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# The Role of Nature and Physical Environment in Mental Relaxation: Konya Kyoto Park

**Research Article**
Araştırma Makalesi

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## ABSTRACT

Parks, considered among the most important environments, are often discussed primarily in terms of functional quality. The impact of the physical features, characteristics of the natural elements, and aspects of visual perception have been understudied regarding users' mental relaxation. This study aims to evaluate the effects of environmental and mental relaxation components in the architecture, along with utilization of natural elements in Konya Kyoto Park. The primary objective is to gain a deeper insight into park users' experiences compared to the existing literature on the subject. The motivation behind thiss research stems from the current disconnection among humans, nature, and the physical environment. The method used is descriptive and analytical, through a survey. The survey questions were divided into three components: physical, cognitive, and behavioral impacts. The users of Konya Kyoto Park were selected as the research population. Additionally, semi-structured interviews were conducted. The results showed that the different areas of the park lead to restful experiences and provide mental and affective relaxation to visitors by offering views, perspectives, and various functions that allow them to spend leisure time and be in nature.

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# Zihinsel Rahatlamada Doğanın ve Fiziksel Çevrenin Rolü: Konya Kyoto Park

## ÖZ

Parklar, en önemli çevrelerden biri olarak kabul edildiği halde, birçok durumda sadece işlevsel kalite açısından incelenmiştir. Fiziksel özelliklerin etkileri, doğal unsurların özelliği ve görsel algı açısından, kullanıcıların zihinsel rahatlamasına yönelik daha az çalışılmıştır. Bu çalışma, Konya Kyoto Parkı'nda çevresel ve zihinsel rahatlama bileşenlerinin mimarideki etkilerini ve doğal unsurların kullanımının değerlendirilmesini amaçlamaktadır. Çalışmanın temel kaygısı, park deneyimlerini ele alan mevcut literatürle karşılaştırıldığında park kullanıcılarının deneyimlerine ilişkin daha derin bir anlayış elde etmektir. Bu araştırmaya olan ihtiyacın altını çizen şey, insan, doğa ve fiziksel çevre arasındaki mevcut kopukluktur. Kullanılan yöntem tanımlayıcı ve analitiktir ve bir anket aracılığıyla gerçekleştirilmiştir. Anket soruları fiziksel, bilişsel ve davranışsal etkiler olmak üzere üç bileşene ayrılmıştır. Konya Kyoto Parkı'nın kullanıcıları araştırma popülasyonu olarak seçilmiştir. Ayrıca yarı yapılandırılmış görüşmeler gerçekleştirilmiştir. Sonuçlar, parkın farklı alanlarının, ziyaretçilere zaman geçirmelerine ve doğada olmalarına olanak tanıyan manzaralar, perspektifler ve çeşitli işlevler sunarak dinlendirici deneyimler, zihinsel ve duygusal rahatlama sağladığını göstermiştir.

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## INTRODUCTION

Providing mental relaxation is considered one of the most important issues in architectural and environmental design. In this regard, parks, and green spaces, which are built and operated as important places to creat mental relaxation and improve the mental health of users, have always been of interest in terms of architecture and functional aspects. Such spaces should be examined by designers and managers in terms of the interaction of nature and the physical environment and the impact of their visual perception aspects on users' environmental behavior, mental relaxation, psychological health, and the feeling of satisfaction. According to the World Health Organization, health is a multidimensional issue in addition to the physical dimension, and involves the

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psychological and social dimensions (Green et al., 2021). Based on this, it should be noted that different dimensions of health mutually affect and influence each other (Matiz et al., 2020). What underscores the need for this study is the current disconnect between humans, nature, and the physical environment. Although such a question raises the idea that the quality of the relationship between nature and human life depends on the chosen way of life, this study aims to highlight the necessity of reevaluating the relationship between individuals' mental and nature in the built environment. In this context, Liu et al. (2022) emphasize the importance of examining natural spaces and their connection to health. They regard natural and physical environments as everyday spaces, exploring their role in shaping behavior, environmental health, perception, and mental relaxation. The author, emphasizes the need to reconsider how individuals inhabit natural-physical environments.

Numerous studies have shown that appropriate physical design, green space, and natural light increase feelings of happiness and mental calm. In this respect, DeLauer et al. (2022) showed that suitable physical design, green spaces, and natural light affect individuals' happiness and mental relaxation. In their study, Jimenez et al. (2021) define encounters with the natural environment, such as experiences in green spaces, and indicate that observing natural landscapes reduces psychological stress and elicits positive emotions. The findings of Callaghan et al. (2021) suggesta positive relationship between mental health and the characteristics of green spaces. In fact, their results underscore the impact of green spaces in promoting better mental health. Saint-Onge et al. (2022) suggest that the use of urban parks also has positive effects on well-being, such as self-actualization, a sense of accomplishment, and a feeling of belonging. They found that park users feel more connected to themselves and their community as a result of caring for themselves. From a review of previous studies, it is evident that the design of green spaces addresses both psychological and physical human needs, and the peaceful coexistence among people, architecture, and nature, along with the appropriate integration nature into the environment.

Therefore, recognizing the significant importance of the interaction between nature and the physical environment of green spaces necessitates addressing the present study from an architectural perspective. Considering the elements of nature such as plants, water, landscape, natural light and physical spaces of Konya Kyoto Park as independent variables, this research aims to explore how the interaction of these natural elements with the physical design of green spaces, such as parks, influences the mental and psychological relaxation of users. To answer this question, the study proposes a conceptual model derived from a comperhensive review of fundamental concepts related to user well-being in physical environments, mental health, and the psychological aspects of spatial perception and green spaces. Subsequently, the factors introduced in the corresponding model are assessed through a survey in which 320 users are presented with a series of images depicting various landscapes and spaces within Konya Kyoto Park. Finally, the qualitative data obtained from this survey are collected and analyzed using inferential and comparative analysis. The results are then evaluated based on the main objectives of the study, examining the role of natural physical elements of the built environment on users' mental relaxation.

## THEORETICAL FRAMEWORK

The familiarity of designers and architects with the science of psychology helps them to design an environment that aligns with the psychological and physical needs of users. This understanding involves the perception of the environment, especially, the main concern of the present study: the perception of nature and its elements, such as water, light, and green spaces, and their impact on mental relaxation. Undoubtedly, natural elements significantly influence the human soul. Incorporating these elements into the design of green spaces, drawing inspiration from natural features, and combining this knowledge with cognitive and behavioral sciences can address various psychological and health issues. The utilization of nature in the design of architectural and public spaces is increasingly in developed countries. We observ various concepts of nature therapy (e.g. Cooley, 2022; Zhong et al., 2022; Olszewska-Guizzo et al., 2022; Cooley et al., 2020). Unfortunately, in our country, only a few studies have explored the impact of nature on concentration disorders, memory, learning, stress, and mental relaxation. This crucial therapeutic approach has been largely overlooked. Nature plays an important role in providing esthetics (Tsekos & Petsiou, 2018). The individual's ability to perceive the quality of nature, like art, begins with beautiful components and then passes through the stages of the perceptual sequence from the beautiful to other values. Importantly, the attitude towards nature encompasses perception of the environment, direct perception of implicit meanings and psychological values and well-being resulting from interaction with the environment. This includes perceptual feedback in the system of activities and behaviors of the environment's users (Carlson, 2011).

The physical and architectural features of green spaces play a curcial role in people's quality of life, and access to these areas can be considered significant factor in mental relaxation and daily stress relief. One of fundamental physical apects of green spaces is the variety of plants and the presence of various natural elements such as trees, plants, water and stones. These elements contribute to the biodiversity and beauty of the environment, helping to reduce stress and enhance the mental relaxation of users. In this regard, Lindemann-Matthies and Matthies (2018) showed that plant species richness positively influenced recovery from stress. According to their results, the reduction in blood pressure was more significant when respondents could see a plant arrangement instead of a floor without vegetation, and relaxation was greatest with medium species richness. Lighting and colors have a direct impact on people's moods and relaxation. Xie et al (2022)

have shown that the lighting environment has important influences on the psychological and physical aspects of a person. On certain occasions, appropriate lighting design can regulate people's emotions and improve their well-being in a space. According to Hoyle (2022), green spaces with light and natural colors can make people feel calm and fresh. Moderate light and the temperature of natural colors, such as green, have a positive effect on people's behavior and mood.

The level and harmony of different elements in the space can enhance the feeling of balance and relaxation (Jabbar et al. 2022). Green spaces with appropriate walking paths and seating can provide users with activities, rest, and mental relaxation. The integrity of different elements in green spaces plays a crucial role in mental relaxation. When these spaces are well cared for and free of waste or damage, individuals can experience a deeper sense of peace and connection with nature (Yang et al., 2021). Pristine environments with intact vegetation, clean water features, and well-maintained structures create a tranquil atmosphere that makes it easier for people to escape the stresses of everyday life. The absence of visual distractions and the harmonious coexistence of various elements, such as lush greenery and well-maintained pathways, contribute to an overall sense of mental relaxation and well-being, providing a haven for rejuvenation and tranquility (Sati & Joshua, 2015). Green spaces can muffle sounds and provide healthy relaxation. The sounds of nature, such as water, wind, leaves, vegetation, and birdsong, can offer users a sense of calm and peace (Zhou et al., 2022). The results suggest that sound sensitivity, as indicated by the perceived presence of individual sounds, is more strongly associated with the factors studied (Liu et al., 2019). Easy access to green spaces significantly influences relaxation. Public facilities such as parking lots, entrances, and pathways should be designed to ensure universal access to these spaces. Access to green spaces has an extremely positive impact on an individual's psychological well-being. These natural environments provide a respite from the hustle and bustle of urban life, instilling a sense of calm and connection with nature (Lee et al., 2023). The presence of green and open spaces is associated with lower stress, improved mood, and enhanced cognitive function. Whether it involves a quiet walk in a park, a picnic in a garden, or simply sitting in the shade of a tree, these experiences promote relaxation, foster a sense of calm, and encourage physical activity. Ultimately, they contribute to better mental health and a greater overall sense of happiness and well-being (Fernandes et al., 2023).

The legibility of green spaces plays a crucial role in promoting mental relaxation and general well-being. In this context, legibility refers to the ease with which people can understand and navigate a green environment. Legible green spaces offer a clear and coherent design with well-defined paths, signage, and visual cues to guide visitors. When green spaces are legible, they reduce cognitive load and anxiety associated with navigation and allow individuals to focus their attention on the restorative qualities of nature (Moulay et al., 2017). The human brain instinctively seeks environments that are predictable and coherent, and legible green spaces fulfill this need and promote a sense of safety and calm. In addition, the legibility of green spaces can enhance opportunities for social interaction and physical activity, which are known to contribute to better mental health. Overall, the legibility of green spaces is a key factor in harnessing the psychological benefits of nature for mental relaxation and stress reduction (Ujang et al., 2018). The role of views and landscape in influencing mental relaxation is a well-documented and important aspect of environmental psychology and well-being. Natural views and esthetically pleasing landscapes have been shown to have a profound impact on a person's mental state (Jo et al., 2019). The sight of a picturesque natural setting, such as expansive vistas, lush greenery, and bodies of water, can evoke feelings of calm and reduce stress. The esthetic quality and naturalness of the landscape play a crucial role. The visual complexity and variety of elements in a landscape can capture attention without overwhelming cognitive resources, promoting a restorative experience. In addition, natural vistas are associated with attention restoration and cognitive recovery, which can lead to improved mood and a sense of mental rejuvenation (Grassini et al., 2019). Research indicates that the presence of green space and natural views, even in urban environments, can improve overall mental relaxation, emotional well-being, and cognitive functioning. These findings underscore the importance of incorporating nature and scenic landscapes into our living and working environments to promote mental health and relaxation.

The role of perceptual factors of green spaces in users' mental relaxation is a topic of great scientific interest in the fields of environmental psychology and landscape architecture. For example, Chen et al. (2020) found that young residents' perceptions of the components of green spaces for health promotion (sensory features, diversity of form, and compatibility of form and function) had a greater influence on their willingness to use parks and promote health. Gozalo et al. (2019) have shown that the spatial dimension, an appropriate facade, and the use of colors and diverse materials in green spaces correlate positively with the frequency of walking, physical activity, and relaxation. In addition, Kodali et al. (2023) suggested that improving architectural features such as the visual relationship between the path and the surroundings in a park, continuing and strengthening the sense of movement in space, memories, and mental motivation would increase the frequency of activities in a park and contribute to strengthening mental relaxation. While the physical and perceptual qualities of green spaces are crucial, the importance of behavioral factors in promoting mental relaxation cannot be underestimated. The activities people engage in, their social interactions and their connection to the natural environment play a crucial role in promoting mental relaxation and overall well-being. Understanding and harnessing these behavioral factors can guide urban planning and design to create and maintain green spaces that effectively promote mental relaxation and contribute to healthier, happier communities (Corral-Vrdugo et al.,

2012). Mental relaxation is closely associated with the concept of psychological restoration, where individuals experience a reduction in stress and an improvement in cognitive functioning, mood, and overall well-being. Behavioral factors, such as the activities people engage in and their interactions with the natural environment, play a pivotal role in facilitating psychological recovery (Hartig et al., 2001). Humans are social creatures by nature, and the presence of other people in green spaces can promote feelings of connectedness, support and relaxation. Social interactions in this environment can act as a buffer against stress and promote emotional well-being. Picnics, group sports classes or simply sitting and talking with others contribute to a sense of belonging and relaxation (Staats et al., 2016). Green spaces provide an ideal setting for mindfulness exercises and contemplation. Engaging with the natural environment by simply observing, listening or immersing oneself can lead to less brooding and a better sense of calm. Behavioral factors such as meditation or keeping a nature journal can greatly improve mental relaxation (Lin et al., 2019).

Following the discussion in the theoretical background, three physical, perceptual, and behavioral factors have been categorized as the cornerstones of the conceptual framework for this study. Each factor is further divided into some sub-components. The corresponding model (Figure 1) represents the relationship between the components and sub-components of the physical and natural features of green spaces that affect the mental relaxation of users. Based on this model, open and closed questions were designed in the form of a survey that will be tested during the study.

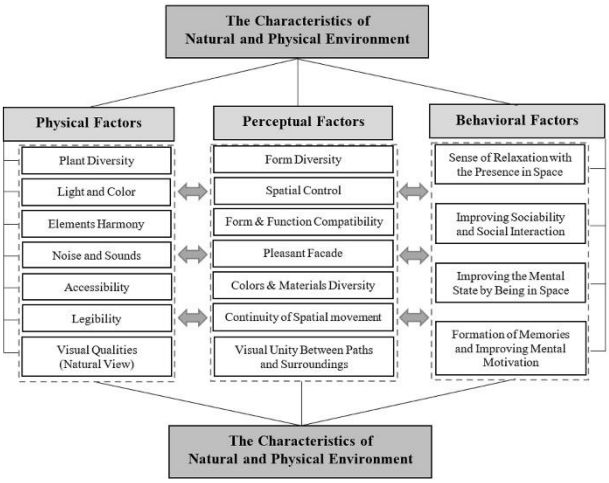


**Figure 1.** The conceptual model of the study

## MATERIAL AND METHOD

### Case Study

Kyoto Park, the largest Japanese garden in Turkey, is a project completed by Konya Municipality in 2010. It is situated on the nourth side of the city along Istanbul Avenue, where numerous apartment buildings, cafes, schools, and tramway systems are nearby. The project was designed based on Japanese garden art principles and an area of approximately 36.000 $m^2$. The landscape project, designed with inspiration from Japanese architecture and garden culture, has become one of the prominent attractions in Konya. Kyoto Park has three entrance gates designed in Japanese architecture (Figure 2).

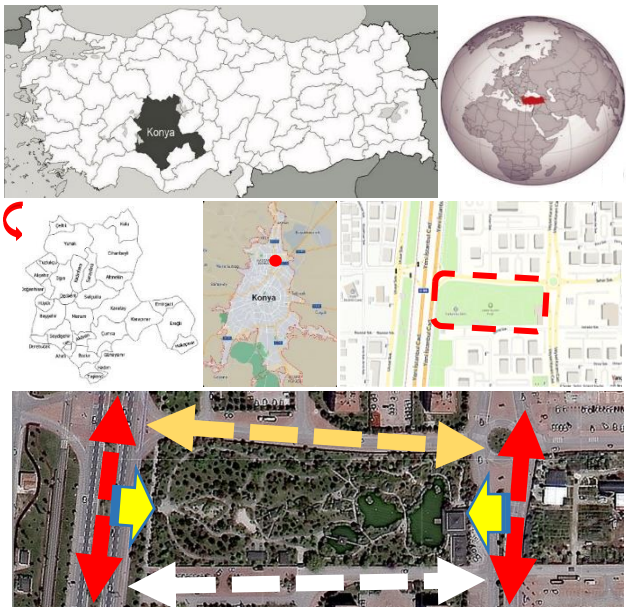


**Figure 2.** The location of case study in the city of Konya. First row: the location of Konya (satellites.pro/Google_plan/Konya map); The second row: the location of the case study in the city (Google maps); The third row: Case study plan (Google Earth, modified by the author)

Kyoto Park features various physical, architectural, and natural elements that attract many people throughout the week (Figure 3). For example, the park includes a four-thousand-square-meter pond inhabited by numerous Japanese fish. Within the park, wooden and stone Japanese bridges are prevalent. In addition to the pond, small streams, tiny waterfalls that produce soothing sounds, and of course elegant wooden or stone bridges reflecting Japanese traditions. Stone lanterns, symbols of Japanese gardens, and viewing platforms are additional design elements in this area. There are many camellias in Kyoto Park, and some of them are strategically placed arranged around the pond. The landscape design incorporates natural hills, small islands, trees, shrubs, perennials, and plants associated with Japanese garden culture. The circulation areas feature paths with planned applications of natural stone and grass. Natural-looking stairs were designed, utilizing a combination of wood and stone. A tea house is also present in Kyoto Park. The Sakura tree, commonly known as the cherry tree, significantly defines Kyoto Park's landscape. Colorful Malus and Prunus species attract attention to the park's planting. Japanese maple trees, roadside shrubs, conifers, and vines contribute to the overall landscaping of the area. Water wells, little

islets, walking trails, observation spots, and undulating hills enhance in garden's aesthetics, complementing the bridges, camellias, lanterns, and lights in line with Japanese customs. There is also a parking place for automobiles.

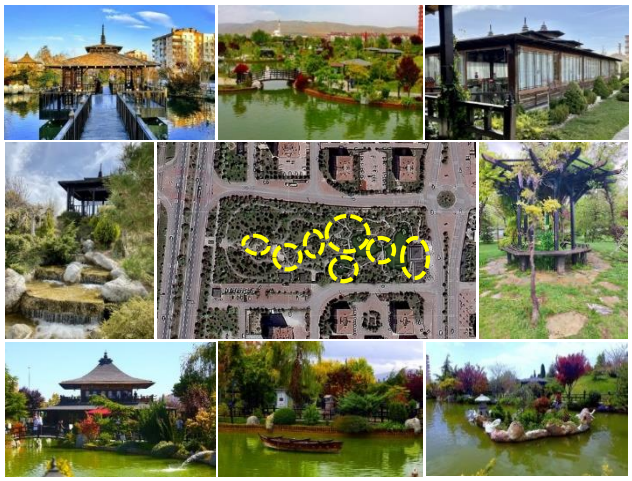

**Figure 3.** The physical and natural characteristics of Konya Kyoto Park (Author)

## Methodology

The method used is descriptive-analytical, assuming that the obtained results are useful for the development of mental relaxation of the users. The study investigates the relationship between mental relaxation and the physical and natural characteristics of green spaces. In this context, the natural and physical elements of Konya Kyoto Park are considered independent variables. Two main steps were undertaken. Firstly, to establish the theoretical and conceptual framework of the study, a review of existing research and theories on the effects of green spaces on users' mental relaxation was conducted. Secondly, the conceptual model of the study was examined in Kyoto Park in the city of Konya, Turkey (Figure 1). The required data were collected through interviews and questionnaires. A total of 320 users (152 males and 168 females, mean age=23.75 years) were randomly selected using a cluster sampling method to complete questionnaires and conduct interviews on the physical, perceptual, and behavioral factors of each park. This experiment was carried out conducted through personal visits, and ethical approval from the committee was obtained for this purpose.

For the questionnaire, 14 items were created, comprising 7 items for physical factors and 7 items for perceptual factors. The questionnaire was completed during the week and at different times of the day. Data collection took 5 days, and each survey took 7–10 minutes to complete. The questions related to physical and perceptual factors were rated using a 5-point Likert scale (very high, high, medium, low, and very low). In the assessment of physical factors, questions were posed regarding components such as plant diversity (*How do you evaluate the diversity of plant life and its impact on your mental relaxation?*), lighting and color (*the colors and lighting systems used give me a sense of calm and serenity*), elements harmony (*The physical and natural elements used in the park are pleasant, coordinated, and do not cloud my mind and consantration*), noise and sounds (*The sounds I hear are not disturbing and the spaces of this park provide me with the opportunity to get away from disturbing sounds and I feel quiet and peaceful*), accessibility (*I often come to this park because it is easy to get to in the city and because it is also easy to get to within the park and between spaces*), legibility (*The physical environment of the park is clear and recognisable and this makes me feel safe*), and visual quality of the natural view (*The landscape and natural perspectives of the park make me switch off from the daily routine, and I feel relaxed, refreshed, and calm*).

For the evaluation of the perceptual factors, questions were asked about the variety of shapes (*The shapes used in the park are appealing to me and evoke positive feelings*), spatial control (*I can easily observe and follow the current activities in the park and it is possible to see different areas of the park*), form and function (*The different areas of the park in terms of sitting, eating, walking, etc. have sufficient capacity to respond to our needs*), pleasant facade (*The shapes of the objects attract my attention and they are memorable and look warm and inviting*), colors and materials (*The colors and materials used to attract my attention and make me feel good*), continuity of spatial movement (*When I am tired, the spatial diversity of the park make me prefer walking around different spaces and I feel well*), visual unity between paths and surroundings (*I enjoy walking on a continuous path that passes water, plants, and trees*).

In addition to these questions, four items on behavioral factors were asked in an interview. Accordingly, four questions (*To what extent do you feel comfortable and reassured in this park? To what extent do you have social relationships with other people in this park and how much do you love them? Does spending time in this park contribute to improving your mental and psychological state? Does staying in this park contribute to improving your sociability and communication?*) were based on the conceptual model of the study. The interview served as a means to identify the qualitative aspects and criteria of mental relaxation from the users' perspective, providing individuals with the opportunity to express their true feelings about the park. Finally, a comparative analysis of the responses was conducted to investigate the correlation between subjective attitudes and behavioral factors. Inferential statistics were used to examine the parameters of the statistical population and assess the correlation between concepts and variables. The validity of the questionnaire was confirmed by a pilot study with 30 users of Konya Kyoto Park. The reliability of the questionnaire was determined to be 0.833 using Cronbach's alpha test. The mean, correlation coefficient, one-sample t-test, and standard deviation (SD) were used for data analysis in the Statistical Package of the Social Sciences (SPSS). Additionally, the Friedman test was used to rank the three components and factors influencing mental relaxation. The

Pearson correlation test was also used to examine the correlation between these factors.

## FINDINGS AND DISCUSSION

Based on the data in Table 1, the frequency distribution of the physical factor components can be observed. The highest average values refer to the components 'visual qualities' (M=4.61) and 'plant diversity' (M=4.01). The lowest average value of the elements of this factor refers to the component 'elements harmony' (M=3.05). The highest standard deviation with a value of SD=1.023 belongs to the item 'accessibility', which means that there was a disagreement about the importance of this item. The lowest standard deviation with a value of SD=0.816 refers to the item 'light and color', suggesting that respondents generally agreed with it the least.

**Table 1.** Mean and standard deviation of physical factor components

| Physical Factor Components | M | SD |
|---|---|---|
| Plant Diversity | 4.01 | 0.953 |
| Light and Color | 3.26 | 0.816 |
| Elements Harmony | 3.05 | 0.982 |
| Noise and Sounds | 3.88 | 0.937 |
| Accessibility | 3.37 | 1.023 |
| Legibility | 3.13 | 0.944 |
| Visual Qualities | 4.61 | 0.926 |

As for the perceptual factor, the highest average score pertains to 'continuity of spatial motion' (M=4.61), and 'visual unity between paths and surroundings' (M=4.21). As shown in the data in Table 2. The lowest average score of the components of this factor refers to 'compatibility of form and function' (M=3.00). The component with the highest standard deviation, at a value of SD=1.092, is 'spatial control', indicating disagreement about the importance of this item. Conversely, the component 'visual unity between paths and surroundings' has the lowest standard deviation with a value of SD=0.824, suggesitng that respondents agreed least with this item.

**Table 2.** Mean and standard deviation of perceptual factor components

| Perceptual Factor Components | M | SD |
|---|---|---|
| Form Diversity | 4.01 | 0.989 |
| Spatial Control | 3.26 | 1.092 |
| Compatibility of Form and Function | 3.00 | 0.923 |
| Pleasant Facade | 3.88 | 0.911 |
| Colors and Materials Diversity | 3.37 | 1.023 |
| Continuity of Spatial Motion | 4.61 | 0.962 |
| Visual Unity of Paths and Surroundings | 4.21 | 0.824 |

Based on the data presented in Table 3, the frequency distribution of the items causing behavioral effects can be seen. The items 'feeling relaxed by being in the space' (M=4.16) and 'improving the mental state by being in space' (M=3.88) have the highest average scores. Conversely, the items with the lowest average score in this factor is 'improving sociability and social interactions' (M=2.94). Notably, the item 'improving mental state by being in the space' exhibits the highest standard deviation (SD=0.967), indicating varied opinions on its importance. On the other hand, the item 'improving sociability and social interactions' has the lowest standard deviation (SD=0.877), suggesting less disagriment among respondents regarding this aspect.

**Table 3.** Mean and standard deviation of behavioral factor components

| Behavioral Factor Components | M | SD |
|---|---|---|
| Sense of Relaxation with the Presence in Space | 4.16 | 0.935 |
| Improving Sociability and Social Interaction | 2.94 | 0.091 |
| Improving the Mental State by Being in Space | 3.88 | 0.967 |
| Formation of Memories and Improving Mental Motivation | 3.42 | 0.877 |

After describing the variables and the obtained answers, the research question was examined, and the validity of the assumptions was statistically verified by results analysis. In this regard, the T-test ($p<0.05$) was used to investigate the effects of all variables on the users' mental relaxation with a significant difference at level 3 being considered. Table 4 shows the results of the T-test for the three factors, including physical, perceptual, and behavioral, affecting the mental relaxation of Kyoto Park users. Since the significance level for these factors is less than 5%, it can be concluded that the average of these factors significantly differs from the number 3. The lower and upper bounds indicate the 95% confidence level for the average of these variables. As both upper and lower bounds for these variables are positive, it can be inferred that the average of these factors is greater than 3. Consequently, it can be claimed that these three factors played a positive role in influencing the mental relaxation of the users (Figure 4).

**Table 4.** The results of the T-test for physical, perceptual, and behavioral factors

| Main Factors | Lower Bounds | Upper Bounds | t | Significance Level |
|---|---|---|---|---|
| Physical | 0.244 | 0.375 | 21.14 | 0.000 |
| Perceptual | 0.654 | 0.777 | 16.25 | 0.000 |
| Behavioral | 0.432 | 0.472 | 11.29 | 0.000 |

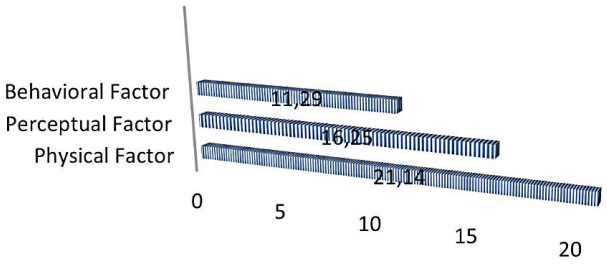


**Figure 4.** Prioritizing the factors affecting users' mental relaxation in the Kyoto Park

The Friedman test was used to prioritize variables based on their impact on the dependent variable. The results comprised two outputs. The first output included the chi-squared statistic value ($\chi 2$ = 264.176), the degree of freedom ($d.f$ = 5), and the significance level ($\alpha$ = 0.000). Because the fact that the significance level is less than 5%, the null hypothesis was rejected, and the claim of equal ranking of these dimensions was not accepted. The second output is a descriptive statistic showing that the average score of the physical factor (M = 4.83) is higher than that of the perceptual factor (M = 3.37) and the behavioral factor (M = 3.02). Furthermore, the results of the Pearson correlation test revealed a statistically significant correlation among all factors, with all correlations confirmed at a 95% confidence level ($P < 0.05$). The findings show that the strongest relationship among the factors, with a correlation coefficient of $r$ = 0.44, is attributed to the relationship between the behavioral factor and the physical factor. The strongest correlation arises from the relationship between the physical and perceptual factors with a correlation coefficient of $r$ = 0.39, followed by the relationship between the behavioral and the perceptual factors with a correlation coefficient of $r$ = 0.31. After prioritizing the research components, it can be suggested that the physical factor is crucial for deriving benefits from nature and improving mental relaxation in Kyoto Park.

In general, the results of the study examining the role of green space in mental relaxation provided valuable insights into the relationships between different factors influencing an individual's mental relaxation. The data revealed significant correlations among the behavioral factor, the physical factor, and the perceptual factor, shedding light on the interplay between these components to mental relaxation. The strongest relationship between behavioral and physical factors indicates that individual behavior in green spaces has a significant impact on the overall level of mental relaxation. The positive correlation means that mental relaxation tends to increase when people actively participate in physical activities in green spaces or use the physical facilities of a park. This association aligns with existing research indicating that physical features and natural environments can profoundly impact psychological well-being by reducing stress and anxiety and improving mood. On the other hand, the strong correlation between physical and perceptual factors suggests a remarkable relationship between the physical features of Kyoto Park and individuals' perceptions of these spaces. The positive correlation implies that people who perceive green spaces as physically appealing and beneficial to their well-being or recreation also tend to experience mental relaxation. This finding underscores the importance of maintaining and enhancing the physical attributes of green spaces to maximize their positive effect on mental relaxation. Furthermore, a significant correlation between the behavioral factor and perceptual factor suggests that individual behaviors, such as spending time in green spaces or engaging in relaxation-promoting activities, are related to how people perceive these environments. When individuals engage in relaxation-promoting behaviors in green spaces, they are more likely to perceive these spaces as mentally relaxing. This highlights the interdependence of behavior and perception to green spaces and mental relaxation.

The study identified 'visual qualities' as a critical component of the physical factors associated with mental relaxation. In the case study of Kyoto Park, visual qualities include the aesthetic appeal of green spaces, including factors such as natural beauty, scenic views, Japanese plants, and overall visual appeal. The results of the study show that individuals who perceive green spaces as visually appealing and aesthetically rich are more likely to experience improved mental relaxation. These results are consistent with the concept of 'restorative environments," which assumes that spending time in natural environments with positive visual qualities can have a restorative effect on cognitive functioning and emotional well-being (Bornioli & Subiza-Perez, 2023). Natural landscapes featuring appealing visual features, such as bodies of water, well-tended vegetation, and harmonious design, can reduce mental fatigue, relieve stress, and promote relaxation. In urban planning and design, these findings underscore the importance of integrating aesthetically pleasing elements into green spaces to maximize their potential as environments for stress relief and relaxation. Factors like landscape architecture, scenic vantage points, and the overall visual composition of green spaces can significantly influence how people perceive and use these spaces. The study also highlighted 'plant diversity' as curcial component of physical factors related to mental relaxation. Plant diversity refers to the variety of plant species present in a green space. The results suggest that higher levels of plant diversity are associated with greater mental relaxation in individuals. The findings are consistent with the concept of biophilia, which states that people have an innate connection to nature and a preference for a diverse and natural environment (Gaekwad et al., 2022). Contact with a variety of plant species in green spaces can connect people with the natural world and evoke positive emotions, thereby promoting relaxation.

In terms of perceptual factors, the highest rating for 'the continuity of spatial movement' component in Kyoto Park green spaces refers to the uninterrupted flow of natural elements and the absence of distracting interruptions or incongruous features. This includes the smooth and harmonious flow of the vegetation, paths, and landscape elements of the park in question, which make individuals more likely to engage in an activity and experience a sense of deep concentration, enjoyment, and timelessness (flow), which contributes to mental relaxation. Also, in terms of the behavioral factor, 'feeling relaxed in the park spaces' is a key aspect of the findings of this study. It can be described that when individuals feel comfortable and relaxed in such surroundings, it indicates that these places offer a break from the stress of daily life. The calming qualities of nature, from the rustling of leaves to the chirping of birds to the sight of greenery, seem to have a noticeable and positive impact on mental relaxation. Such

moments of tranquility in green spaces can be an antidote to the fast-paced, urban lifestyle that often leads to mental stress. In addition, the finding that parks help improve mental health underscores the potential of these environments to act as natural mood elevators. It suggests that people's psychological well-being is noticeably altered by spending time in Kyoto Park. This improvement is attributed to a variety of factors, including increased physical activity, exposure to natural light, and a sense of connection with nature that can also promote a sense of escape, allowing individuals to temporarily detach from the demands and pressures of daily life.

## CONCLUSION

Parks and green spaces are one of the most important places to relieve stress and improve people's health. Therefore, beyond functional quality, the role of the physical body and natural elements in such spaces is vital for visual perception, mental tranquility, and their impact on user behavior. The results of the present study reveal a complex web of relationships among the behavioral, physical, and perceptual factors associated with green space and mental relaxation. It is evident that engaging in physical activities in green spaces is an important factor in relaxation, but the aesthetic and perceived qualities of these spaces also play a crucial role. These findings carry important implications for urban planning and public health policy, emphasizing the need to preserve and promote green spaces as a means of improving psychological well-being and relaxation in urban environments. Additionally, the study highlights the importance of policies that promote both physically active and perceptually positive experiences in green spaces to optimize their potential as a source of mental relaxation.

In summary, the results of the study emphasize the importance of 'visual qualities', 'plant diversity', 'continuity of spatial movement', and 'sense of relaxation in parks' as crucial components in green spaces influencing mental relaxation. By enhancing the aesthetic appeal and biodiversity of these environments, urban planners and landscape architects can create green spaces that not only provide recreational and leisure opportunities but also serve as restorative environments that contribute to the mental well-being and relaxation of individuals. These findings have significant implications for the design and maintenance of urban green spaces, highlighting the need to create visually attractive and ecologically diverse natural environments in urban landscapes to promote mental health and relaxation among urban populations.

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## Author Contribution and Conflict of Interest

There is no conflict of interest.

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