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Investigation of the Effect of Urban Identity on Urban Landscape Design with Eye Tracking Technique in the Case of Konya City

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HIGHLIGHTS

- The effect of Konya urban identity on the urban landscape design of Konya city was investigated with eye tracking technique (method).
- Urban identity and eye tracking method have been the subject of a study together for the first time.

Abstract

The aim of this study is to examine the effect of Konya urban identity on the urban landscape design of Konya city through eye tracking technique (method) through individuals. Within the scope of the research, first of all, a literature review on the subject was made. Afterwards, urban landscape areas with dense urban identity components determined in the light of literature resources were visited and photographs were obtained from these areas. Interviews were held with experts in the field of Konya urban identity, and as a result of these interviews, the photographs to be used in eye tracking analysis were determined. The photographs were uploaded to the eye tracking program and heat maps of the eye movements of the volunteer participants were created using the eye tracking device, and the numerical data (fixation numbers and fixation times) of the eye tracking analysis were reached. In addition, questionnaires were applied to the participants after the eye tracking analysis. As a result of the research, it was revealed that heat maps and eye tracking numerical data supported the questionnaires. Based on this, the conclusion that Konya's urban identity has an effect on Konya's urban landscape design was reached through the people who participated in the study.

Keywords: Eye tracking technique; Konya; urban identity; urban landscape design

1. Introduction

Urban identity is all the features that distinguish a city from other cities. These features are called urban identity components. In the formation of urban identity components, natural and artificial environmental features, historical, cultural, institutional and demographic characteristics, as well as socio-economic features, sensory and psychological features are also effective.

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The identity of the city becomes clear and can be perceived through urban design and urban landscape design. In this way, the natural and artificial environment of the city and the meaning that socio-cultural and socio-economic formation adds to this environment can be revealed (Çakmaklı, 1992).

Eyes, one of the most important sense organs, are the windows of the mind and have the most important place in our perception of the world. For this reason, eye tracking analysis, tracking and recording eye movements is one of the effective methods used to understand the processes taking place in the mind. Eye movement data provides information about where people pay attention, what information they ignore, and what bothers them most (Çağıltay, 2011).

In the scientific studies in the field of landscape architecture, especially visual landscape perception, visual landscape quality, etc. In order to measure people's preferences and perceptions on the subject, photo-surveys are generally applied to the participants. It has been observed that the people who were asked questions by the survey method gave the answers they wanted to the people who made the survey by using the cognitive sides of their brains. For this reason, it can be said that a "real" analysis of people's preferences and perceptions can be made, especially with neuromarketing methods. The reason for this is that neuroscientific methods give more accurate and detailed information (Stipp, 2015). In addition, it is possible to reach accurate results even with studies with a small number of samples by using neuroimaging techniques (Emul and Yücel, 2021).

In the research, the use of urban identity and eye tracking method together for the first time shows that the study is an original study. The fact that the eye tracking method, which is an up-to-date method, will shed light on national/international scientific studies in the field of landscape architecture once again reveals the importance of the study.

2. Materials and Methods

2.1. Materials

The main material of the research consists of some objects containing the components of Konya's urban identity. These objects; rose, tulip, cascade ornamental pool, fountain, double-headed eagle, tile, green dome and butterfly. These objects are located in the landscape areas in the city center of Konya. In Table 1, the codes given to the objects containing the urban identity components, the locations of the objects and the urban identity component categories including the objects are given.

Table 1. Codes, locations and categories of objects containing urban identity components

Object Name	Code	Location	Urban Identity Component Category
Rose	D1	Kelebekler Vadisi Park	Environmental Identity-Natural Environmental Features
Tulip	D2	Kelebekler Vadisi Park	Environmental Identity-Natural Environmental Features
Cascade ornamental pool	Y1	Kültürpark	Environmental Identity-Artificial Environment Features
Fountain	Y2	Alaeddin Hill Park	Environmental Identity-Artificial Environment Features
Double-headed eagle	SK1	Selcuk Unıversity Alaeddin Keykubat Campus	Social Identity-Socio-Cultural Identity Features
Tile	SK2	Kalehan-Ecdad Garden	Social Identity-Socio-Cultural Identity Features
Green Dome	SE1	Kalehan-Ecdad Garden	Social Identity-Socio-Economic Identity Features
Butterfly	SE2	Alaeddin Hill Park	Social Identity-Socio-Economic Identity Features

Other materials used in the study are; eye tracking device, eye tracking software program, computer, 6.1 inch, 828x1792 pixel screen, 4 gb ram, 64 gb phone, master's theses, doctoral theses, national and international scientific articles, papers, books, original photographs obtained from research areas, a questionnaire prepared with Google Forms, Microsoft Office 365 and Autocad 2023 program.

2.2. Method

The method consists of 3 stages. The first stage is the preliminary stage, the second stage is the data collection and analysis stage, and the third stage is the evaluation stage.

2.2.1 Preliminary stage

At this stage, the subject, purpose and scope of the study were determined, literature and field studies were conducted. While conducting the literature research, national and international master's theses, doctoral theses, scientific articles, papers, books and other materials were used.

While conducting the field research, first of all, all areas that are thought to have an effect on the urban landscape design of Konya city were determined in line with the literature resources and these areas were visited. As a result of the visits, urban landscape areas with the densest of Konya urban identity components were determined and work was continued in line with the visuals obtained from these areas. These areas within the scope of the study; Alaeddin Hill Park, Kültürpark, Kelebekler Vadisi Park, Kalehan-Ecdad Garden, Selcuk UniversityAlaeddin Keykubat Campus.

2.2.2. Data collection and analysis stage

At this stage, by going to the study areas, 96 photographs, which are thought to contain the urban identity components of Konya, were obtained from the areas. The photographs obtained from the areas were taken in a way that does not allow manipulation and on clear days. Attention was paid to the equal number of photographs. These photographs, which include the components of Konya's urban identity; Images containing natural environment features as an environmental identity component, images containing artificial environment features as an environmental identity component, images containing socio-cultural identity features as a social identity component, and images containing socio-economic identity features as a social identity component were obtained from areas in 4 categories.

Secondly, interviews were conducted with experts on Konya's urban identity. First of all, each expert evaluated Konya's urban identity and its components according to their field of expertise. Afterwards, 96 photographs obtained from the fields were shared with experts. Photographs with similar urban identity components were eliminated. It was decided by experts that there are 8 objects containing the components of Konya's urban identity, and 8 photographs of these 8 objects were selected for use in eye tracking analyses.

Finally, eye tracking analyzes were performed at this stage. It is very important to determine the optimum sample size before academic researches are carried out with the eye tracking device in order to reach qualified data. For this reason, power analysis is required for the study to be successful. It is necessary to use research resources efficiently due to reasons such as the eye tracking device used in the studies is expensive, the people who will use the device will use the device one by one and sequentially, and the analysis process takes time. Because of these situations, basic standards have been determined in studies using eye tracking devices on how many people should be in the minimum sample group required to reach the desired power (Bojko, 2013). Looking at these standards; At least 14 data is required in a research with 80% power effect without movement using an eye tracking device, while at least 21 data is needed in the sample group in a research with 90% power effect. In a research with 80% power effect, at least 21 data is required, while in a research with 90% power, at least 34 data needs to be in the sample group (Şenduran, 2019). While non-motion research is done with screen-based eye tracking devices, research involving motion is done with wearable eye tracking devices.

In experimental studies, it was determined that groups between 30-40 people were the most optimal and consistent sample size with an error margin of less than 1% (Sands, 2009). Therefore, the number of samples in this study was determined as 36. Eye tracking analyzes conducted at Selcuk University, Faculty of Architecture and Design, Department of Landscape Architecture, were carried out with 36 volunteer participants, consisting of different demographic characteristics such as age, gender, marital status, and educational status.

Participants in the study voluntarily participated in the analysis. Before the eye tracking analyses, the participants were given information about how the analyzes would be carried out. Permission for the study was obtained from the Ethics Committee of the Faculty of Architecture and Design of Selcuk University. The participants filled the Voluntary Consent Form before the analysis.

Before the participants were included in the study, the visuals of the urban landscape areas in the city of Konya were uploaded to the eye tracking analysis program. First, areas of interest (AOI) were determined on these images uploaded to the program. These areas of interest consist of objects/objects containing urban identity components and were created separately for each image. It was decided with experts which object/objects would be the areas of interest. Areas of interest must be created to receive numerical data from the eye tracking analysis program. Without these areas of interest it is impossible to get numerical data from the eye tracking program. Thanks to these areas of interest, it can be easily determined how many times the participants look at the objects and for how long.

Before the eye-tracking analysis, the volunteers were told, "Consider the features that come to your mind when the city of Konya is mentioned, and examine the photos." and then eye tracking analyzes were started. Thus, the calibration process, which is the first step of eye tracking analysis, was started. Participants were first seated in front of the computer where the eye tracking device was pre-installed. The optimum distance between the participants and the computer is 65 cm. After this distance was achieved, the required calibration process was applied. Calibration procedures were repeated until the calibration result was successful. Validation degree must be below 0.50 for the calibration process to be successful. In order for this value to be below 0.50 and for the calibration process to be successful, the participants were asked not to wear make-up. In addition, people with high vision problems were asked to use glasses or contact lenses during the analysis. Despite glasses and lenses, analyzes could not be performed with people with a Validation degree higher than 0.50. Therefore, these individuals were excluded from the analysis. The analyzes were continued with the participants obtained as a result of successful calibration, and 8 images of 5 seconds each related to the urban landscape areas in the city of Konya were shown to the participants in the form of slides. The visuals were shown to the participants with a computer with a 15.6 inch screen. In order for the analyzes to be successful, the working environment was purified from external stimuli before the analysis and care was taken not to have too much ambient light. Only eye tracking specialist and participant were found in this setting.

After the eye tracking analysis, the participants were informed about the components of urban identity and questionnaires were applied. In the survey, 2 questions were asked by showing the photos on the eye tracking slide again.

As a result of this stage, heat maps were drawn separately for each image, the number of fixations in the areas of interest and the fixation times in the areas of interest were calculated, and charts were obtained and graphs of the survey results were created.

2.2.3. Evaluation stage

The heat maps obtained as a result of the eye tracking analysis, the numerical data of the eye tracking analysis and the survey results applied after the analyzes were evaluated at this stage. Since this method is applied through visuals, the issue of sensory and psychological identity components could not be evaluated in this context. Finally, recommendations were made as a result of the evaluations.

3. Results

3.1. Demographic characteristics of people participating in eye tracking analysis

A total of 36 people participated in the research. Of the volunteer participants participating in the analysis, 20 were female and 16 were male. 27 of the participants are between the ages of 18-25, 3 of them are between the ages of 26-35, 2 of them are between the ages of 36-45, and 4 of them are between the ages of 46-55. 6 of the participants are married and 30 are single. Twenty of the participants were high school graduates, 9 were university graduates, and 7 were graduate students. While 16 of the participants are from Konya, 20 of them are not.

3.2. Heat maps, eye tracking analysis numerical data and survey results

3.2.1. Heat maps, eye tracking numerical data and survey results obtained from visuals related to natural environmental features, which are environmental identity components

There are 2 visuals related to natural environmental features, which are environmental identity components. The first image is the image with the rose object. The code for this image is D1. The areas of interest in this image are roses. This image is an image of the Butterfly Valley park. When the heat map of this image is examined (Figure 1), it is seen that the participants are mostly fixed on roses.

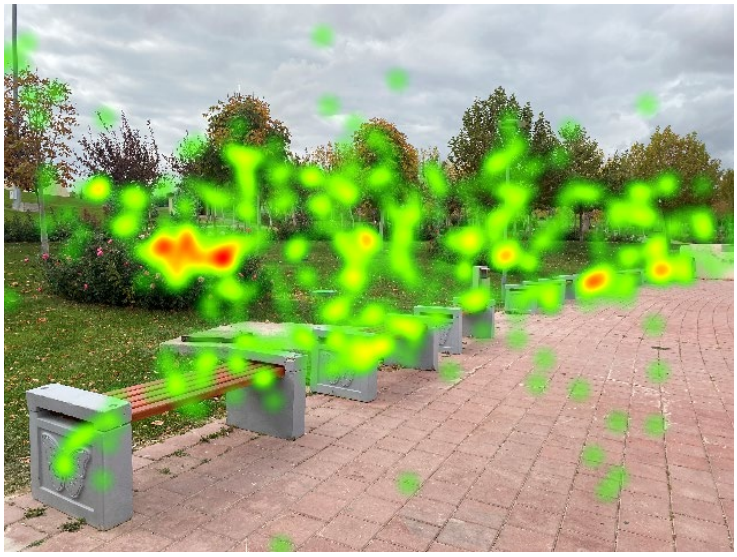

Figure 1. Heat map obtained from participants of D1 image (Original, 2022)

Below are the charts with the eye tracking analysis numerical data of the image. In the first chart, the averages of how many times all participants were fixed on two areas of interest (roses1 2.63 times and roses2 1.41 times) and the average of how many times all participants fixed on two areas of interest (2.26 times) are given. In the second chart, the average of how long all participants were fixed on two areas of interest (roses1 0.92s and roses2 0.42s) and the average of how many times all participants were fixed on two areas of interest (0.78s) were given. The time is given in seconds (Table 2 and Table 3).

Table 2. Averages of fixation numbers within the areas of interest for the D1 image

Participants	Roses 1	Roses 2	Average	Median	Sum	Total Recording Duration
Average	**2,63**	**1,41**	**2,26**	2,26	3,27	161,44
Percentage Fixated (%)	94,12	50,00				
Variance	1,85	0,26	0,86	0,86	2,64	741,43
Standard Deviation (n-1)	1,36	0,51	0,93	0,93	1,63	27,23

Table 3. Averages of fixation times (s) within the areas of interest for the D1 image

Participants	Roses 1	Roses 2	Average	Median	Sum	Total Recording Duration
Average	**0,92**	**0,42**	**0,78**	0,78	1,11	161,44
Share of Total Time (%)	80,30	19,70				
Percentage Fixated (%)	94,12	50,00				
Variance	0,43	0,07	0,35	0,35	0,51	741,43
Standard Deviation (n-1)	0,66	0,26	0,59	0,59	0,72	27,23

After the eye tracking analysis, the participants were asked, "Are there any objects/objects in the photograph that reflect the urban identity components?" question has been asked. 14 of the participants answered "Yes" and 22 of them answered "No". Another question is "If your answer is "Yes", can you write the objects/objects that reflect the urban identity components?" 100% of the participants answered “roses” to the question.

Another visual related to natural environmental features, which is an environmental identity component, is the tulip object. The code for this image is D2. The areas of interest in this image are tulips. This image is an image of the Butterfly Valley park. When the heat map of this image is examined (Figure 2), it is seen that the participants are mostly fixed on tulips.

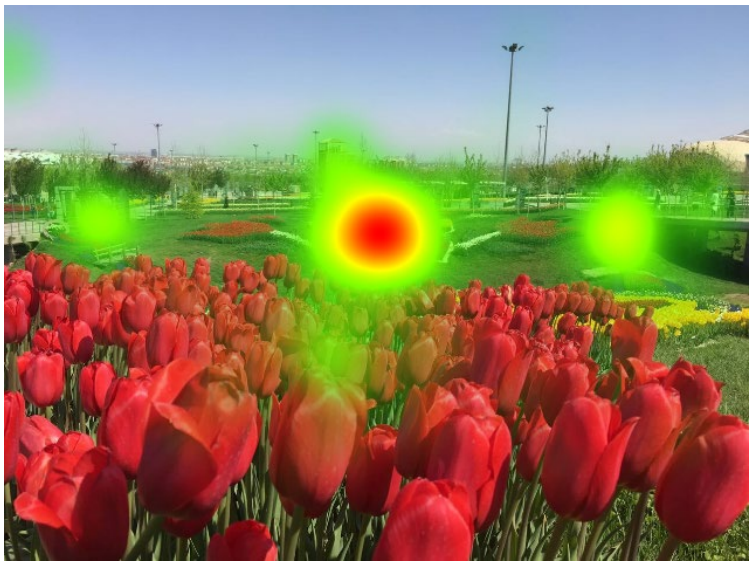

Figure 2. Heat map obtained from participants of D2 image (Original, 2022)

Below are the charts with the eye tracking analysis numerical data of the image. In the first chart, the average of how many times all participants were fixed on two areas of interest (3.94 times for tulips on a butterfly pattern and 3.35 times for other tulips) and the average of how many times all participants were fixed on two areas of interest (3.65 times) are given. In the second chart, the average of how long all participants were fixed on two areas of interest (1.41s for tulips on a butterfly pattern and 0.79s for other tulips) and the average of how many times all participants were fixed on two areas of interest (1.10s) were given. The duration is given in seconds (Table 4 and Table 5).

Table 4. Averages of fixation numbers within the areas of interest for the D2 image

Participants	Tulips on a butterfly pattern	Other tulips	Average	Median	Sum	Total Recording Duration
Average	**3,94**	**3,35**	**3,65**	3,65	7,29	161,44
Percentage Fixated (%)	100,00	100,00				
Variance	5,33	5,69	2,92	2,92	11,67	741,43
Standard Deviation (n-1)	2,31	2,39	1,71	1,71	3,42	27,23

Table 5. Averages of fixation times (s) within the areas of interest for the D2 image

Participants	Tulips on a butterfly pattern	Other tulips	Average	Median	Sum	Total Recording Duration
Average	**1,41**	**0,79**	**1,10**	1,10	2,19	161,44
Share of Total Time (%)	64,10	35,90				
Percentage Fixated (%)	100,00	100,00				
Variance	1,12	0,23	0,27	0,27	1,10	741,43
Standard Deviation (n-1)	1,06	0,48	0,52	0,52	1,05	27,23

After the eye tracking analysis, the participants were asked, "Are there any objects/objects in the photograph that reflect the urban identity components?" question has been asked. Twenty-six of the participants answered "Yes" and 10 answered "No". Another question is "If your answer is "Yes", can you write the objects/objects that reflect the urban identity components?" 100% of the participants answered the question as “tulips”.

3.2.2. Heat maps, eye tracking numerical data and survey results obtained from visuals related to artificial environmental features, which are environmental identity components

There are 2 visuals related to the artificial environment features, which are the environmental identity component. The first image is the one with the cascade ornamental pool reinforcement element. The code of this image is Y1. The area of interest in the image is the cascade ornamental pool. This image belongs to Kültürpark. When the heat map of this image is examined (Figure 3), it is seen that the participants are mostly fixed on the cascade ornamental pond.

Figure 3. Heat map obtained from participants of Y1 image (Original, 2022)

Below are the charts with the eye tracking analysis numerical data of the image. In the first chart, the average number of times all participants were fixed on the area of interest (cascaded ornamental pond 2 times) is given. In the second table, the average of how long all participants were fixed on the area of interest (cascaded ornamental pool 1.02s) is given. The time is given in seconds (Table 6 and Table 7).

Table 6. Averages of fixation numbers within the areas of interest for the Y1 image

Participants	Cascade ornamental pool	Average	Median	Sum	Total Recording Duration
Average	**2,00**	**2,00**	2,00	2,00	161,44
Percentage Fixated (%)	76,47				
Variance	1,20	1,20	1,20	1,20	741,43
Standard Deviation (n-1)	1,10	1,10	1,10	1,10	27,23

Table 7. Averages of fixation times (s) within the areas of interest for the Y1 image

Participants	Cascade ornamental pool	Average	Median	Sum	Total Recording Duration
Average	**1,02**	**1,02**	1,02	1,02	161,44
Share of Total Time (%)	100,00				
Percentage Fixated (%)	76,47				
Variance	0,70	0,70	0,70	0,70	741,43
Standard Deviation (n-1)	0,84	0,84	0,84	0,84	27,23

After the eye tracking analysis, the participants were asked, "Are there any objects/objects in the photograph that reflect the urban identity components?" question has been asked. Fifteen of the participants answered "Yes" and 21 answered "No". Another question is "If your answer is "Yes", can you write the objects/objects that reflect the urban identity components?" 100% of the participants answered the question as "cascaded ornamental pool".

Another one of the visuals related to the artificial environmental features, which is an environmental identity component, is the image in which the fountain reinforcement element is located. The code for this image is Y2. The area of interest in the image is the fountain. This image is an image of Alaeddin Hill park. When the heat map of this image is examined (Figure 4), it is seen that the participants mostly focus on fountain.

Figure 4. Heat map obtained from participants of Y2 image (Original, 2022)

Below are the charts with the eye tracking analysis numerical data of the image. In the first chart, the average number of times all participants were fixed on the area of interest (5.58 times of fountain) is given. In the second chart, the average of how long all participants were fixed on the area of interest (fountain 2.18s) is given. The time is given in seconds (Table 8 and Table 9).

Table 8. Averages of fixation numbers within the areas of interest for the Y2 image

Participants	Fountain	Average	Median	Sum	Total Recording Duration
Average	**5,58**	**5,58**	5,58	5,58	161,44
Percentage Fixated (%)	100,00				
Variance	7,56	7,56	7,56	7,56	741,43
Standard Deviation (n-1)	2,75	2,75	2,75	2,75	27,23

Table 9. Averages of fixation times (s) within the areas of interest for the Y2 image

Participants	Fountain	Average	Median	Sum	Total Recording Duration
Average	**2,18**	**2,18**	2,18	2,18	161,44
Share of Total Time (%)	100,00				
Percentage Fixated (%)	100,00				
Variance	1,40	1,40	1,40	1,40	741,43
Standard Deviation (n-1)	1,18	1,18	1,18	1,18	27,23

After the eye tracking analysis, the participants were asked, "Are there any objects/objects in the photograph that reflect the urban identity components?" question has been asked. Eighteen of the participants answered "Yes" and 18 answered "No". Another question is "If your answer is "Yes", can you write the objects/objects that reflect the urban identity components?" 100% of the participants answered “yes” to the question “fountain”.

3.2.3. Heat maps, eye tracking numerical data and survey results obtained from images related to socio-cultural identity, which is a social identity component

There are 2 images related to socio-cultural identity, which is a social identity component. The first of these images is the image containing the double-headed eagle object. The area of interest in the image is the double-headed eagle sculpture. The code for this image is Y2. This image is located in Selcuk University Alaeddin Keykubat Campus. When the heat map of this image is examined (Figure 5), it is seen that the participants are mostly fixed on the double-headed eagle statue.

Figure 5. Heat map obtained from participants of SK1 image (Original, 2022)

Below are the charts with the eye tracking analysis numerical data of the image. In the first chart, the average number of times all participants were fixed on the area of interest (double-headed eagle statue 2.53 times) is given. In the second chart, the average of how long all participants were fixed on the area of interest (double-headed eagle statue 1.80s) is given. The time is given in seconds (Table 10 and Table 11).

Table 10. Averages of fixation numbers within the areas of interest for the SK1 image

Participants	Double headed eagle	Average	Median	Sum	Total Recording Duration
Average	**2,53**	**2,53**	2,53	2,53	161,44
Percentage Fixated (%)	83,33				
Variance	2,19	2,19	2,19	2,19	741,43
Standard Deviation (n-1)	1,48	1,48	1,48	1,48	27,23

Table 11. Averages of fixation times (s) within the areas of interest for the SK1 image

Participants	Double headed eagle	Average	Median	Sum	Total Recording Duration
Average	**1,80**	**1,80**	1,80	1,80	161,44
Share of Total Time (%)	100,00				
Percentage Fixated (%)	83,33				
Variance	1,87	1,87	1,87	1,87	741,43
Standard Deviation (n-1)	1,37	1,37	1,37	1,37	27,23

After the eye tracking analysis, the participants were asked, "Are there any objects/objects in the photograph that reflect the urban identity components?" question has been asked. All of the participants answered “Yes”. Another question is "If your answer is "Yes", can you write the objects/objects that reflect the urban identity components?" 100% of the participants answered the question as “double-headed eagle”.

The last image related to socio-cultural identity, which is a component of social identity, is the one with the tile object. The areas of interest in the image are the tile motifs on the building. The code of this image is SK1. This image is an image of Kalehan-Ecdad garden. When the heat map of this image is examined (Figure 6), it is seen that the participants are generally fixed on the tile motifs on the building.

Figure 6. Heat map obtained from participants of SK2 image (Original, 2022)

Below are the charts with the eye tracking analysis numerical data of the image. In the first chart, the averages of how many times all participants were pinned to two areas of interest (tile motif1 1.42 times, tile motif2 3.16, tile motif3 3.94, and tile motif4 1.20 times) and the average of the total number of times all participants were fixed to two areas of interest (2.77 times). In the second chart, the average of how long all participants were fixed on two areas of interest (tile motif1 0.52s, tile motif2 1.05s, tile motif3 1.18s, and tile motif4 0.38s) and the average of how many times all participants were fixed on two areas of interest (0.93s) is given. The time is given in seconds (Table 12 and Table 13).

Table 12. Averages of fixation numbers within the areas of interest for the SK2 image

Participants	Tile motif 1	Tile motif 2	Tile motif 3	Tile motif 4	Average	Median	Sum	Total Recording Duration
Average	**1,42**	**3,16**	**3,94**	**1,20**	**2,77**	2,50	7,56	161,44
Percentage Fixated (%)	52,78	69,44	100,00	55,56				
Variance	0,37	3,64	3,25	0,38	0,91	1,34	9,17	741,43
Standard Deviation (n-1)	0,61	1,91	1,80	0,62	0,95	1,16	3,03	27,23

Table 13. Averages of fixation times (s) within the areas of interest for the SK2 image

Participants	Tile motif 1	Tile motif 2	Tile motif 3	Tile motif 4	Average	Median	Sum	Total Recording Duration
Average	**0,52**	**1,05**	**1,18**	**0,38**	**0,93**	0,88	2,40	161,44
Share of Total Time (%)	11,41	30,37	49,33	8,89				
Percentage Fixated (%)	52,78	69,44	100,00	55,56				
Variance	0,14	0,94	0,49	0,06	0,33	0,38	1,04	741,43
Standard Deviation (n-1)	0,37	0,97	0,70	0,24	0,57	0,62	1,02	27,23

After the eye tracking analysis, the participants were asked, "Are there any objects/objects in the photograph that reflect the urban identity components?" question has been asked. Thirty of the participants answered "Yes" and 6 of them answered "No". Another question is "If your answer is "Yes", can you write the objects/objects that reflect the urban identity components?" 100% of the participants answered the question as "tile".

3.2.4. Heat maps, eye tracking numerical data and survey results obtained from the image related to socio-economic identity, which is a social identity component

There are 2 images related to socio-economic identity, which is a social identity component. The first of these images is the Mevlana Museum model containing the green dome object. The code for this image is SK2. The area of interest in the image is the Mevlana Museum model. This image is an image of Kalehan-Ecdad garden. The code for this image is SE1. When the heat map of this image is examined (Figure 7), it is seen that the participants are mostly fixed on the green dome.

Figure 7. Heat map obtained from participants of SE1 image (Original, 2022)

Below are the charts with the eye tracking analysis numerical data of the image. In the first chart, the average number of times all participants were fixed on the area of interest (5,72 times for the Mevlana Museum model) is given. In the second table, the average of how long all participants were fixed on the area of interest (Mevlana Museum model 2.37s) is given. The time is given in seconds (Table 14 and Table 15).

Table 14. Averages of fixation numbers within the areas of interest for the SE1 image

Participants	Mevlana Museum model	Average	Median	Sum	Total Recording Duration
Average	**5,72**	**5,72**	5,72	5,72	161,44
Percentage Fixated (%)	100,00				
Variance	7,06	7,06	7,06	7,06	741,43
Standard Deviation (n-1)	2,66	2,66	2,66	2,66	27,23

Table 15. Averages of fixation times (s) within the areas of interest for the SE1 image

Participants	Mevlana Museum model	Average	Median	Sum	Total Recording Duration
Average	**2,37**	**2,37**	2,37	2,37	161,44
Share of Total Time (%)	100,00				
Percentage Fixated (%)	100,00				
Variance	1,82	1,82	1,82	1,82	741,43
Standard Deviation (n-1)	1,35	1,35	1,35	1,35	27,23

After the eye tracking analysis, the participants were asked, "Are there any objects/objects in the photograph that reflect the urban identity components?" question has been asked. All of the participants answered “Yes”. Another question is "If your answer is "Yes", can you write the objects/objects that reflect the urban identity components?" 100% of the participants answered the question as “green dome”.

The last image related to socio-economic identity, which is a component of social identity, is the image of the butterfly object. The code for this image is SE2. The area of interest in the image is the butterfly pattern. This image is an image of Alaeddin Hill park. When the heat map of this image is examined (Figure 8), it is seen that the participants are mostly fixed on the butterfly pattern.

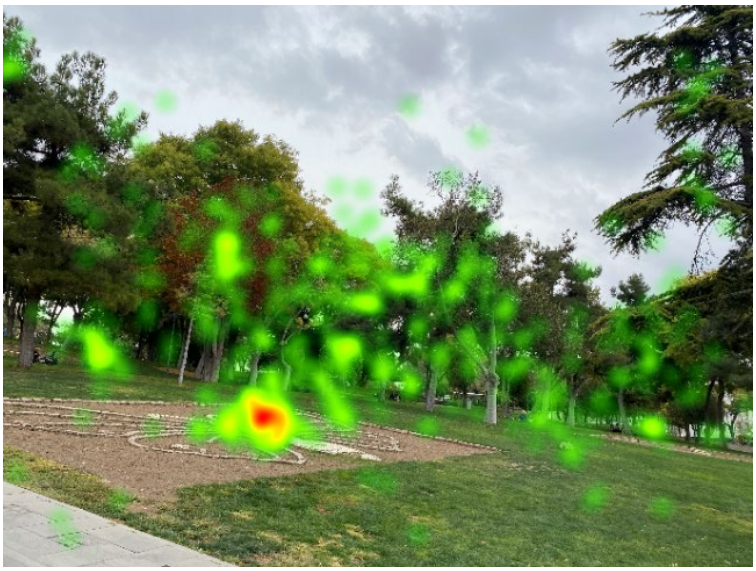

Figure 8. Heat map obtained from participants of SE2 image (Original, 2022)

Below are the charts with the eye tracking analysis numerical data of the image. In the first chart, the average number of times all participants were fixed on the area of interest (butterfly pattern 2.56 times) is given. In the second chart, the average of how long all participants were fixed on the area of interest (butterfly pattern 1.04 s) is given. The time is given in seconds (Table 16 and Table 17).

Table 16. Averages of fixation numbers within the areas of interest for the SE2 image

Participants	Butterfly pattern	Average	Median	Sum	Total Recording Duration
Average	**2,56**	**2,56**	2,56	2,56	161,44
Percentage Fixated (%)	94,12				
Variance	2,00	2,00	2,00	2,00	741,43
Standard Deviation (n-1)	1,41	1,41	1,41	1,41	27,23

Table 17. Averages of fixation times (s) within the areas of interest for the SE2 image

Participants	Butterfly pattern	Average	Median	Sum	Total Recording Duration
Average	**1,04**	**1,04**	1,04	1,04	161,44
Share of Total Time (%)	100,00				
Percentage Fixated (%)	94,12				
Variance	0,31	0,31	0,31	0,31	741,43
Standard Deviation (n-1)	0,55	0,55	0,55	0,55	27,23

After the eye tracking analysis, the participants were asked, "Are there any objects/objects in the photograph that reflect the urban identity components?" question has been asked. Eleven of the participants answered "Yes" and 25 answered "No". Another question is "If your answer is "Yes", can you write the objects/objects that reflect the urban identity components?" 100% of the participants answered the question as “butterfly”.

4. Conclusions

Eye tracking technique is used in many fields such as education, health, web design, marketing and advertising. In order to examine the purchasing behavior of consumers in the field of this technique, marketing and advertising; to investigate neuropsychiatric disorders in the field of health; In the field of web design, in order to enable people to easily access the information they seek in the virtual environment; In the field of education, it is used to examine how students solve problems, especially in numerical lessons.

When some international scientific studies in the field of landscape architecture are examined, it is seen that the eye tracking technique is used to determine the perceptions and preferences of people. These data, which were previously tried to be obtained only through questionnaires, can be measured more accurately and more accurately when obtained by eye tracking technique. In addition, when these data obtained from eye tracking analysis are supported by questionnaires, it is possible to reach more specific data. The eye tracking technique, which is a current technique, can determine where people focus the most, how long they focus, how many times they focus on the same point, and many other data by examining the eye movements of people. It is therefore advantageous to obtain these data using this technique. In other methods, people are sometimes hesitant to express their true views while expressing their own opinions. This technique largely eliminates such manipulation situations. In addition, the eye tracking method has some limitations. For example, this technique cannot be applied to people with high eye disorders and elderly people with poor eyesight. Other constraints encountered are that suitable environmental conditions for eye tracking analysis cannot be easily provided each time, and people of the same age group generally want to voluntarily participate in eye tracking analysis studies. It is possible to reach more objective results when such situations are eliminated.

Within the scope of the research, the effect of Konya urban identity on the urban landscape design of Konya city was examined through the volunteer participants who participated in the research. In this study, which was carried out using the eye tracking technique, people's perceptions of the subject were measured. In line with the measurements made, it was observed that the areas where the participants were fixed in the analyzes were generally areas containing the components of urban identity. Starting from here; The conclusion that Konya's urban identity has an effect on Konya's urban landscape design was reached through the people who participated in the study.

Urban identity is a combination of features that help distinguish and differentiate a city from other cities, and elements specific to that city (Lynch, 1960). For this reason, using urban identity components more prominently in urban landscape design can make the city more unique. The identity of that city can be made more evident by using objects containing these components in all landscape design works carried out on a large or small scale, from the design of the reinforcement elements to the urban design.

As a result of the study, it is seen that most of the objects reflecting Konya's urban identity (rose, tulip, cascaded ornamental pool, fountain, double-headed eagle, tile, green dome and butterfly) were seen as a part of Konya's urban identity by the people who participated in the study. For this reason, the use of these objects in urban landscape areas in the form of different designs in the landscape design works to be carried out in the city of Konya can make the city of Konya a unique city.

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