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THE RELATIONSHIP BETWEEN SPATIAL CHARACTERISTICS OF URBAN PARKS AND PSYCHOLOGICAL WELL-BEING: A CASE STUDY OF ANKARA SEĞMENLER PARK

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Abstract: Life styles, which have been constantly changing in recent years, have many positive and negative effects on individuals. This effect has been the subject of scientific and applied studies by different professional disciplines. In this study, the relationship between the psychological well-being of individuals who get away from their daily routine and spend time in a city park and the spatial characteristics of that park is examined. In the first phase of the study; "Perceived sensory dimensions" in Ankara Seğmenler Park have been classified into 5 different spaces with the survey study applied to experts according to venue types. In the study carried out in two stages, the users were given different questionnaires examining psychological well-being, duration and frequency of park use, and the patterns of park use within the scope of physical, social and mental activities. In the study conducted with a total of 136 participants from each region, statistical analyzes were carried out using the SPSS 20.0 V statistical package program. The emotional states of the participants before, during and after using the park were measured, and the effects of different spaces on the participants were examined. As a result of the study, statistically significant differences were found in the effects of regions with different spatial characteristics on individuals' mood after use. It has been determined that the opportunities provided by 5 different regions of Ankara Seğmenler Park (in terms of physical, social and mental activities) affect the space preferences of individuals and each region causes different levels of emotion changes in similar activities.

Keywords: Urban parks, Well-being, Seğmenler Park

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1. Introduction

Today, a significant portion of the world's population resides in urban areas. The gradual replacement of rural life by urban living has brought about various effects on individuals. Both the physical and psychological health of individuals are directly or indirectly influenced by their lifestyle. As a result, multiple professional disciplines have undertaken diverse studies on this subject. The literature in this context covers a wide range of topics, including the spatial characteristics of natural or designed areas, the activities performed by individuals in these spaces, and aspects such as visual or physical accessibility.

The World Health Organization (WHO) defines health not merely as the absence of disease or infirmity but as a state of complete physical, mental, and social well-being (Diener and Seligman, 2009). From this perspective, health is understood not only in terms of outcomes determined through medical examinations but also through the individual's own perception of physical, mental, and social well-being.

This perception-based notion of being healthy has played a role in the emergence of concepts such as psychological well-being. The concept of psychological well-being was developed by Ryff et al. (1999), who proposed a six-dimensional assessment tool. This tool is a six-point Likert-type scale that measures the attributes of psychological well-being through self-reports provided by individuals.

In addition to personal and environmental components affecting psychological well-being, factors such as human-nature interactions, satisfaction with leisure activities, and the characteristics of outdoor spaces (e.g., green areas and urban green spaces) also influence this state.

Studies on the health effects of green spaces began as early as the 1950s. These studies generally explore topics such as the impact of green areas on physical and psychological health, preferences for green space, and human-nature relationships.

It has been identified that different modes of green space usage yield varying effects on human health. Individuals may use nearby or distant green spaces either actively (direct use) or passively (indirectly, by being aware of their presence). These modes of use provide both direct and indirect benefits to health (Özgüner, 2004).

Discussing the benefits of green spaces to human health from both mental and physical perspectives can enhance

understanding. Physically, green spaces contribute to reducing the prevalence of conditions such as obesity, heart disease, diabetes, and respiratory illnesses-ailments that can be assessed through laboratory testing. Regular use of green spaces is associated with a 50% reduction in heart attacks, strokes, and diabetes; a 30% reduction in bone fractures, colon cancer, and lung cancer; and a 25% reduction in Alzheimer's disease (Morris, 2003; Ayan, 2012). Rohde and Kendle (1994) found that observing nature reduces anger and anxiety, sustains attention and interest, and enhances feelings of pleasure.

Green spaces must meet certain quality criteria to appeal to users. Factors such as accessibility, usability, habitability, diversity, simplicity, maintenance, safety, continuity, and compatibility are commonly included among green space quality standards. For individuals to escape the stress of daily life, green spaces must meet their expectations and contribute positively to their perceived well-being (İnceoğlu and Aytuğ, 2009).

In this context, the ability of urban parks to meet user expectations is significant not only in terms of their physical characteristics but also in their potential to contribute to individuals' psychological well-being. A wide range of quality criteria—from accessibility and safety to diversity and continuity—shape the perceptual impact of green spaces on users. These areas, often chosen as retreats from the stress of daily life and as environments for mental relaxation, serve as vital indicators of urban life quality depending on how well they align with user needs and expectations. This study investigates the relationship between the spatial characteristics of urban green spaces and users' psychological well-being, using Ankara's Seğmenler Park as a case study. In doing so, it aims to provide a spatial evaluation of the influence of public open spaces on individual well-being.

1.1. Concepts and Theories Related to Restorative Environments

In addition to their contributions to physical and psychological health compared to urban environments, green spaces also have significant effects on individuals' overall well-being. The concept of "restorative" was first introduced by Bradburn (1969) and has since been used in conjunction with terms such as psychological well-being, positive and negative affect, life satisfaction, and contentment. Although these terms carry different nuances, they are all fundamentally associated with the state of well-being. Research on the influence of green spaces on human health and well-being has led to the development of several theories and concepts. These include:

1.1.1. The concept of subjective well-being

Subjective well-being is based on an individual's self-evaluation from their own perspective, encompassing subjectivity, positive attributes and assessments, and a holistic evaluation of life in all its dimensions (Figure 1) (Kangal, 2013).

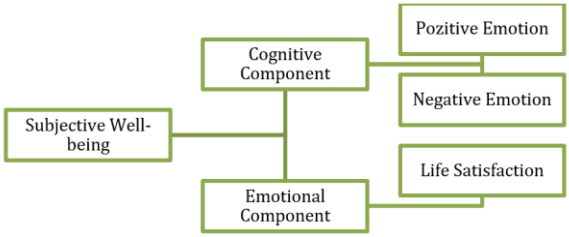

Figure 1. The construct of subjective well-being (Diener et al., 1985).

1.1.2. Perceived sensory dimensions

Perceived Sensory Dimensions (PSD) involve defining and classifying the spatial characteristics of an environment. Based on a study involving 1,000 variables, Grahn and Stigsdotter (2011) reduced these into eight core spatial qualities. These eight dimensions are: Nature, Culture, Prospect, Social, Space, Rich in Species, Refuge, and Serene. (The bolded items in Table 1 refer to the zones identified in the study area.)

Table 1. Perceived Sensory Dimensions – PSD (Stigsdotter et al., 2017)

1. Nature	A type of space dominated by greenery, where natural forms are perceived and the area is free from clutter.
2. Culture	A type of space where elements of human culture, such as fountains and sculptures, are central to the environment.
3. Prospect	A type of space that does not evoke a sense of enclosure, has long wide grass surfaces, and offers small-scale recreational opportunities.
4. Social	A safe space type with good lighting, providing opportunities for both sunbathing and shaded areas, and enabling social activities.
5. Space	A type of space that is not divided by roads or sections, has a strong central focus, and fosters a sense of connection.
6. Rich in Species	A type of space that hosts a variety of plant and animal life.
7. Refuge	A type of space offering shelter through plants or structures, providing a sense of safety, and suitable for passive recreation.
8. Serene	A quiet and peaceful type of space that is not crowded, is well-maintained, clean, and safe.

Table 1 presents spatial types distinguished by different shades, each representing a specific type of space identified through fieldwork within the study area.

1.1.3. Attention restoration theory

Attention Restoration Theory (ART), developed by environmental psychologists Kaplan and Kaplan (1989), suggests that mental fatigue and stress experienced in

daily life can be alleviated through interaction with natural environments. The theory includes four psychological components: fascination, extent, being-away, and compatibility.

1.1.4. Psychoevolutionary theory

This theory, first proposed by Ulrich, is also known as Psychoevolutionary Theory in the literature. It posits that humanity's evolutionary history underpins a deep-seated need for green spaces. According to Ulrich (1993), people are directly influenced by the environment they live in, and this influence can be explained physiologically. For individuals to adapt to their surroundings, green spaces should contain diverse natural elements, facilitating emotional and instinctive connections between humans and nature.

2. Psychological Well-being

The concept of psychological well-being has been linked to various related terms in the literature, leading to multiple perspectives. One of the earliest proponents of subjective well-being, Diener (1984), equated happiness with experiencing more positive than negative emotions and achieving a high level of life satisfaction.

The theory developed by Deci and Ryan (1991) is based on the idea that human needs and their effective fulfillment (without obstacles originating internally or externally) are central to well-being. Although empirically overlapping with subjective well-being, these theorists argue that psychological and subjective well-being are distinct. Subjective well-being pertains to individuals' evaluations of their lives, whereas psychological well-being refers to optimal human functioning (Diener and Seligman, 2009).

Ryff et al. (1999) emphasized that psychological well-being constitutes a minimum structure, providing insights into how individuals evaluate themselves and their quality of life. According to Ryff et al. (1999), psychological well-being comprises six dimensions: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth (Diener and Seligman, 2009).

Ryff and Keyes (1995) argued that psychological well-being is associated with the ability to form and maintain meaningful relationships, and with having clear life goals. They summarized the characteristics that reflect psychological well-being in five points: a positive self-image, acceptance of personal limitations, the ability to shape one's environment to suit personal needs and desires, autonomy and initiative, and an awareness of one's talents and capacities, along with a commitment to self-development.

The balanced presence of these six dimensions, as defined by Ryff et al. (1999), enables individuals to perceive themselves positively, recognize their limitations, and maintain positive emotions about their past. Individuals who build healthy relationships with their environment and shape their surroundings according to their goals and needs are better positioned to seize opportunities. Autonomous individuals can think and act freely according to their personal capacities without being subjected to environmental pressures. Those who prioritize personal development tend to be self-aware, open to new ideas and experiences. The healthy interaction among these psychological variables indicates the overall psychological health of the individual (Sezer, 2013).

3. Materials and Methods

3.1. Material

As the primary material of the study, five zones within Ankara's Seğmenler Park (Figure 2) were identified based on the perceived sensory dimensions evaluated by an expert group. These zones—characterized as natural, prospect, social, refuge, and serene—were determined through a survey conducted with eight academic staff members from the Department of Landscape Architecture at Ankara University. The selection of Seğmenler Park was based on criteria such as its location, spatial characteristics, user intensity, and the diversity of its visitor profile.

The following psychometric measurement tools were used in the participant surveys conducted for the purposes of this research:

Figure 2. Location of Seğmenler Park and designated zones – Google Earth, 2018.

- Satisfaction With Life Scale (SWLS) – This scale reflects a cognitive-judgmental process in which individuals evaluate their quality of life based on self-selected criteria (Diener et al., 1997). Individuals assess their level of satisfaction by comparing their current status against their own standards (Dağlı and Baysal, 2016).
- Basic Psychological Needs Scale – Developed by Deci and Ryan and Deci (2000), this scale measures essential psychological conditions. It highlights the importance of being in supportive and rewarding relationships, contributing to others' well-being, and fulfilling personal responsibilities in specific areas.
- Psychological Well-being Scale – Developed by Diener et al. (2009a), this scale assesses core elements of psychological well-being, such as having meaningful relationships, a sense of competence, and leading a purposeful and meaningful life (Telef, 2013).
- Ryff's Psychological Well-being Scale (PWB) – Originally developed by Ryff et al. (1999), this instrument evaluates psychological well-being across six dimensions: self-acceptance, autonomy, environmental mastery, personal growth, positive relations with others, and purpose in life (Telef, 2013).
- Scale of Positive and Negative Experience (SPANE) – Developed by Diener et al. (2009b), this scale was adapted into Turkish by Telef (2013). It evaluates twelve emotional experiences, six positive and six negative, and measures feelings such as satisfaction, interest, and emotional flow (Telef, 2013).

3.2. Method

The methodology of the study was guided by previous research (Ayan, 2017). A brief summary of foundational studies is provided below:

- Stigsdotter et al. (2017) investigated the restorative effects of forest environments, categorized by perceived sensory dimensions, on mental health. Their findings indicated that zones with different spatial characteristics evoked distinct psychological responses among participants.
- Ayan (2017) examined the influence of urban parks on subjective well-being and found that participants experienced more positive emotions after using parks, with the quality and duration of park use playing significant roles.
- Douglas et al. (2017) emphasized the health benefits of green spaces in their study, advocating for urban planning and design practices that address the needs of all age groups, from childhood to old age, by ensuring accessibility to nearby green spaces.

In this context:

- Relevant concepts were defined, a comprehensive literature review was conducted, and a theoretical framework was established.
- Existing scientific studies, survey tools, and measurement techniques related to the core concepts of the thesis were reviewed, particularly in terms of psychological well-being, influencing factors, and methods for evaluating perceived sensory dimensions.
- A conceptual map was developed, leading to the determination of the study's objectives and goals.

Two different survey forms were prepared to suit the research objective:

- Participant Survey: Administered in the identified zones of the park, this form evaluated both psychological well-being and patterns of park use through psychometric instruments.
- Expert Survey: Used to identify the spatial characteristics of the park, this survey was conducted with a selected group of experts.

The study area (Seğmenler Park) was divided into distinct zones based on the classification of perceived sensory dimensions established by Stigsdotter et al. (2017). Expert feedback was used to define and label each spatial zone with unique characteristics.

Following the survey, the collected data were analyzed and compared with the expert classifications. The results were discussed and the findings synthesized in the final section of the study.

After segmenting Seğmenler Park into five distinct regions, appropriate and valid psychometric measurement tools were selected to evaluate psychological well-being.

These included the Satisfaction with Life Scale, the Psychological Well-being Scale, and the Scale of Positive and Negative Experiences. These psychometric instruments provide insight into individuals' behaviors, well-being from a socio-psychological perspective, and their self-assessed emotional states. This study argues that user-centered approaches should be prioritized in landscape planning and design. Incorporating user feedback contributes to higher levels of usage and enhances the quality of the designed spaces.

4. Results

The research findings are presented under two main categories: (1) the survey conducted with experts based on the perceived sensory dimensions of the five zones within Seğmenler Park, and (2) the survey results gathered from park users in each of these five zones.

4.1. Expert Survey – Seğmenler Park

The expert evaluation was conducted using a bipolar three-point Likert scale with the options: "Agree", "Neutral", and "Disagree". For instance, the "openness" characteristic had its bipolar counterpart as "enclosed".

4.2. Participant Survey – Seğmenler Park

Following the identification of spatial characteristics based on perceived sensory dimensions, a participant

survey was administered in each of the five zones. The results were analyzed to address the following research questions:

- What is the relationship between the demographic profile of park users and their levels of psychological well-being, life satisfaction, and emotional states over the past month?
- How do emotional changes among participants differ across the five zones after using the park?

4.2.1. The relationship between demographic profile of park participants and psychological well-being, life expectancy and last month mood (positive and negative experience scale)

The analysis revealed statistically significant differences in T_18 and T_19 scores between regions, based on participant responses. As shown in Table 2, participants who visited Zone 2 had significantly higher psychological well-being scores compared to those who visited Zones 3 and 4. The psychological well-being scores of participants who visited Zones 1 and 5 did not show statistically significant differences compared to other zones.

In addition, significant differences in psychological well-being were observed among participants based on income levels. Participants with an income of 1500 TL or below reported significantly lower psychological well-being scores than those with an income of 1600 TL or above.

However, no statistically significant differences were found in psychological well-being among participants with different educational backgrounds. This suggests that education level does not have a significant influence on the psychological well-being of individuals visiting Seğmenler Park.

Regarding age, no significant differences were detected in the total T_18 (P=0.130) and T_19 (P=0.730) scores. Nevertheless, a post-hoc comparison indicated that participants aged 50 and above had higher psychological well-being scores than those in the 18–49 age group.

The general emotional states of participants were also taken into account. A statistically significant difference was found among the zones in terms of responses to positive and negative emotions.

Table 2 Distribution of T_18 and T_19 scores by zone

T_18 – Psychological Well-being (PWB) - P-value: 0.067						
Zone	n	Mean	Std. Dev.	Minimum	Maximum	Significance
Zone 1	26	30.62	3.74	24.00	40.00	ab
Zone 2	26	31.54	2.44	25.00	37.00	a
Zone 3	27	29.11	2.50	24.00	32.00	b
Zone 4	27	29.30	2.78	23.00	32.00	b
Zone 5	30	30.13	4.76	15.00	40.00	ab
T_19 – Life Satisfaction (LS) - P-value: 0.011						
Zone	n	Mean	Std. Dev.	Minimum	Maximum	Significance
Zone 1	26	15.54	3.00	9.00	20.00	ab
Zone 2	26	17.19	2.77	10.00	21.00	a
Zone 3	27	14.15	2.66	9.00	20.00	b
Zone 4	27	15.00	3.39	9.00	20.00	ab
Zone 5	30	15.87	3.65	8.00	25.00	ab

Table 3. Responses to positive emotions by zone

Responses to Pozitive Emotions by Zone	n (Number of articipants)	Mean	Std. Deviation
1	26	3.8397	0.60274
2	26	4.3526	0.47918
3	27	3.9136	0.63946
4	27	3.3086	0.67575
5	30	4.3333	0.62514
Total	136	3.9559	0.71355

Table 4. Responses to negative emotions by zone

Responses to Negative Emotions by Zone	n (Number of articipants)	Mean	Std. Deviation
1	26	2.5256	0.61589
2	26	1.9423	0.29793
3	27	1.9815	0.55148
4	27	2.2469	0.61909
5	30	1.5333	0.4275
Total	136	2.0319	0.60977

Table 5. General distribution of emotional states after park use by zone

Park Use Emotional Status/Zones	n (Number of articipants)	Mean	Std. Deviation
1	26	4.1115	0.54061
2	26	4.1577	0.44737
3	27	4.0370	0.58975
4	27	4.3185	0.51369
5	30	4.3667	0.53002
Total	136	4.2029	0.53430

Table 6. Distribution of post-use emotional states by zone

Felt Emotions	Evaluation	1st Zone	2nd Zone	3rd Zone	4th Zone	5th Zone
Pleasure	Highest					
	Lowest			√		
Energy	Highest					
	Lowest	√		√		√
Satisfaction	Highest					
	Lowest		√		√	
Sociability	Highest			√		
	Lowest	√			√	√
Feeling Safe	Highest					
	Lowest	√				√

Participants' emotional states during the past month varied by zone. Zone 4 participants reported the lowest scores for positive emotions, whereas Zones 2 and 5 had the highest (with Zone 5 > Zone 2). Zone 1 was where the highest frequency of negative emotions was reported. Despite these differences, demographic variables such as gender, age, income, education, and employment status did not produce statistically significant differences in emotional states over the past month. Most participants responded “often” for positive emotions and “rarely” for negative ones.

4.2.2. Comparison of participants' emotional changes after use in 5 areas of the park

This section evaluates whether the emotional states of participants changed after using the park and whether these changes differed across zones.

Significant differences were observed in feelings of joy, energy, satisfaction, sociability, and safety across zones. These differences are expressed in Table 6 as the highest and lowest values by zone.

5. Discussion and Conclusion

The aim of this study was to assess the relationship between the spatial characteristics of urban parks and individuals’ psychological well-being, and to examine how different types of spaces influence park usage. Additionally, the study explored how various types of spatial settings affect psychological well-being and how activities conducted in different zones lead to emotional changes in participants. Seğmenler Park, with its distinctive design features, usage patterns, and ecological value, serves as a significant green space in Ankara and is widely preferred by a diverse group of users.

When evaluated overall, Seğmenler Park was found to have a positive effect on the psychological well-being of its users. Moreover, statistically significant differences were observed between zones in terms of the relationship between participants’ demographic characteristics and their psychological well-being.

Zone 1, identified as "natural", was the least frequently used compared to other zones. Although it is not rich in plant diversity, its informal design and lack of structural elements are its defining characteristics. Due to the dense vegetation, the area is perceived as dark and enclosed, leading to feelings of insecurity among users. It is assumed that individuals prefer this zone for solitude and seclusion.

Zone 2, categorized as having "prospect", has a steeper slope and more sparse vegetation. Participants reported that they preferred this zone due to its open and spacious quality, which allows for scenic views. It is the most organized and well-maintained area in the park and offers the highest number of recreational opportunities.

Zone 3, labeled as "social", is better maintained than Zone 1 but less so than Zones 2 and 5. It contains the highest number of structural elements. Zone 4 follows in terms of structural elements, though a balance between natural and built components exists in both Zones 3 and 4. Due to its proximity to roads and parking lots, Zone 3 is also noisier than the others.

Zone 5, defined as "serene", features an ornamental pool that has a more calming effect on participants compared to the other zones. Participants viewed Zone 5 as the most aesthetically pleasing part of the park. Despite not offering as many recreational facilities as Zone 2, it had a comparable level of usage intensity and was identified as the most influential zone in terms of psychological well-being due to its restorative qualities.

The Attention Restoration Theory proposed by Kaplan and Kaplan (1989) suggests that natural environments

can reduce the psychological fatigue and tension experienced in daily life. This theory is supported by the study findings, which show a positive emotional change in participants following park usage.

While the literature emphasizes that the defining characteristic of restorative environments is their natural quality, this study suggests that how a space is perceived may be just as important. Zone 1, although labeled "natural", had a less positive impact on psychological well-being due to other negative factors such as its dark, enclosed nature.

Zones 5, 2, and 4 were the most preferred by participants. The positive emotions reported before, during, and after usage in these zones may be attributed to their spatial features. According to Douglas et al. (2017), spaces that meet the needs of different age groups tend to be more preferred. In this study, the zones with more recreational amenities were favored. Zone 3, despite being social in character, was less preferred due to its lower natural features and was mainly used for accessing the park or visiting the food kiosk, resulting in lower emotional gains.

One limitation of the study is that participants self-selected the zones they visited. Analysis showed that Zone 4 was commonly chosen by parents due to its playground and sports areas; Zone 2, due to its steep slope, was less preferred by individuals outside the 18–25 age range; and Zone 5, being flat and quiet, was favored by older adults.

These findings can be further interpreted in light of Attention Restoration Theory (Kaplan and Kaplan, 1989) and Psychoevolutionary Theory (Ulrich, 1993). The positive emotional responses reported in Zones 5 and 2 support ART's premise that natural environments restore depleted cognitive resources through qualities such as fascination, being-away, and compatibility. Additionally, the preference for areas that evoke aesthetic pleasure and tranquility, as observed in Zone 5, aligns with Ulrich's view that humans have an innate, evolutionarily grounded affinity for natural settings that promote emotional recovery. Conversely, the underutilization and lower restorative perception of Zone 1, despite its naturalness, underscore the importance of not just the presence of nature, but how it is perceived and experienced by users. This suggests that both the physical and psychological qualities of landscape design must be harmonized to meet users' innate and cognitive needs. Therefore, incorporating the principles of these two theories into landscape planning can enhance the psychological benefits of urban parks and contribute to user-centered design strategies.

Another major conclusion is that contemporary landscape planning and design must take into account the psychological need for green spaces. The spatial characteristics of different zones influence landscape preferences and, when these align with user needs, they result in positive emotional outcomes after use. The study confirms that existing psychological states can be improved through appropriate park usage. Therefore, landscape architects must consider the target user group when making design decisions. Among demographic factors, age and education level play a particularly important role in shaping user needs. Establishing a relationship between psychological well-being, landscape preference, landscape quality, and user profile is essential for future planning and design initiatives.

Author Contributions

The percentage of the author(s) contributions is presented below. All authors reviewed and approved the final version of the manuscript.

	A.N.Ç.M.
C	100
D	100
S	100
DCP	100
DAI	100
L	100
W	100
CR	100
SR	100
PM	100
FA	100

C=Concept, D= design, S= supervision, DCP= data collection and/or processing, DAI= data analysis and/or interpretation, L= literature search, W= writing, CR= critical review, SR= submission and revision, PM= project management, FA= funding acquisition.

Conflict of Interest

The author declare that there is no conflict of interest.

Ethical Consideration

Ethics committee approval was not required for this study because of there was no study on animals or humans.

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