

The Relationship Between Women's Preferences for Landscape Spatial Configurations and Relevant Socio-Economic Variables

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Abstract. People's preferences for urban parks are influenced by the spatial and contextual characteristics of spaces, where landscapes form the main body of parks. The present study examined women's preferences for landscape spatial quality indicators (including coherence, mystery, complexity, legibility, prospect, and refuge) in two urban parks. Also, the study explored the impact of socio-economic variables such as age, income, and education on women's preferences. In this spirit, a photo survey was conducted among 178 women as park users in Tabriz in 2017. Descriptive analysis, factor analysis, and comparison tests such as one-way ANOVA were used to analyze the data. Based on the results, the highest preferences were for mystery, complexity, and prospect. The results also revealed that the preference for landscape spatial quality indicators (LSQIs) varies among different age groups, education levels, and income statuses, where middle-aged women show the highest preference toward all of the LSQIs. Similarly, perception of and preference for landscape were seen to increase with education level, with less educated women demonstrating the lowest preferences for LSQIs in a park environment. Also, women with low and high income levels had the highest preference for mystery, complexity, and prospect of LSQIs. The population of middle-aged residents is increasing, which renders it necessary for special attention to be paid to understanding their opinions and demands for public spaces, such as landscape quality. It was likewise confirmed that users' characteristics should be taken into account in planting design, particularly its spatial configurations in urban parks.

Keywords. Landscape Preference; Landscape Spatial Quality Indicators; Tabriz City; Users Characteristics.

INTRODUCTION

Landscape preference studies have commonly focused on two different branches, namely landscape spatial quality and landscape content quality (e.g., Kaplan and Kaplan 1989). The spatial quality is the organization and composition of landscape elements (such as trees, shrubs, and flowers)(Nielsen et al. 2012). Studies on landscape perception might predict the function of individuals in nature (van den Berg et al. 2007). Perception also has a critical role in determining appropriate land use policies and preservation of sustainable landscapes (Council of Europe 2000). The quality of landscape significantly affects people's mental well-being, as it helps them find some relief from stress and fatigue (Berman et al. 2012). In providing a comfortable environment for citizens, their public perceptions and interpretations must be accounted for (Kaymaz 2012).

It seems that the spatial quality of the environments plays a paramount role in the awareness of environmental issues and people's feelings. Some researchers have come to recognize the importance of understanding public preferences toward landscape improvements; at the end of the day, new landscape developments will be experienced by various groups of people (Vouligny et al. 2009). People's preferences for landscape are influenced by their socio-economic and demographic characteristics (Howley et al. 2012). In addition, it was disclosed that preference for landscapes varies with education (Molnarova et al. 2012), gender (Lindemann-Matthies et al. 2010), age (van den Berg and Koole 2006), and expertise (Vouligny et al. 2009). Hami et al. (2016) explored public preferences for indoor landscape in a shopping mall. Their findings revealed significant differences between age groups and income levels in visual

preferences for interior landscapes. As age and income level increase, the preference for interior landscape also increases. Previous studies have shown that landscape preferences are influenced by age (e.g., Richardson and Mitchell 2010; Wang and Zhao 2017). Hami and Tarashkar (2018) have shown that middle-aged women had the highest preferences for native plants in Tabriz, Iran. Wang and Zhao (2017) proved that education levels and the respondents' gender influence their preferences for landscape aesthetic quality. Kaltenborn and Bjerke (2002) found that age and education had a notable influence on preference for farm environments. Torgler et al. (2008) examined the impact of gender and age on people's preferences and decision makings; they found that women have a higher tendency as well as stronger preferences for the environment. However, they found a negative correlation between age and environmental preferences. Another study examined the impact of income and social welfare on public preferences for landscape (Ferreira and Moro 2013). They reported that income level has an impact on preference for landscape, but the impact of education and other socio-demographic characteristics were recognized as most notable and significant (Ferreira and Moro 2013).

A large number of studies over the past few years have focused on examining differences between gender groups toward environment related issues (e.g., Xiao and McCright 2015). Some studies have verified that women have stronger attitudes toward environmental issues (Xiao and McCright 2015) and are more aware of them due to their higher tendency toward socialization (Zelezny et al. 2000). Also, women seem to be more likely to participate in pro-environmental behaviors than men (Rezai et al. 2011); the male participants felt a lower sense of safety in a very open and spacious scene because it didn't offer the capability for hiding. The research by Ghamari et al. (2015) points to the fact that women pay more attention to landscape details, while men perceive landscape as a whole. For example, strong colors may cause women fatigue, while men do not pay attention to it. The differences in the perceptions held by men and women are well established across these studies, which also establish the necessity of separate planning for the needs of men and women. In addition, because of religious beliefs in Islamic countries like Iran, women face certain restrictions in public spaces, but over the years, many public spaces

such as parks have been allocated exclusively to women and called "Ladies Parks." The gap here then is to understand how women perceive landscape quality in urban parks, which the current study sets out to address. In this regard, understanding women's perceptual preferences for spatial quality of landscapes in parks constitutes the objective of the study. This study also seeks to find if socio-economic variables (such as age, income, and education) affect women's preferences for landscape spatial quality indicators, and also how these characteristics affect women's preferences.

MATERIALS AND METHODS

Study Area

This study was conducted in the city of Tabriz, Iran, which is the capital of East Azerbaijan, located at the extreme north-west of Iran at longitude $46^{\circ}17.514'$ E and at latitude $38^{\circ}4.8'$ N, lying 4580 feet (1396 m) above sea level. Tabriz is influenced by the local steppe climate. Due to the high altitude, this plain has long, cold winters and temperate summers. The maximum average temperature of the region is 18°C in August and July, and the minimum average temperature is -7°C in January. The average annual precipitation is 250 to 300 mm. Because of the presence of mountains near the city such as the Sahand Mountain, the wind blowing is evident on most days of the year. The direction of the winds of Tabriz in different seasons is from the northeast and the west. Based on the results of a 2016 census, the population of the city is 1,558,693 people. It is the fifth most populated city in Iran. The questionnaire was distributed in Shams Tabrizi Park and El Goli Park, which are the two famous and beautiful parks in the city. Shams Tabrizi Park is located in the central part of the city. This park benefits from traditional Iranian architecture. The El Goli Park is one of the most important places for recreation in the city, which is located in the southeast of Tabriz, 7 kilometers to the city center (Figure 1). El Goli Park was announced as one of Iran's National Heritage Sites on 15 February 2009.

Landscape Scene Preparations

Kaplan and Kaplan (1982) have developed Information Processing Theory. The theory explains that an environment is a source of information. Generally, this theory focuses on people who are interested in searching for the information in an environment, and

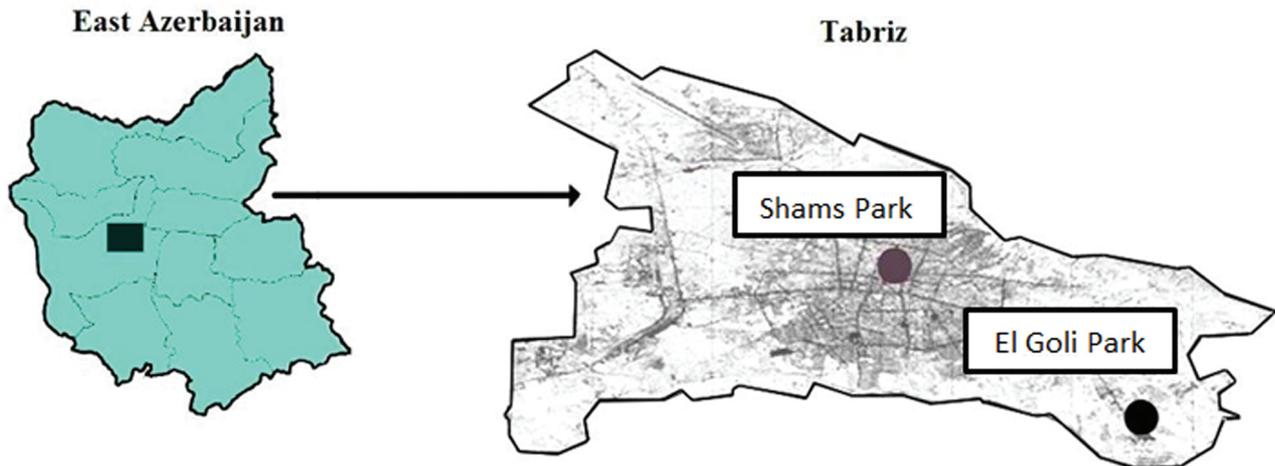


Figure 1. Location of the study areas.

they prefer environments that could offer some information to them. Kaplan et al. (1998) have maintained that direct or indirect information in environments is important to people. To obtain the information, people need to understand and explore the environment. Prospect-refuge theory was developed by Appleton, an English geographer and academic in 1975. The theory describes the needs of people for a place that allows them to see their surroundings without being seen by others. This theory based itself on Darwin's theory of evolution, whereby a panoramic environment offers an opportunity for people to see, whereas an enclosed environment offers an opportunity to hide. According to Appleton (1975), spatial arrangement of landscape elements that lead to viewing surroundings or provide an opportunity to hide allow the movement and exploration of nature. In order to examine the variables related to Information Processing Theory (Kaplan and Kaplan 1989), including coherence, compatibility, mystery, complexity, and prospect-refuge theory (Appleton 1975), a photo questionnaire containing 18 manipulated images, including three scenes for each variable, was used. These theories argue that arrangement of plant species in different ways, which provide different spatial configurations, affects people's perceptual preferences. The images were adapted from landscape journals and books. The purpose of the present study was to use real landscape images. Also, the images excluded any noise (such as hardscapes) to prevent influencing the participants' preferences. In addition, this research has focused on natural scenes rather

than man-made landscaped scenes. Therefore, the best way to prepare photos for a photo-questionnaire was downloading images containing spatial quality indicators and applying the fewest changes to them. In order to have a better presentation of the theoretical features (mystery, complexity, coherence, legibility, prospect, and refuge), the scenes were manipulated using Adobe Photoshop CS6 software. The size of the scenes was adjusted to 8.7 cm × 13.4 cm, and brightness, contrast, and color were adjusted for all images using Adobe Photoshop CS6 software. Buijs et al. (2009) proved that images of landscape act as predictors of differences in landscape preferences. Simulated color images look like a natural photograph (Soliva and Hunziker 2009), and they were used in preference studies as an alternative for the real landscape (Hull and Stewart 1992).

In this study, coherence leads to direct attention to the scene and it is characterized by conformity between land use and natural conditions of a region (van der Jagt et al. 2014), as well as the unity of the elements (brightness, size, and texture) within a scene (Kaplan and Kaplan 1989). Coherence was simulated in such a way that all the elements could manifest as a coherent unit in the eyes of the participants. A legible place gives the opportunity and promise of effective action to the individual and might also be easily understood and remembered by a person (Kaplan and Kaplan 1989). Elements within a legible landscape can be easily distinguished and identified (Kaplan and Kaplan 1989). Legibility in the current study refers to the degree of distinctiveness. Mystery is

captured by a scene with hidden information; there is a possibility to learn more by walking into the scene (Kaplan and Kaplan 1989). Curving paths with vegetation that somewhat limited the view were used to exhibit the mystery (Kaplan and Kaplan 1989). Simulated images with some hidden information were used to present the mystery. Complexity is the diversity and richness of the elements within a scene (Kaplan and Kaplan 1989). It is also characterized by the interspersed of landscape elements and their component size (Tveit et al. 2006). The richness of the elements in the landscape containing low coherence leads to the appearance of complexity. The prospect is a place with a clear vision, and the refuge is a safe place to hide; it is possible to have a prospect of vistas over the surrounding area (Grahn and Stigsdotter 2010). The final selection of images for the booklet was made by an expert.

Questionnaire Structure

The questionnaire was divided into two sections. The first section contained demographic information, and the second part examined preference toward landscape spatial quality indicators (LSQIs) (coherence, complexity, legibility, mystery, prospect, and refuge). The women were asked to indicate how much they prefer each scene in urban parks. Before scoring each landscape scene, the women had to indicate their personal socio-demographic characteristics, such as age, education level, monthly income, and city of residence. The scenes were selected by the researcher in the first step. In the second level, the scenes were reviewed by the supervisor committee, and final selections were held by them as well. The selected scenes were randomly presented in a booklet. There were 20 scenes in the booklet (three images for each indicator). The two last pictures were not included in data analysis because these two extra scenes at the end were used to prevent the participants from being able to anticipate, as mentioned by Suhardi (2006). The participants were asked to evaluate the scenes on a 5-point Likert scale (1 = least preferred, to 5 = most preferred).

Survey Procedures

In order to determine the sampling size, Mitra and Lankford's formula (1999) was used. This formula significantly prevents error by reducing sampling error and increasing confidence level, while at the same time reducing nonsampling error.

$$\text{Sampling error} = \sqrt{\frac{(p) \times (1 - p)}{\text{proposed sample size}}},$$

$$e = \sqrt{\frac{(p) \times 1 - p}{\text{sample size}}}$$

In this formula, p is number of statistical population without specific attribute, with its value being 50%. We assumed the standard deviation to be equal to 3.74% (< 5%). As a result, the sampling size amounted to 178 women. Mitra and Lankford (1999) explained that when the population is too large, sampling error less than 5% is acceptable to determine a sample population. Over the duration of May and July 2017, 178 adult females aged 19 to 85 were selected to complete the questionnaires using the booklet. The questionnaire was distributed every day from 10:00 am to 2:00 pm and from 4:00 pm to 8:00 pm, as these hours constitute the most frequently visited times at these urban parks.

After ensuring women's willingness to complete the questionnaire, the paper was given to them and they were asked to respond within 30 minutes. Reason for giving a limited time was to capture women's immediate responses to images containing spatial qualities. Participants were asked to fill the questionnaire out near the researcher. The concept of LSQIs was described to the women. For instance, the women were asked to rank scene 8 based on its capability to serve as a safe place to hide. Women's personal judgments about landscape preferences form the basis of the current study.

Data Analyses

The data were analyzed using the SPSS 21.0 software. The most and least preferred scenes were determined through descriptive analysis. In the first step, descriptive statistics were used to interpret participants' demographic information. Mean analysis was run to rank spatial quality indicators dimensions and scenes based on women's preferences. In order to reduce a large number of data to meaningful components and to determine preference dimension, the scenes were grouped in each dimension. Exploratory factor analysis was employed using Principal Component Analysis (PCA) on 18 scenes to extract LSQIs. The internal consistency of grouped items in the same factor was checked using reliability analysis. The purpose of a reliability analysis was to determine how well a set of items go together in a single scale. The internal

consistency should be close to or greater than 0.7 as recommended by De Vaus (2002). Later on, mean comparison tests such as one-way ANOVA were used to explore significant mean differences among users' demographic variables toward LSQIs.

RESULTS

Participants' Background Information

The majority of the participants were in the youngest age group. In terms of marital status, 39.9% of the participants were single, and 60.1% were married. In terms of educational status and income level, the majority of the participants ($n = 72$, 40.4%) were at the level of diploma, and 47.2% ($n = 84$) made \$330 to \$900 USD in a month (< \$300 USD = low, \$301 to \$900 USD = fair, \$901 to \$1500 USD = high, > \$1501 USD = very high).

Women's Perception of Plants' Spatial Configuration in Urban Parks

Women's preferences were measured using a 5 point Likert scale (1 = least preferred, 2 = somewhat unpreferred, 3 = neither unpreferred nor preferred, 4 = somewhat preferred, 5 = most preferred). Figure 2 shows scenes 6, 11, 4, and 8 as the most preferred scenes by women. As seen below, scene 6 (mean = 4.69,

SD = 0.679) and scene 11 (mean = 4.21, SD = 0.813) pointed to high prospect, respectively. Scene 4 (mean = 4.18, SD = 0.632) has a sense of mystery, and scene 8 (mean = 4.08, SD = 0.757) seems to show a place that people can be hidden from view (refuge quality).

Figure 3 shows scenes 18, 5, 3, and 7 as the least preferred scenes by women participants in urban parks. Scene 18 (mean = 1.78, SD = 0.680) shows a high level of openness in a natural landscape. Scene 5 (mean = 2.28, SD = 0.758) and scene 3 (mean = 2.80, SD = 0.529) show natural landscapes with a high level of coherence; meanwhile scene 7 (mean = 2.92, SD = 0.771) illuminates high levels of legibility. The scenes ranked as the most preferred are associated with wetter environments. The least preferred scenes are those associated with either xeriscaping or plants of semiarid environments (Figure 3). It seems that the content and spatial quality of the scenes can influence people's preferences. The selected scenes contained arid, semiarid, and wetter attributes. Figure 4 shows the results of factor analysis where each spatial factor contains three scenes with a loading factor of above 0.5. As Figure 4 shows, spatial quality indicators include six factors, namely mystery, legibility, coherence, complexity, prospect, and refuge. Mystery scenes contain some hidden information. Scenes that show coherence were selected in such a way that all

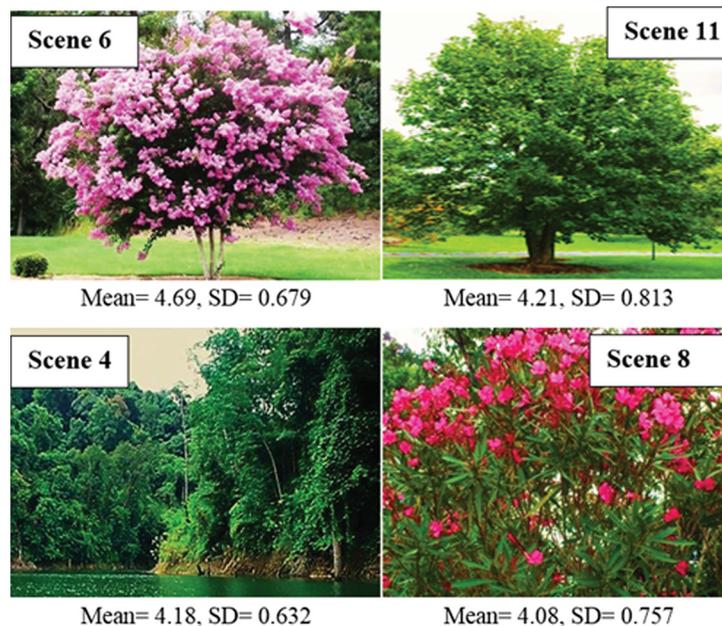


Figure 2. Four most preferred scenes. Adapted from Hami and Tarashkar 2018.

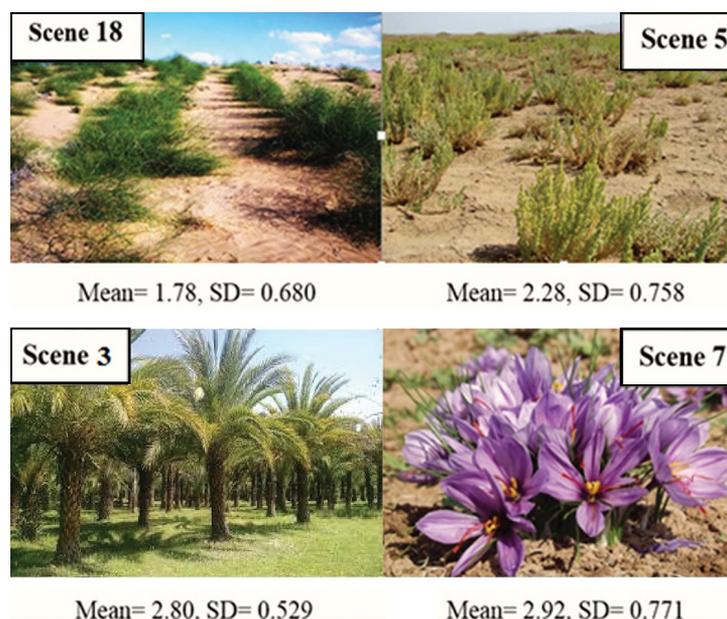


Figure 3. Four least preferred scenes. Adapted from Hami and Tarashkar 2018.

the elements within a scene could manifest as a cohesive unit in the eyes of the participants. Complexity is defined by the diversity and repetition of elements in the environment. Legibility refers to the degree of distinctiveness. Scenes related to the concept of prospect give the ability to see, meanwhile, the refuge is scenes that provide a venue to hide.

The mean analysis result shows that women prefer scenes that have a high degree of mystery (mean = 3.80, SD = 0.90), complexity (mean = 3.80, SD = 0.93), followed by prospect (mean = 3.56, SD = 0.64), refuge (mean = 3.50, SD = 0.97), legibility (mean = 3.17, SD = 1.04), and coherence (mean = 2.75, SD = 0.98) for urban landscapes, respectively (Table 1). Also, reliability analysis showed that all reliability values were acceptable (De Vaus 2002).

This section looks at the significant mean differences between the participants' demographic variables with regard to landscape quality in urban parks, or in other words, how the preferences for LSQIs change when the users' characteristics such as age and education differ from each other. Landscape spatial quality indicators were merged using factor analysis with internal consistency close to 0.7 (Table 1), and demographic factors were presented in Table 2. The results of mean comparison are presented in the following.

Mean Comparisons Between Socio-Demographic Factors Regarding LSQIs

Mean Comparisons Between Educational Levels Regarding LSQIs

As seen in Table 2, a significant mean difference is observed between education levels toward spatial quality indicators such as coherence ($F = [173, 4] = 9.876, \alpha = 0.00$), complexity ($F = [173, 4] = 6.230, \alpha = 0.00$), legibility ($F = [173, 4] = 5.919, \alpha = 0.00$), and refuge ($F = [173, 4] = 12.266, \alpha = 0.00$). Less educated women had the lowest preference for coherence (mean = 1.36), complexity (mean = 2.70), legibility (mean = 2.00), and refuge (mean = 2.63), and showed significant differences with other groups. People with at least a master's education had the highest preference for coherence (mean = 3.28), complexity (mean = 4.21), legibility (mean = 3.70), and refuge (mean = 4.03). Those who had graduate and postgraduate degrees showed similar preferences toward spatial quality indicators.

Mean Comparisons Between Age Groups Regarding LSQI

From Table 3, statistically significant differences are observed between age groups in preferences for coherence ($F = [173, 4] = 7.14, \alpha = 0.00$), complexity

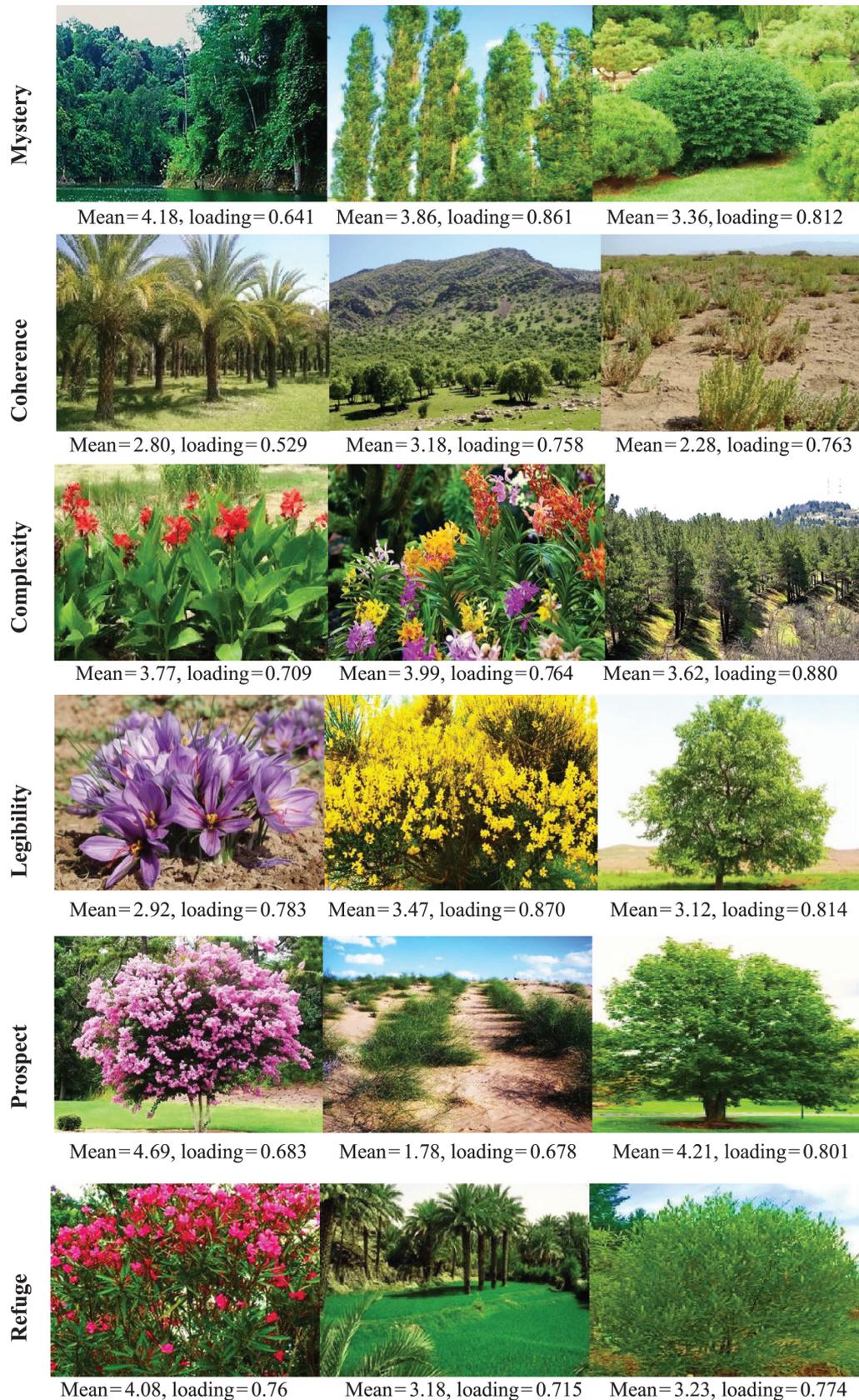


Figure 4. Preferences for spatial quality indicators and reliability value. Adapted from Hami and Tarashkar 2018.

($F = [173, 4] = 11.98, \alpha = 0.00$), legibility ($F = [173, 4] = 16.51, \alpha = 0.00$), mystery ($F = [173, 4] = 8.36, \alpha = 0.00$), prospect ($F = [173, 4] = 8.265, \alpha = 0.00$), and refuge ($F = [173, 4] = 3.803, \alpha = 0.005$). The post-hoc comparisons revealed the highest preference of the middle-aged group (40 to 49) toward coherence (mean = 3.53), complexity (mean = 4.58), legibility (mean = 4.15), mystery (mean = 4.72), prospect (mean = 4.06), and refuge (mean = 3.95), which is significantly higher than those in the 19 to 29 and > 60 age groups.

Table 1. Mean¹ analysis and Cronbach's alpha of LSQIs.

Spatial quality indicator	Mean	SD	Cronbach's alpha
Mystery	3.80	0.90	0.67
Complexity	3.80	0.93	0.68
Prospect	3.56	0.64	0.50
Refuge	3.50	0.97	0.60
Legibility	3.17	1.04	0.76
Coherence	2.75	0.98	0.58

¹Cell entries are mean values based on 5 point Likert scale (1 = least preferred, 2 = somewhat unpreferred, 3 = neither unpreferred nor preferred, 4 = somewhat preferred, 5 = most preferred).

Mean Comparisons Between Income Groups Regarding LSQI

As seen in Table 4, the results of the one-way ANOVA illustrated significant differences among people with different income levels toward mystery ($F = [173, 4] = 4.194, \alpha = 0.007$), complexity ($F = [173, 4] = 12.941, \alpha = 0.00$), and prospect ($F = [173, 4] = 19.009, \alpha = 0.00$). Women with low income levels had the highest preferences toward all indicators: mystery (mean = 4.33), complexity (mean = 4.63), and prospect (mean = 4.26). On the other hand, people with a moderate income (\$300 to \$1500 USD) had the lowest preference and showed significant differences with the other groups (above \$1500 USD per month and below \$300 USD per month).

DISCUSSION

The current study focused on the effect of socio-demographic characteristics including income, age, and education on women's preferences toward plant spatial quality indicators in urban parks in Tabriz. The results showed that various economic situations influenced women's preferences for LSQIs. This is in line with a previous study which showed that income

Table 2. Mean comparison results between education levels regarding LSQIs using ANOVA.

	Mean ¹ values for education ^{2,3}					Df	F	Sig
	Under diploma	Diploma	Bachelor	Master	Above master			
Coherence	1.36 ^a	2.60 ^b	2.80 ^{bc}	2.93 ^{bc}	3.28 ^c	173, 4	9.87	0.000
Complexity	2.70 ^a	3.56 ^{ab}	3.82 ^b	4.00 ^b	4.21 ^b	173, 4	6.23	0.000
Legibility	2.00 ^a	3.04 ^b	3.20 ^b	3.42 ^b	3.70 ^b	173, 4	5.91	0.000
Refuge	2.63 ^a	3.07 ^a	3.81 ^b	3.87 ^b	4.03 ^b	173, 4	12.26	0.000

¹Cell entries are mean values based on 5 point Likert scale (1 = least preferred, 2 = somewhat unpreferred, 3 = neither unpreferred nor preferred, 4 = somewhat preferred, 5 = most preferred). ²The raw means with different superscripts differ significantly at $P < 0.05$. ³Tukey was used for post-hoc comparison.

Table 3. Mean comparison results between age groups regarding LSQIs using one-way ANOVA.

	Mean ¹ values for age groups ^{2,3}					Df	F	Sig
	19-29	30-39	40-49	50-59	> 60			
Coherence	2.42 ^a	2.93 ^{bc}	3.53 ^c	2.84 ^{abc}	2.50 ^{ab}	173, 4	7.14	0.000
Complexity	3.36 ^a	4.09 ^{bc}	4.58 ^c	3.91 ^{abc}	3.55 ^{ab}	173, 4	11.98	0.000
Legibility	2.61 ^a	3.54 ^{bc}	4.15 ^c	3.28 ^{abc}	3.11 ^{ab}	173, 4	16.51	0.000
Mystery	3.52 ^a	3.87 ^{ab}	4.72 ^c	4.30 ^{bc}	3.49 ^a	173, 4	8.36	0.000
Prospect	3.42 ^a	3.72 ^{bc}	4.06 ^c	3.33 ^{ab}	3.11 ^a	173, 4	8.26	0.000
Refuge	3.23 ^a	3.73 ^b	3.95 ^b	3.58 ^{ab}	3.31 ^{ab}	173, 4	3.80	0.005

¹Cell entries are mean values based on 5 point Likert scale (1 = least preferred, 2 = somewhat unpreferred, 3 = neither unpreferred nor preferred, 4 = somewhat preferred, 5 = most preferred). ²The raw means with different superscripts differ significantly at $P < 0.05$. ³Tukey was used for post-hoc comparison.

Table 4. Mean comparison results between monthly income levels (USD) regarding LSQIs using one-way ANOVA.

	Mean ¹ values for income groups ^{2,3}				Df	F	Sig
	< 300	300-900	900-1500	> 1500			
Complexity	4.63 ^a	3.62 ^b	3.43 ^b	4.23 ^a	173, 4	12.94	0.000
Mystery	4.33 ^a	3.38 ^b	3.36 ^b	4.00 ^a	173, 4	4.19	0.007
Prospect	4.26 ^a	3.38 ^{bc}	3.18 ^b	3.66 ^c	173, 4	19.00	0.000

¹Cell entries are mean values based on 5 point Likert scale (1 = least preferred, 2 = somewhat unpreferred, 3 = neither unpreferred nor preferred, 4 = somewhat preferred, 5 = most preferred). ²The raw means with different superscripts differ significantly at $P < 0.05$. ³Tukey was used for post-hoc comparison.

level is an important factor in public preferences (Hami et al. 2016). Women with a minimum income (below \$300 USD per month) showed the highest preferences for spatial quality indicators. The high preference of the low-income group may be due to their higher need for landscapes and green spaces. However, some studies in the past have suggested that economic status is of less importance in the formation of landscape preferences compared to other socio-demographic characteristics like age, education, and gender (Buijs et al. 2009; Ferreira and Moro 2013). The study found that preferences for quality indicators vary significantly among different age groups of women.

Other researchers have indicated that age plays an important role in the formation of respondents' preferences (Grühn and Scheibe 2008). However, women's preference for the landscape is not always enhanced by increases in age. For instance, preferences for water-related landscapes have been seen to decrease as the age of women increases, whereas the preference for agricultural landscape goes up along with increases in age (Howley 2011). Middle-aged women had the highest preferences toward LSQIs. In this regard, a similar study conducted in eight European countries on the Baltic Sea found that in most countries, middle-aged people are more inclined to a green lifestyle and green activism (Joas et al. 2008), although previous studies showed that elderly people had less perception of the landscape (Torgler et al. 2008). The present study found no significant differences between elders and young women with regard to landscape quality indicators. Education level is known as another important factor in explaining public preferences (Wang and Zhao 2017). The results pointed to significant differences among women with different education levels in preferences for spatial quality indicators, where with increases in the level of

education the preference for quality indicators increased as well. This finding is in line with a previous study in which educational status was an effective factor in environmental preferences (Tuncer et al. 2007). Less educated women have the lowest preference for quality indicators. Formal education might alter preferences by increasing previously held perceptions of environmental issues (Jackson-Smith and McEvoy 2011), which may help people become more "environmentally conscious" (Ellis et al. 1999). Differences in preferences of differently educated people in the case of signs and pictograms have already been discussed in Dowse and Ehlers (2001).

By incorporating public attitudes and preferences, the designing of urban parks is determined as an important action that could be taken toward the preservation of sustainable landscapes (Council of Europe 2000). This study considered such preferences held by women with various socio-demographic classes such as age, income, and education in order to introduce a framework toward planting patterns in urban parks in the city of Tabriz. As indicated in previous studies, economic capability (Morren and Grinstein 2016) and level of environmental education (Hawthorne and Alabaster 1999) are factors effective in sustainable development. Thus, the overall education level and income status of a region should be considered as crucial factors in decisions on design and management of urban parks. This insight enables one to argue that spatial quality of park landscapes should not follow a monotonous and homogenous pattern across parks, since visitors simply carry different socio-economic backgrounds. For example, less complex landscapes need to be designed for places with lower overall education and lower income. It follows that more complex landscapes will be appropriate for women of higher education and communities with higher income levels.

CONCLUSION

On one hand, the differences in the perceptions of women and men simply reveal the crucial importance of separate planning according to different needs and communities. On the other, women, comprising half of the users of urban public spaces, including urban parks, have the right to equitable use. Because of religious norms and beliefs, particularly in certain societies, women face constraints in the use of public open spaces such as parks. Also, perhaps because of traditional codes of belief and culture, women are more comfortable in communities and spaces specifically allocated to them alone, rather than in those for both genders. As such, the idea of creating “Ladies Parks” in Iran can lead to offering suitable public spaces for women in Iran. The women using such spaces would be able to be free of “Hijab,” the Islamic headscarf, which would allow women to freely engage in uplifting physical activities in urban parks.

This study focused on women’s perceptual preferences toward landscape spatial configurations. The preferences of different socio-demographic groups might help in the appropriate design of such spaces, and this was the focal point of the current study. Among the socio-demographic characteristics, age, education, and income significantly affect the preference of women for the landscape. Preferences for quality indicators significantly vary among different age groups, and design approaches in the urban parks should be changed based on the target group. Based on the results of the 2016 census and according to the age pyramid of the East Azerbaijan province, the middle-aged population is increasing, where the average age of the women living in urban areas is about 31.6. Thus, it is crucial that the planning and designing of urban parks takes the views of this age group into account to meet important and immediate future needs. As middle-aged women (40 to 49 years) show the highest preference for spatial qualities, they can serve as advocates for park development. Similarly, given the age structure of women living in metropolitan areas, these quality indicators will prove to be of higher efficiency in urban areas.

According to the results, it is evident that with a high level of education, there is an increase in the preferences for LSQIs. Women exhibit a higher preference for landscape quality indicators (e.g., coherence, complexity, legibility, and refuge). This study examined the impact of formal education on women’s

preferences. Women with less education had the lowest preferences for LSQIs. It seems that education is a key factor in understanding and exploring the spatial quality of the landscape. Also, women with less education were not able to recognize such landscape spatial characteristics as legibility and complexity. It seems that they might perceive the landscape in different ways, which could be explored in future research.

Regarding economic status, planting design approaches must change according to the location of the urban park and the women who use it. For example, as the largest and most famous urban park in the city of Tabriz, El-Goli Park is located in one of the most prosperous areas of the city. In addition, residents from all parts of the city, at both the deprived and prosperous extremes of the economic spectrum, visit this park as a popular destination. Consequently, the planting design of the park should be based on research findings that might satisfy the needs of different groups, for instance, women.

The ideas suggested in this and previous research could be used to help create healthier societies and build sturdier platforms for sustainable development. A complex landscape in the urban park was the younger women’s favorite, as the results suggest. The recommended way to create a landscape with higher complexity involves the use of a broad range of plants that repeat with high frequency. Since 2005, 6 urban parks have been dedicated to women in the city of Tabriz. In light of the fact that this research focused on women’s preferences, the implications of these findings will be most applicable to parks dedicated to women in the city of Tabriz. Park managers can use the results of the present study, in the sense that they plan to gather data on the age, education, and income levels of their female visitors.

As a possible practical instance, if most users turn out to be 19 to 29 and 30 to 39 years of age, the best quality indicator for this group would be complexity. It is recommended that further studies continue to explore men’s preferences for landscape spatial configuration indicators in the urban parks of Tabriz as well, comparing the results with the findings of the current study. In addition, the assessment of women’s preferences toward restorative quality indicators (such as fascination, being away) is another recommended course of action for possible follow-up research.

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Résumé. Les préférences des gens pour les parcs urbains sont influencées par des caractéristiques spatiales et contextuelles d'espaces où le paysage constitue la part essentielle des parcs. La présente recherche examine les préférences des femmes pour les indicateurs de qualité spatiale des paysages (incluant la cohérence, l'aspect mystérieux, la complexité, la lisibilité, la perspective et le potentiel comme abri) de deux parcs urbains. Le projet explore également l'impact de variables socio-économiques telles l'âge, le revenu et l'éducation sur les préférences des femmes. Dans cette optique, un sondage photographique fut réalisé parmi 178 femmes utilisatrices de parcs à Tabriz en 2017. Analyses descriptives, analyses factorielles et tests de comparaison tels que l'ANOVA unidirectionnelle furent utilisés afin d'examiner les données. Sur la foi des résultats, les préférences valorisées étaient l'aspect mystérieux, la complexité et la perspective. Les résultats démontrèrent également que la préférence pour les indicateurs de qualité spatiale des paysages (IQSP) variait selon les différents groupes d'âge, le niveau d'éducation et le statut des revenus, ainsi les femmes d'âge mûr témoignèrent de la plus haute préférence pour tous les IQSP. De manière similaire, la perception et la préférence pour le paysage semblaient augmenter avec le niveau d'éducation tandis que les femmes moins éduquées démontraient une plus faible préférence pour les IQSP dans un environnement de parc. De plus, les femmes possédant, tant un niveau de revenus bas que celles avec un revenu élevé, témoignaient d'une préférence marquée pour l'aspect mystérieux, la complexité et la perspective parmi les IQSP. La population des résidents d'âge moyen est en accroissement, ce qui rend nécessaire de porter une attention particulière à la compréhension de leurs opinions et de leurs attentes pour les espaces publics, dont la qualité du paysage. Il a également été confirmé que les caractéristiques des usagers soient prises en considération lors de la conception des plantations, particulièrement pour la configuration spatiale dans les parcs urbains.

Zusammenfassung. Die Präferenzen der Menschen für urbane Parkanlagen werden beeinflusst durch die räumlichen und kontextuellen Charakteristika von Räumen, wo Landschaften die Struktur der Parkanlagen formen. Diese Studie untersucht die Präferenzen von Frauen für die räumlichen Qualitätsindikatoren (einschließlich Zusammenhalt, Mystik, Komplexität, Lesbarkeit, Ausblick und Schutz) von Landschaften in zwei urbanen Parkanlagen. Die Studie erforschte auch den Einfluss von sozioökonomischen Variablen wie Alter, Einkommen und Ausbildung auf die Präferenzen der Frauen. In diesem Geiste wurde 2017 in Tabriz eine Fotoumfrage an 178 Frauen als Parkbesucherinnen durchgeführt. Beschreibende Analyse, Faktoranalyse und Vergleichsüberprüfungen so wie einseitige ANOVA wurden verwendet, um die Daten zu analysieren. Basierend auf den Resultaten lagen die höchsten Präferenzen bei Mystik, Komplexität und Aussicht. Die Ergebnisse enthüllten auch, daß die Präferenzen für räumliche Qualitätsindikatoren in der Landschaft (LSQIs) innerhalb der unterschiedlichen Altersgruppen, der Ausbildungsgrade und der Einkommensgruppe variiert, wobei Frauen mittleren Alters die höchste Präferenz hinsichtlich aller Indikatoren zeigten. Gleichzeitig wurde die Wahrnehmung von und die Präferenz für Landschaft als mit dem Ausbildungsgrad steigend gesehen, wobei weniger gut ausgebildete Frauen die niedrigsten Präferenzen für die LSQIs in Landschaftsparkanlagen demonstrierten. Auch hatten Frauen mit niedrigem und hohem Einkommen die höchste

Präferenz für Mystik, Komplexität und Ausblick von den LSQIs. Die Population der Frauen mittleren Alters nimmt zu, was es notwendig macht, eine besondere Aufmerksamkeit darauf zu richten, deren Meinungen und Ansprüche an öffentliche Plätze, so wie landschaftliche Qualität zu verstehen. Es wurde entsprechend bestätigt, daß die Charakteristika der Nutzer bei dem Pflanzdesign und besonders seiner räumlichen Konfigurationen in urbanen Parkanlagen in Betracht gezogen werden sollen.

Resumen. Las preferencias de las personas por los parques urbanos están influenciadas por las características espaciales y contextuales de esos espacios, donde los paisajes forman el cuerpo principal de los parques. El presente estudio examinó las preferencias de las mujeres por los indicadores de calidad espacial del paisaje (incluyendo coherencia, misterio, complejidad, legibilidad, perspectiva y refugio) en dos parques urbanos. Además, el estudio exploró el impacto de las variables socioeconómicas como la edad, los ingresos y la educación en las preferencias de las mujeres. En este espíritu, se realizó una encuesta fotográfica entre 178 mujeres como usuarias del parque en Tabriz en 2017. El análisis descriptivo, el análisis factorial y las pruebas de comparación como ANOVA unidireccional se utilizaron para analizar los datos. Según los resultados, las preferencias más altas fueron de misterio, complejidad y perspectiva. Los resultados también revelaron que la preferencia por los indicadores de calidad espacial del paisaje (LSQI) varía entre los diferentes grupos de edad, niveles de educación y estados de ingresos, donde las mujeres de mediana edad muestran la mayor preferencia hacia todos los LSQI. Del mismo modo, se observó que la percepción y la preferencia por el paisaje aumentaban con el nivel educativo, y las mujeres menos educadas demostraban las preferencias más bajas para LSQI en un entorno de parque. Además, las mujeres con niveles de ingresos bajos y altos tenían la mayor preferencia por el misterio, la complejidad y la perspectiva de los LSQI. La población de residentes de mediana edad está aumentando, lo que hace necesario que se preste especial atención para comprender sus opiniones y demandas de espacios públicos, como la calidad del paisaje. Asimismo, se confirmó que las características de los usuarios deben tenerse en cuenta en el diseño de plantación, en particular sus configuraciones espaciales en parques urbanos.