study's structural model was eventually examined. The study findings indicated that the public open spaces have a significant effect on the students' attachment to place. Corresponding to the study findings, the favorability of the meeting spaces is the most important factor forming and strengthening the attachment to place in the university students. Favorable meeting spaces set the ground for interaction establishment opportunities so they can enhance the social interactions between the students that can per se effectively influence the students' attachment to place. Therefore, according to the study results that indicated the main role of social interactions in the formation of attachment to place in the students, the designing of the faculties' public open spaces should be conducted in such a way that it can result in face-to-face interactions amongst the students to the maximum possible extent. Furthermore, the study results indicated that the favorability of the meeting spaces significantly associated with the existence of artistic or architectural elements and suitability of the green spaces. Artistic or architectural elements play their role by the formation of a distinct and meaningful environmental personality for the students and the green spaces by creating visual fascination.

Keywords: Faculties' Public Open Spaces, Place Attachment, Faculty of Fine Arts, Structural Equation Modeling.

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1. INTRODUCTION

Entering the university is a positive experience and a new opportunity for improving the individuals' personality (Chow & Healey, 2008). The primary goal of the individuals who enter university is improving their scientific level and acquiring professional ability. Also, academic education is an important period of time contributing to the individuals' acquiring of independent and critical thinking (McMillan, 1987, 2008). Acquiring such skills necessitates the existence of a strong "motivation" in the students (Garcia & Pintrich, 1922, 2008). However, the lack of motivation in today's university students is a common problem. So far, instructors and researchers have made a great deal of effort for organizing and developing a method for elevating the university students' motivation (Bidwell, 1990; Van Voorhis, 1995). Researches show that the existence of a strong bond with the environment or, in other words, "attachment to university" can bring about an increase in the students' motivation (Goodenow & Grady, 1993) and it is per se effective in the acquisition of positive academic results (Bergin & Bergin, 2009; Osterman, 2000).

Every year, thousands of individuals leave their houses for studying in universities and experiencing a new environment. In the course of this dislocation, one of the main challenges of the individuals is the lack of adaptation to this new environment. During recent years, the rapid growth in the student population has made most of the academic centers be able to only deal with the quantitative development of the educational environments hence they largely neglected the designing quality of many environments therein. Meanwhile the public open spaces (exterior environment) of these centers have received attention even less than the interior environments in them. This is while the studies show that attachment to place can rely on the physical properties of the place (Lewika, 2011, p. 216) and the experts in the area of designing academic complexes underline the role of public open spaces in the formation of the sense of place (Dober, 1992; Gaines, 1991).

Concentrating on the public open spaces in the faculties, the present study seeks to find their role in the formation of place attachment in the students. Therefore, the main question of the current research paper is that "how are the faculties' public open spaces associated with the students' attachment to place?" And, "How can this relationship be explained?" To answer the study questions, the place attachment is firstly defined and explained and the physical factors of the public open spaces are identified and categorized based on their subjects; then, the study's theoretical model is codified. Afterward, the obtained model is tested using the survey research method in the faculty of fine arts in Tehran's university. In order to gather the data, a closed-ended questionnaire is utilized. Structural equation modeling was used to analyze the data.

2. STUDY LITERATURE

In this section, the description and explanation of the concept "place attachment", identification and categorization of the physical factors related to faculties' open spaces and the relationship between the physical environment and attachment to place are dealt with. The section's summarization leads to the extraction of the study's theoretical framework.

2.1. Place Attachment

Place attachment points to the emotional effect of a place; this sensory, emotional and internal effect of place on human beings is the central core of attachment to place. In fact, place attachment is the symbolic relationship created by the individuals with a place and it gives a common sensory, emotional and cultural meaning to a special space and becomes a basis for the individual and group's perception of the environment (Low & Altman, 1992, p. 5). Place attachment is an aspect of the overall sense of place and a positive emotional attachment developed between an individual and the place (Stedman, 2003b, p. 72). Although individuals' affections towards a place is the essential factor in the formation of place attachment, some of the researches express that there are other facets of the affective aspect playing a more accentuated role in the explanation of place attachment; some others, as well, believe that the emotions alone are not sufficient for explaining the concept of place attachment.

Theoreticians who dealt with the importance of non-affective aspects, described and explained attachment to place as the dependency on the place and its identity (Williams & Roggenbiel, 1989) and, subsequently, there are other researchers who developed a method for assessing attachment to place based on this definition (Semken & Freeman, 2008; Todd & Anderson, 2005). Place attachment points to the place's ability to meet the individuals' needs or, put differently, the opportunities that a place provides for satisfying the individuals' needs and goals (Stokols & Shumaker, 1981) while the spatial identity is an aspect of the self that determines the persons' individual identity in relation to place (physical) (Proshansky, 1978, p. 155). Despite the idea that this approach has been common in explaining the dependency on the place in the studies carried out during the past two decades, it has faced a lot of challenges as pointed out in the recent studies (Hernandez, Hidalgo, Salazar-Laplace, & Hess, 2007; Rollero & Piccoli, 2010).

Scannell and Gifford (2010, p. 5) showed that place attachment, in addition to the affective aspect, includes cognitive and behavioral aspects, as well. In their idea, place attachment is a bond between the individual or group with a place so based on the spatial scale (building, neighborhood, and city), the distinctness extent and social or physical properties of the place vary and it emerges through psychological "affective", "cognitive" and "behavioral" processes. In a qualitative and theory-based study, Scannell and

Gifford codified a 3-aspect model, “person-processes-place”, for describing and explaining place attachment. This model is an organized framework that portrays the diverse definitions of attachment to place and unifies all of the separate and scattered concepts proposed in the prior studies within a single frame (Scannell & Gifford, 2010, p. 8).

The first aspect of the model is the person. Who is going to get attached? And, to what extent is attachment dependent on the individual and collective meanings? The second aspect includes the psychological processes; how is an individual attached? Put it another way, how the affective, cognitive and behavioral processes (bonds) appear in the attachment? The third aspect pertains to the place towards which attachment is felt and it includes properties of the place; to what place an individual feels attached and what is the nature of this place for which attachment in the heart is felt? (Scannell & Gifford, 2010, p. 2).

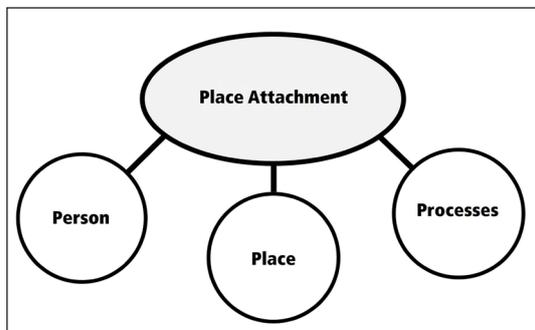


Fig. 1. The 3-Aspect Model of “Person, Processes and Place” for Attachment to Place

Based on the aspect of “person”, place attachment occurs in two levels, namely individual and collective. The individual memories and experiences in place lead to the formation of the meaning of place at individual level (Twigger-Ross & Uzzell, 1996; Manzo, 2005). At the collective level, attachment to place includes the meanings of place shared by individuals. In fact, the cultural commonalities cause the individuals to become attached to a place through shared historical experiences, values and symbols (Virden & Walker, 1999). Religion, as well, is effective in the formation of attachment to place at a collective level. In fact, it is by means of religion that the meaning of a certain place is improved in sacred terms for individuals (Mazumdar & Mazumdar, 2004).

The second aspect of place attachment is the psychological, affective, cognitive and behavioral processes. This dimension pertains to the quality or the process of the place attachment of individuals and groups. These three processes that will be explained in the following sections together constitute the psychological concept of attachment to place (Scannell & Gifford, 2010, p. 2).

The bond between the individual and place is undoubtedly an affective tie. Humanist geographers use special words for describing this bond. For example,

Tuan (1974) expresses the term “topophilia” or “love for a place” for describing this relationship. As believed by him, individuals grant meaning to their places through this affective relationship. From the perspective of Relph (1976), attachment to place is the reliable and affective relationship with the environment that supplies human beings’ essential needs. Environmental psychologists, as well, admit to the main role of affections in the formation of individual-place bond (Hummon, 1992; Brown, Perkins, & Brown, 2003). One of the evidence confirming this phenomenon is the latent affections in the literature on the population dislocation as a result of natural disasters, war, and migration. In fact, individuals tend to express signs of grief and sorrow during these movements upon getting separated from the place for which they feel attached (Fried, 1963; Fullilove, 1996).

The bond between an individual and a place includes “cognitive elements”, as well. Important and meaningful environments are associated with memories, beliefs, meanings, and knowledge for individuals. The cognitive aspect of place attachment includes the construction of meanings for place and binding to those meanings as well as cognitions that facilitate the process of feeling closeness to the place. Individuals with experiences about important incidents and spending of their memorable times in a given environment tend to attribute meanings to it and get bonded to them (Hunter, 1974; Manzo, 2005; Twigger-Ross & Uzzell, 1996).

The third aspect of the psychological processes of place attachment is the behavioral level wherein the attachment is expressed through behavior (action). Like interpersonal attachment, attachment to place is manifested through “proximity maintaining” behaviors and there is a bond between the individual and a certain place the most important characteristic of which is maintaining proximity with such a place (Hidalgo & Hernandez, 2001, p. 274). It can be said in general that behaviors of attachment to a place are manifested in the form of the tendency towards proximity maintaining, reconstruction of place and movement to similar places (Case, 1996; Francaviglia, 1978; Michelson, 1976).

The other aspect of place attachment is formed by the place itself. In general, in the researches related to the place attachment, this aspect has been evaluated in various geographical scales (a room in a house, neighborhood, and city); commonly, it is divided into two levels of attachment, namely “social” and “physical” (Hidalgo & Hernandez, 2001; Riger & Lavrakas, 1981). The distinction between the social and physical aspects of attachment to a place was first made by Riger and Lavrakas (1981) who investigated the rootedness or physical attachment in contrast to the social attachment. Most of the studies about place attachment are directed at the social aspect of place (social attachment). In these studies, attachment to a place is defined as the attachment to the individuals presence therein (Fried, 1963, 2000; Kasarda &

Janowitz, 1974; Low & Altman, 1992; Woldoff, 2002). On the contrary, although a group of researchers believes that place attachment relies on the physical properties of the environment (Hidalgo & Hernandez,

2001; Manzo, 2003, 2005; Stokols & Shumaker, 1981), fewer studies have dealt with it in theoretical and empirical levels.

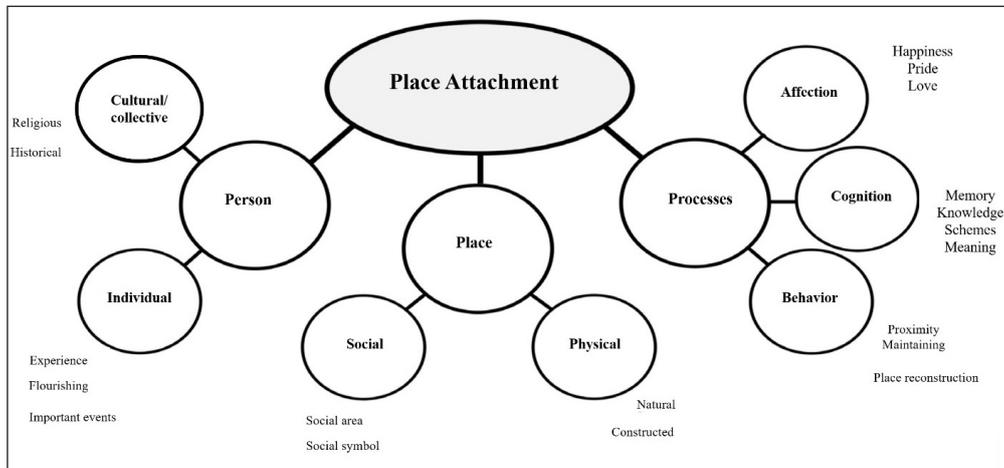


Fig. 2. The 3-Aspect Model of “Person, Processes, Place” for Attachment to Place
(Scannel & Gifford, 2010, p. 2)

2.2. Faculties’ Public Open Spaces

Major studies in the area of designing public open spaces (exterior environment) of the academic complexes¹ are mostly with the scale of designing several faculties within the format of a complex. Thus, the present study reviews the literature on the aforesaid scale. Then, the indicators that can be generalized to the article’s intended scale for the faculties’ public open spaces as part of the campus’s public open spaces will be extracted.

The studies on the designing of the academic complexes’ public open spaces deal with the description of the physical arrangement of the environment and its properties observed by sidewalks or riding individuals from inside or outside the complex (Dober, 1992; Gaines, 1991). According to these studies, there are general approaches to designing these environments. In the first approach, attention is paid to the infrastructures (open spaces, movement paths, and buildings’ placement positions) that form the overall arrangement of the environment. In the second approach, attention is paid to the properties of the environment distinguishing it from the exterior environment of the other academic complexes.

Academic complexes’ public open spaces are constructed environments and artificial green spaces comprised of buildings, passing paths, tableaus, lighting elements, trees, landscaping, grassland precincts, and open spaces, sitting or gathering places like squares, artistic or architectural elements like statues, fountains and ornamental elements (Strange & Banning, 2000). public open spaces are effective on the first experiences of encountering with environment, behavior, social relations and students’ learning. Also, the quality of landscaping in these environments plays

a considerable role in the formation of the identity of place and sense of social belonging (Griffith, 1994, p. 648). If the environment is not designed well, it can be a barrier for socialization and cause stress (Kaplan & Kaplan, 1978; Zimring, 1982).

Based on the studies directed at the public open spaces of the academic complexes, the physical elements of these environments can be divided into two sets, named “concrete elements” and “conceptual elements” (Dober, 1992; Eckert, 2012; Strange & Banning, 2000). Concrete elements are objective and tangible and they can be divided into four sets of artificial green spaces (trees, grassland areas, flower gardens, and shrubs), furniture (benches, lighting elements, and tableaus), meeting spaces (formal and informal) and artistic or architectural elements (fountains, elements, statues, and artworks). The conceptual elements are subjective and point to the general favorability or function of the public open spaces. These elements are categorized into two sets of functional properties (ease of movement, ease of entry to the buildings, arrangement, and stability of the movement paths) and the managerial properties (cleanliness and maintenance).

2.3. Relationship between Physical Properties and Place Attachment

There are relatively different perspectives expressed about the quality of physical factors’ effect on the place attachment. The studies by Stedman (2003a, p. 73) about the role of the place’s physical aspect in the attachment to place deal with its direct role in the satisfaction and its indirect role in the attachment to a place and it is also expressed that it is influenced by the symbolic meanings of a place. According to the perspective of Falahat (2006, p. 63), the physique of a

place is effective within the format of “form variables” and “components’ organization” via creating meanings (identity, beauty and symbols) and supplying special activities (social interactions, satisfaction and sense of community) in giving rise to the sense of place with the sense of place attachment being one of its levels. In addition, according to the studies by Javan Foruzandeh and Motallebi (2011, p. 35), environment and its physical properties influence the belonging to place in two levels: in the first level, physical elements are effective in establishing social belonging in the environment and rendering feasible the creation and enhancement of the social bonds in the environment by facilitating the activities in correspondence to the individuals’ behavioral pattern as well as by supplying the needs of the users of place. In this level, the physical elements stem from memories and mental images of the users and symbolically play their roles under the influence of the culture and social values. Although some researchers like Stedman (2003a) believe that physical factors of environment indirectly influence the place attachment, some of the studies have shown that the physical properties of the place not only directly influence the place attachment but also can account for a higher percentage of the place attachment in comparison to social factors (Bonaiuto, Aiello, Perugini, Bonnes, & Ercolani, 1999; Brown, Perkins, & Brown, 2003, 2004; Fried, 1982; Harlan, Larsen Hackett, Wolf, Bolin, & Hope, 2005). From the viewpoint of Lewicka (2010), the physique of a place influences the place attachment both directly and also indirectly via facilitating social relations.

3. STUDY THEORETICAL FOUNDATIONS

What was investigated up to here was the definition

and elaboration of sense of place attachment and its aspects, identification of the physical factors of public open spaces, categorization of them and explanation of the physical environment’s relationship with the place attachment. According to the 3-aspect model proposed by Scannell and Gifford, place attachment is a bond between an individual and a group with the place with the distinction rate and social or physical properties of the place being variable based on the spatial scale and also being manifested through psychological, cognitive and behavioral processes. The two aspects of place (physical and social) and the individual (individual and collective) in Scannell and Gifford’s 3-aspect model have been often intended to act as predictor factors in lieu of explaining the concept of place attachment (Goodenow & Grady, 1993; Pretty, Chipuer, & Bramston, 2003; Sampson, 1988). Therefore, the present study underlines the psychological processes as a dimension for explaining the concept of place attachment. Based thereon, the dependent variable “place attachment” is defined in the present study as the affective, cognitive (memories and meanings) and behavioral bond (proximity maintaining behaviors) between the students and faculty. On the other hand, the independent variable “faculties’ public spaces” is defined as the resultant of its physical factors. Physical factors of the public open spaces have been classified under the title of four concrete factors (artificial green space, furniture, meeting spaces, artistic or architectural elements) and two conceptual factors (functional properties and managerial properties). Based on what was mentioned up to now, a model can be achieved as demonstrated in Figure (3). Next, the study’s theoretical model will be tested on the study case

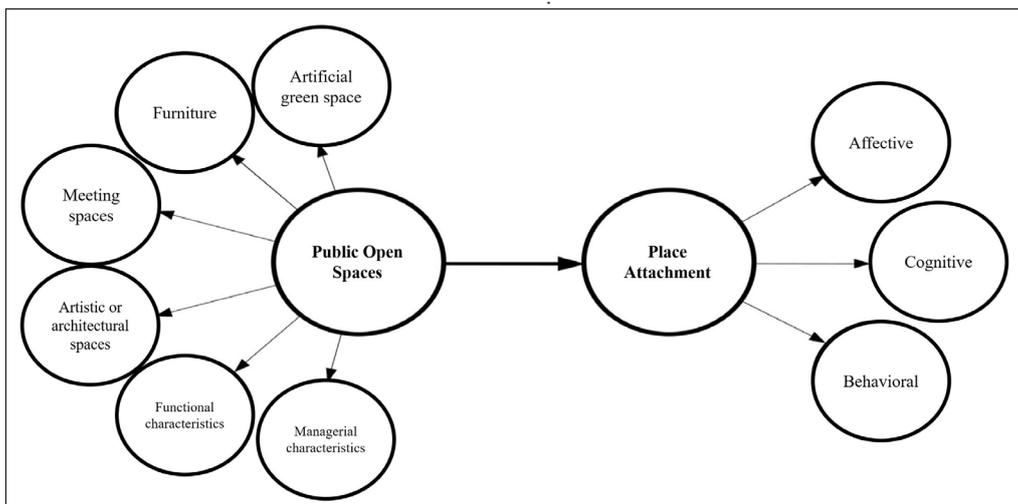


Fig. 3. Study’s Theoretical Model

4. STUDY METHOD

The present study is of correlation type. The survey method (subjective evaluation of the testees through a

closed-ended questionnaire) was utilized for gathering the data. Structural equation modeling has been the method employed for data analysis. The case study

is the faculty of fine arts in Tehran University. The fine arts faculty's public open spaces are situated in the periphery and/or between the buildings that are predominantly consisted of cubic volumes or a combination of them. In fact, green spaces have been posited amongst the building volumes as the negative spaces. These spaces are mostly connected with one another through covered corridors (colonnade) along the faculty's longitudinal axis. Amongst the elements existent in the environment, fountain, elements, statues, artworks and bulletins can be pointed out. The study population included all of the university students of this faculty who have been studying during the academic years from 2014 to 2015. Using Cochran's formula, 150 closed-ended questionnaires were distributed in a randomized² manner among the university students.



Fig. 4. Urban Location and Fine Art Faculty's Situation in the Central Campus of Tehran University



Fig. 5. The Arrangement of Green Spaces and Building Blocks in the Faculty of Fine Arts
(Google Earth, 2015)



Fig. 6. Beginning and Central Areas of the Faculty



Fig. 7. Open Spaces between the Ateliers



Fig. 8. The Connection between the Colonnade and the Ateliers' Open Spaces



Fig. 9. Flower and Shrubs' Garden, Colonnade, Bulletins and Artworks

According to the study's theoretical model, the questionnaire of "psychological place attachment scale (PPAS)" that has been designed by Li based on the research by Scannell and Gifford (2010) was used in order to measure the university students' attachment to place. This questionnaire has been utilized in the studies

by Li (2014) and Li et al. (2013). The questionnaire's Cronbach's Alpha coefficient was reported above 0.85 in all the above three studies indicating its favorable reliability³. The questionnaire is comprised of 30 items that evaluate affective bond (10 items), cognitive bond (10 items) and behavioral bond (10 items) between

the students and the studied campus. The answers are scored based on Likert's five-point scale from "completely disagree" to "completely agree".

The quality of evaluating the physical factors in the studies that have dealt with the investigation of the relationship between the environment's physical factors and attachment to place is a challenging issue (Lewicka, 2011, p. 217). Such an issue has caused a number of studies to rely on the subjective estimates for assessing the physical factors (Bonaiuto, Fornara, & Bonnes, 2003; Fornara, Bonaiuto, & Bonnes, 2009). In the present study, as well, the tangible and conceptual physical factors related to public open spaces have been left to the mental appraisal (perceptions) by the university students with an approach to satisfaction in parallel to the aforementioned studies. The tangible factors (artificial green space, furniture, meeting spaces, artistic or architectural elements) have been assessed based on two types of questioning items. Firstly, the university students' satisfaction with the extent (dimension) of these elements has been questioned (in 10 items). Then, the favorability of these elements has been assessed by asking questions about their attractiveness (10 items). Additionally, the assessment of the conceptual factors (functional or managerial properties) has been conducted by asking university students about their satisfaction (6 items). The answers of this scale have been rated based on Likert's seven-point scale from "highly disagree" to "highly agree". It is worth mentioning that the validity coefficients of the questionnaire "assessment of university students' attachment to place and public open spaces of the faculty⁴" have been attained respectively equal to 0.90 and 0.93 based on Cronbach's alpha method indicating the favorable reliability of them.

4.1. Data Analysis Method

In this study, structural equation modeling (SEM) with maximum likelihood (ML) was used for data analysis. A perfect structural equation modeling consists of a structural model that assumes a special causal structure between the hidden variables (factors) and a measurement model that defines the relationships between the hidden and indicative (parameters) variables. When the data obtained from the study cases are transformed into correlation or covariance matrix and defined by means of a set of regression equations, the model can be analyzed and its fit can be estimated for the population from which the sample volume has been extracted. This analysis provides estimations of the model's parameters as well as several indices for the goodness of fit. Parameters' estimation and information related to the goodness of fit can be tested for the likely changes in the model and reexamination of the theoretical model (Sarmad, Bazargan, & Hejazi, 2008, p. 277).

In the present study, the measurement model of university students' attachment to place and faculty's public open spaces has been tested for investigating

their goodness of fit based on data extracted from the case studies and the goodness of fit indices of each has been subsequently evaluated. Next, in order to achieve the optimal model, the parameters contradicting the model's fit estimation have been screened and a retest has been subsequently conducted. In the second stage and after estimating the goodness of fit for the study variables' measurement model, the structural model has been tested. The validity of the structural model, as well, has been determined according to fit indices. In this study, chi Minimum Value/Degree of Freedom (CMIN/DF), comparative fit index (CFI), incremental fit index (IFI) and root mean square error of error approximation (RMSEA) have been evaluated. Values below three for CMIN/DF, close to unity for IFI and CFI and below or equal to 0.08 for RMSEA imply the model's goodness of fit (Harrington, 2009 and Kline, 2005). It is worth mentioning that SPSS (version 23) and Amos (version 22) have been used for processing the data for processing the data.

5. FINDINGS

The findings obtained from estimating the goodness of fit for the model "students' attachment to place" and, after that, from testing the study's theoretical model have been obtained based on the structural equation modeling. Thus, the findings of the measurement model's test and subsequently the study's structural model test are reported.

5.1. Measurement Model's Test

The findings of the model for measuring place attachment (chart 1) signify that the factor loads of such hidden variables as affective factors, cognitive factors, behavioral factors are in a range from 0.42-0.76, 0.22-0.74 and 0.21-0.58, respectively. Next, screening was carried out in order to achieve the optimal model. The parameters with factor loads below 0.3 were eliminated due to having trivial effects on the hidden variables' measurement (6 parameters); moreover, parameters with the highest skewness and kurtosis (over 1 and -1) (2 parameters) were also omitted and the model was again subjected to test. On the other hand, the findings of the model for measuring the faculty's public open spaces indicated that all of the parameters have been well loaded on their corresponding hidden variables (over 0.6) and the evaluation of the skewness and kurtosis indicated the normality of the parameters' distribution. Furthermore, as shown in chart (2), the highest correlation between the evaluation factors of public open spaces pertains to the informal meeting spaces with artistic or architectural elements and green spaces. Table (1) displays the values of the goodness of fit estimation indices for the model of measuring place attachment after screening as well as the model of assessing the attachment to public open spaces disregarding the adjusted cases. The obtained values are reflective of the favorable fit estimation of these two models.

Table 1. Fit Indices of the Study Variables' Measurement Model

Variables	CMIN/DF	CFI	IFI	RMSEA
Attachment to place	2.11	0.883	0.892	0.078
Public open spaces	1.76	0.937	0.941	0.071

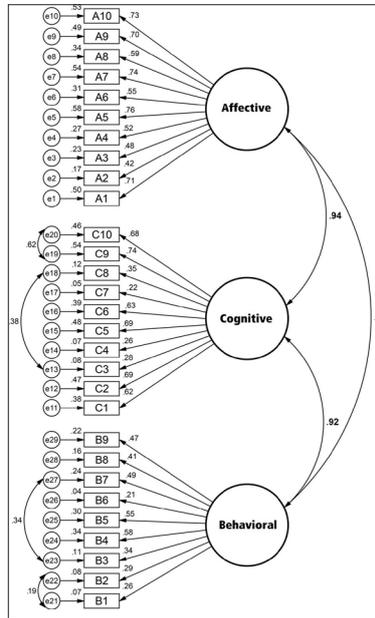


Chart 1. Testing the Measurement Model of University Students' Attachment to Place (All of the Coefficients are Significant in P<0.01 Level)

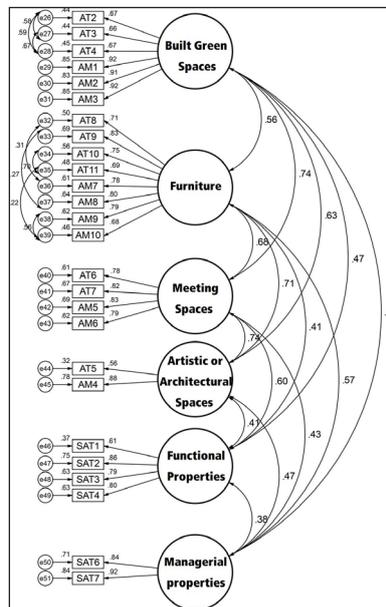


Chart 2. Testing the Model for Measuring the Faculty's Public Open Spaces (All of the Coefficients are Significant in P<0.01 Level)

5.2. Structural Model's Test

In order to test the study's theoretical model and determine the relationships between the independent variable of the faculty's public open spaces and the dependent variable of the university students' attachment to place, use was made of the structural equation modeling. To investigate the model's validity,

the fit indices presented in Table (2) were evaluated. In this model, chi-square over the degree of freedom, comparative fit index, incremental fit index and root mean square error of estimation (RMSEA) were respectively found equal to 1.68, 0.903, 0.912 and 0.067. Considering the obtained values, the reliability of the study's theoretical model's results is confirmed.

Table 2. Study Theoretical Model's Fit Indices

Indenes	CMIN/DF	CFI	IFI	RMSEA
Theoretical model	1.68	0.903	0.912	0.067

As it is clear from chart (3), factor loads of the hidden variables pertinent to affective aspect, cognitive aspect, behavioral aspect, artificial green spaces, furniture, meeting spaces, artistic or architectural elements, functional properties and managerial properties are in the following ranges, respectively: 0.40-0.76, 0.35-0.75, 0.37-0.59, 0.66-0.93, 0.66-0.85, 0.78-0.83, 0.59-0.84, 0.61-0.87 and 0.82-0.94. Furthermore, as it is displayed in chart (3), the public open spaces have a significant effect ($P < 0.01$) for a coefficient of 0.49 on the university students' attachment to place. In other words, the public open spaces account for 24% of the variations in the attachment to place. Affective bond with a factor load of 0.98, cognitive bond with a factor load of 0.93 and behavioral bond with a factor load of 0.89 are effective in the elaboration of the university students' attachment to place. In addition, the factor

“meeting spaces”, with a factor load of 0.92, has the highest effect on the students' appraisal of the faculty's public open spaces hence the formation of attachment to place. After that, the factors “artistic or architectural elements”, “artificial green spaces”, “furniture”, “functional properties” and “managerial properties” influence the students' attachment to place with factor loads respectively equal to 0.84, 0.79, 0.76, 0.62 and 0.55.

In chart (3), the large circles designate the hidden variables; rectangles show the parameters (indicative variables) and small circles denote the variance set for each variable. Additionally, Table (3) summarizes the abbreviations for the parameters of the public open spaces' structural equation modeling and the factor loads of each of them.

Table 3. Abbreviations of Structural Equation Modeling for Evaluating the Faculty's Public Open Spaces

Factor	Factor Load	Parameter	Factor Load	Abbreviation	Parameter	Factor Load	Abbreviation
Artificial Green Spaces	0.79	Fascination of the flower and shrub gardens	0.67	AT2	Amount of flower and shrub gardens	0.93	AM1
		Attractiveness of the faculty's trees	0.66	AT3	Amount of trees in the faculty	0.91	AM2
		Attractiveness of the areas planted with grass	0.68	AT4	Amount of the areas planted with grass	0.92	AM3
Furniture	0.76	Attractiveness of benches	0.71	AT8	Amount of benches	0.77	AM7
		Attractiveness of lighting elements (lamps)	0.85	AT9	Amount of lighting elements (lamps)	0.81	AM8
		Attractiveness of the buildings' tableaus and direction signs	0.74	AT10	Amount of the buildings' tableaus and direction signs	0.78	AM9
		Attractiveness of announcement boards	0.69	AT11	Amount of announcement boards	0.66	AM10
Meeting Spaces	0.92	Attractiveness of informal meeting spaces (colonnade: columned corridor)	0.78	AT6	Dimensions of informal meeting spaces (colonnade: columned corridor)	0.83	AM5
		Attractiveness of informal meeting spaces (open spaces between ateliers in the adjacency of colonnade)	0.82	AT7	Dimensions of informal meeting spaces (open spaces between ateliers in the adjacency of colonnade)	0.79	AM6
Artistic or Architectural Elements	0.84	Attractiveness of fountain, elements, statues and artworks	0.59	AT5	Amount of fountain, elements, statues, and artworks	0.84	AM4
Functional	0.62	Ease of entering the faculty's buildings	0.61	SAT1	Ease of walking and moving in the faculty's precinct	0.87	SAT2
		Stability of the movement paths	0.79	SAT3	Arrangement (placement sites of buildings, green spaces and movement paths)	0.79	SAT4
Managerial	0.55	General cleanliness of the faculty's public open spaces	0.82	SAT6	General maintenance of the faculty's public open spaces	0.94	SAT7

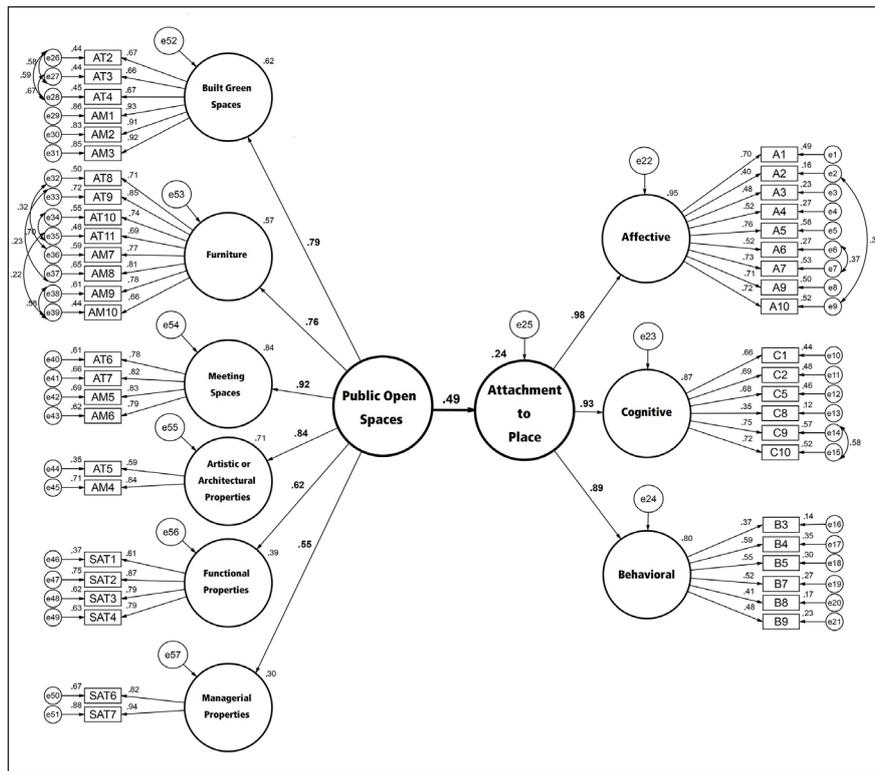


Chart 3. Results of Testing the Study's Theoretical Model for a Standard Estimation State (All of the Paths are Significant in $P < 0.01$ Level)

6. CONCLUSION

As can be understood from the study literature, attachment to place is a complex and multidimensional concept. This psychological concept is manifested through the affections individuals feel for a place, values and meanings they associate with it and the behaviors they exhibit for maintaining proximity thereto. The present study was conducted with the aim of explaining the relationship between the faculty's public open spaces and university students' attachment to place. In line with this, the study's theoretical model was codified and tested in the faculty of fine arts.

Study findings show that there is a very high significant correlation between the students' affective, cognitive and behavioral bonds and the faculty. This finding includes the interpretation that these factors form a general and unit concept called place attachment. Therefore, this finding is consistent with and confirms the results asserting that affection, cognition, and behavior are the constituent indicators of such a psychological concept as place attachment. The findings of the structural equation model's test in the present study signify that the independent variable (faculty's public open spaces" exerts a significant effect ($P < 0.01$) for a coefficient equal to 0.49 on the dependent variable, i.e. students' attachment to the place. In fact, the public open spaces account for

24% of the changes in the students' place attachment, and 76% of the variations are left unexplained being ascribed to the factors that have not been dealt with in this model.

Based on the study findings, the favorability of the spaces wherein more collective activities occur is the most important factor forming and strengthening the students' attachment to place. This finding can be interpreted in this way that the favorable meeting spaces set the ground for interaction opportunities and form social bonds in them that can be per se effective in the students' attachment to place. In fact, the individuals are more attached to the places wherein they know others and interact and converse with them and the social bonds flowing in place directly influence the individual's bond with the place. Therefore, according to the interpretation of the present study's finding indicating the main role of social interactions in the formation of attachment to place in the university students, the designing of the faculties' public open spaces should be in such a way that the ground is more set for face-to-face interaction of the students with one another to the maximum possible extents. Moreover, the findings show that the favorability of the meeting spaces is significantly associated with the existence of artistic or architectural elements and desirability of the green spaces. Therefore, it is recommended that the designers should pay attention to the meaningful

functional roles thereby to simultaneously enhance the quality and socialization of the informal meetings in the exterior spaces via taking advantage of architectural or artistic elements like fountains, elements, statues, artworks as well as by maintaining direct and constant relationship between the students and the green spaces. Artistic or architectural elements play their roles by forming a distinct and meaningful environmental personality in the university students and green spaces play their role by creating visual attraction.

The present study shows that the faculties' public open

spaces have a significant effect on university students' attachment to place. This effect can be substantially explained through the meeting spaces the favorability of which is interlaced with favorable green spaces due to the existence of architectural or artistic elements therein and can be effective in elevating the social interactions amongst the university students. Thus, it is suggested that future studies should insert social relations as intermediary factors in the creation of the relationship between the faculties' public open spaces and the students' attachment to place for achieving more precise and clearer results.

END NOTE

1. Academic complex that is equivalent in English to Campus usually includes the land (precinct) and buildings located therein for various institutions of a university (Wikipedia).
2. In order to have identical scattering and relatively ensure the randomness of the samples, the questionnaires were distributed during the first week of June, 2015, in three consecutive days at different hours within a time span from morning to afternoon in various sections of fine arts faculty.
3. A questionnaire's reliability shows that to what extent a measurement instrument gives identical results under identical conditions (Sarmad Bazargan & Hejazi, 2008).
4. Elimination of one item from the behavioral factor resulted in the enhancement of Cronbach's alpha coefficient in the attachment to place questionnaire from 0.88 to 0.90.

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