Beyond Scenery: Exploring the Socio-spatial Benefits of Green Spaces for University Students in Istanbul

Manzaranın Ötesinde: İstanbul'daki Üniversite Öğrencileri için Yeşil Alanların Sosyo-mekânsal Faydalarının Araştırılması

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Abstract
Research on green spaces and well-being is a relatively new field, and there is a lack of understanding of the socio-spatial effects of green areas on specific populations, such as university students. In particular, the relationship between green spaces and the psychological well-being of university students in Istanbul has not been thoroughly investigated. The aim of this paper is to address this significant gap in knowledge by exploring how campus green areas influence students' psychological well-being. The study examines how students use these areas, what they are used for, and how their spatial location affects their accessibility and usage. This paper's contributions are expected to provide empirical evidence on the impact of campus green spaces on student development and well-being and to highlight the importance of campus green spaces in urban planning and environmental psychology.
Employing a mixed-methods approach, the study initially involved extensive observations across six diverse university campuses in Istanbul to understand the broader role of green spaces in university environments. Subsequently, a detailed case study was conducted on two prominent campuses, Istanbul Technical University (ITU) and Bilgi University, chosen for their notable integration of urban greenery and optimal student populations. The qualitative phase involved semi-structured interviews with 20 students from these two selected campuses, exploring their socio-spatial practices and perceptions of green spaces. The findings indicate that accessible and well-designed university green spaces are essential for enhancing student well-being, resulting in reduced stress, improved mood, and cognitive restoration. Additionally, these spaces promote social interaction and contribute positively to students' overall university experience and decision-making. This study highlights the considerable potential of integrating green infrastructure within higher education institutions to support student mental health and foster more sustainable, human-centric campus environments in rapidly urbanizing contexts.

Keywords: Green space, public space, İstanbul, university student

Genişletilmiş Özet

Yeşil alanların sosyal ve psikolojik refah üzerindeki faydaları giderek daha fazla kabul görse de, yoğun nüfuslu kentsel ortamlarda üniversite öğrencileri üzerindeki spesifik etkileri hala yeterince araştırılmamıştır. İstanbul gibi hızla kentleşen metropollerde üniversite öğrencilerinin psikolojik refahı üzerindeki spesifik etkilerine yoğunlaşan çalışmalarda önemli bir boşluk bulunmaktadır. Bu çalışma, kampüs yeşil alanlarının öğrencilerin psikolojik refahını nasıl şekillendirdiği sorusuna odaklanmaktadır. Öğrencilerin kampüs yeşil alanlarını nasıl kullandığını, hangi amaçlarla kullandığını ve bu alanların mekansal konumlarının erişilebilirliği nasıl etkilediğini sorgulayarak, kampüs yeşil alanlarının tasarımının ve kullanımının öğrencilerin sosyal ve psikolojik gelişimini nasıl olumlu yönde destekleyebileceğine dair ampirik bulgular sunulacaktır.

Psikolojik refah için doğanın rolü üzerine yapılan kapsamlı araştırmalar, yeşil alanlarda bulunmanın stres seviyelerini düşürüp, yaşam memnuniyetini artırarak ruh sağlığı ve refahı üzerinde olumlu bir etkiye sahip olduğunu göstermiştir. Araştırmalar, yeşil alanların sosyal bağlantıları ve toplumsal bağları nasıl güçlendirdiğini, bireysel refahın yanı sıra toplumsal uyumu da teşvik ettiğini göstermektedir (Maas vd., 2006; Cervero ve Kockelman, 1997). Grinde ve Patil (2009) ve Heschong (2002) tarafından belirtildiği üzere, yeşil alanların refah ve ekolojik faydalar üzerindeki etkilerini vurgulayan sayısız avantajı da bu dönemde yeşil alan tasarımına yeniden odaklanılmasına yol açmıştır. Bu derleme, yeşil alanların kentlere dahil edilmesinin ve öneminin devam ettiğini vurgulamaktadır. Kaplan ve Kaplan'ın (1989) Dikkat Geri Kazanım Teorisi (Attention Restoration Theory) ve Ulrich'in (1984) Stres Azaltma Teorisi (Stress Reduction Theory), doğal ortamlarla etkileşimin zihinsel yorgunluğu ve stresi nasıl azaltabileceği, bilişsel performansı ve duygusal refahı nasıl iyileştirebileceğini anlamak için çalışmalara bir temel sağlar. Bu çalışma, İstanbul kampüslerindeki yeşil alanların öğrencilerin ruh sağlığını ve refahını nasıl etkilediğini araştırmakta ve öğrencilerin bu alanlarla ilgili algılarına, kullanımlarına ve memnuniyetlerine odaklanmaktadır. İstanbul'un hızla kentleşen ve yoğun nüfusa sahip bir şehir olması, üniversitelerdeki yeşil alanları daha da önemli hale getirmektedir.

Kampüslerin analizinde karma yöntem yaklaşımı kullanılmıştır. Nicel aşama, yeşil alanların üniversite ortamlarındaki rolünü aydınlatmak için altı farklı kampüste kapsamlı gözlemlere dayanmaktadır. Bu aşamada, kampüsler arasında üniversite nüfusu ve yeşil metrik göstergeleri gibi temel özellikler karşılaştırılmış; ayrıca öğrencilerin yeşil alanlarla etkileşimleri izlenmiş ve öğrenci başına düşen yeşil alanı belirlemek için bir "yeşil metrik" kullanılmıştır.

Bu karşılaştırmalı analizin ardından, nitelikli araştırma kısmında iki üniversite seçilmiştir: İstanbul Teknik Üniversitesi (İTÜ) ve Bilgi Üniversitesi. Bu üniversiteler, öğrenci başına kampüs içi yeşil alan kullanım oranı yüksek olması ve optimum öğrenci sayılarına sahip olmaları nedeniyle özellikle seçilmiş olup, yeşil alanların psikolojik etkilerini araştırmak için iyi bir örnek teşkil etmektedir. İTÜ, altı kampüsü ve 40.000'den fazla öğrencisi ile Türkiye'nin önde gelen üniversitelerinden biridir. Bu çalışmada, İTÜ'nün, toplam alanın %40'ını oluşturan bahçeler, ormanlık alanlar ve büyük bir göl ile yeşil alanlarıyla tanınan Maslak Kampüsü seçilmiştir. Bilgi Üniversitesi ise, üç kampüsü ve 15.000'den fazla öğrencisi olan özel bir üniversitedir. Çalışma için açık hava eğitimini, sosyal aktiviteleri ve huzurlu düşünmeyi teşvik eden yeşil alanlara, parklara ve bahçelere sahip olan Santral Kampüsü seçilmiştir. Alan çalışması olarak seçilen iki kampüste, farklı bölümlerden olan 20 öğrenciyle yarı yapılandırılmış görüşmeler yapılmıştır. Görüşmelerde öğrencilerin yeşil alan algıları, kullanım şekilleri ve yeşil alanların ruhsal esenlik üzerindeki etkileri araştırılmıştır. Katılımcıları belirlemek için amaçlı örnekleme yöntemi kullanılmış ve kampüste yeşil alanları kullanan 18 ila 30 yaş arası öğrencilere odaklanılmıştır. Kayıtlı olmayan kişiler, sadece çevrimiçi eğitim alan öğrenciler ve 18 yaşın altındaki kişiler araştırma dışında tutulmuştur.

Bulgular, görüşmelerde dört tema vurgulamaktadır:

-Yeşil Alanlarla Etkileşim: Öğrenciler yeşil alanlarda önemli miktarda zaman geçirmiş (günde 2-4 saat) ve çoğu günlük etkileşimi tercih etmiştir. Aktiviteler arasında rahatlama, sosyalleşme, fiziksel aktivite ve ders çalışma yer almaktadır.

-Ruh Sağlığı Üzerindeki Psikolojik Etki: Öğrenciler yeşil alan kullanımı ile ruh sağlığı arasında güçlü bir korelasyon olduğunu bildirmiştir. Faydalar arasında stresin azalması, ruh halinin iyileşmesi ve bilişsel restorasyon yer almaktadır. "Açık alanlar" rahatlama ve sosyal toplantılar için en çok tercih edilen ders dışı mekanlar olmuştur.

-Yeşil Alan Kullanımı: Öğrenciler çeşitli yeşil alanları tercih ederken, açık alanlar uyarlanabilirlikleri ve erişilebilirlikleri nedeniyle en çok tercih edilen alanlar olmuştur. Bilgi Üniversitesi öğrencileri bahçeleri ve açık alanları eşit oranda tercih ederken, İTÜ öğrencileri merkezi konumu ve büyüklüğü nedeniyle açık alanları tercih etmiştir.

-Öğrencilerin memnuniyeti: Yeşil alanlar ayrılmaz sosyal alanlar olarak işlev görmüş, arkadaşça buluşmalar en çok tercih edilen etkinlik olmuştur. Bilgi Üniversitesi öğrencileri, yeşil alanları günlük olarak daha fazla kullandıklarını belirtmiştir. Bu durumun nedenleri arasında daha esnek bir akademik program veya düzenli etkileşimi teşvik eden kampüs tasarımı olabilir.

Bu çalışma, üniversite yeşil alanlarının aşağıdakiler de dahil olmak üzere sayısız faydasını vurgulamaktadır: Stresin azalması ve zihinsel sağlığın iyileşmesi, ruh halinin ve bilişsel restorasyonun artması, ve öğrenci memnuniyetinin ve sosyal etkileşimin artması. Bulgular, yeşil alanların üniversite tasarım ve planlamasına entegrasyonunun, öğrenci refahını ve genel üniversite deneyimini zenginleştirmedeki kritik rolünü vurgulamaktadır. Gelecekteki araştırmalar, farklı üniversite ortamlarındaki yeşil alanların karşılaştırmalı analizleri ile öğrenci tercihlerini ve katılımını daha derinlemesine keşfetmelidir.

Anahtar Kelimeler: *Yeşil alan, Kamusal Alan, İstanbul, Üniversite Öğrencisi*

Introduction

In a world increasingly characterized by urbanization, rising mental health issues among the youth, and concerns over urban livability, the role of green space in urban life has been rekindled. On university campuses, where students encounter changing academic, social, and psychological pressures, access to nature has assumed a crucial role in promoting mental well-being. While environmental psychology and urban studies have highlighted the restorative and stress-reducing potential of green spaces *(Lindemann-Matthies, 2021; Ulrich et. al.,1991)*, the ways they are experienced and used by university students, particularly in dense urban settings, remain underexplored. As Istanbul undergoes urban transformation, facing challenges like population growth and diminishing green areas, these changes directly impact student life, limiting access to open and restorative environments and reducing opportunities for social interaction, recreation, and outdoor learning on and around campuses.

Recent research has highlighted the numerous benefits that green spaces provide to urban populations, including psychological restoration, improved social cohesiveness, and increased physical activity *(Hartig et al., 2014; Kaplan, 1995)*. These benefits are particularly enhanced in university settings due to the unique stressors and academic pressures that students face. Attention Restoration Theory *(ART) (Kaplan & Kaplan, 1989)* and Stress Reduction Theory *(SRT) (Ulrich, 1984)* are theoretical frameworks that provide a foundation for understanding how social interactions within natural environments can reduce mental fatigue and stress, thereby improving cognitive performance and emotional well-being.

This study investigates the impact of green spaces on two different campuses in Istanbul by focusing on students' mental health and well-being. The research focuses on student perceptions, use, and satisfaction with these areas to evaluate their role in student well-being. Istanbul, as a rapidly urbanizing and densely populated city, makes its university green spaces even more crucial. By examining the campuses of Istanbul Technical University and Bilgi University, both recognized for their success in incorporating green spaces into their campuses, this study explores how these spaces contribute to student psychological development and success.

This study adds to a growing body of literature emphasizing the importance of green spaces in urban environments, particularly in educational settings. By focusing on Istanbul, a city renowned for its historical blend of natural beauty and urban expansion, this study offers a distinct viewpoint on the discussion of urban green spaces. The findings are intended to inform policy and design strategies that prioritize the incorporation of natural habitats into urban planning, with a focus on improving student well-being and academic achievement. Within the scope of this research, this study examines the subject according to the following questions:

1. How and where do students utilize green spaces, and for what purposes?

2. What is the impact of green environments on the psychological well-being of university students?

3. How does the location of green areas affect their usage?

The content of this paper is structured to present a comprehensive overview. Following this introduction, a literature review explores existing theoretical frameworks and empirical evidence on the connections between nature and psychological well-being, as well as the impact of campus green spaces. Subsequently, the research design and methodology are detailed, explaining the selection criteria for the campuses and the data collection methods. The findings from both the observational and interview phases are then presented, followed by a discussion that interprets these results in the context of the research questions and existing literature. The paper concludes with a summary of key insights and implications for practice and future research.

Green Spaces on Campus

The term "green environment" in the context of higher education refers to the integration of natural elements, such as green spaces, into university campuses. This conceptualization is essential for understanding how nature affects learning environments *(van den Bogerd et al., 2018)*.

Extensive research on the role of nature for psychological well-being has shown that being in green spaces has a positive effect on mental health and well-being by lowering stress levels and increasing life satisfaction. According to Wilson's *(1984)* biophilia hypothesis, humans have an inherent connection to nature. Research demonstrates how green spaces can foster social connections and communal bonds, promoting individual well-being as well as community cohesion *(Maas et al., 2006; Cervero and Kockelman, 1997)*. The numerous advantages of green spaces, as noted by Grinde and Patil *(2009)* who stressed their influence on well-being and ecological benefits, also led to a renewed focus on green space design. This review highlights the ongoing incorporation and importance of green spaces in cities. Two key theories—Attention Restoration Theory *(ART)* and Stress Recovery Theory *(SRT)* by Ulrich *(1984, 1991)* and Kaplan and Kaplan *(1989, 1995)*—provide a framework for understanding the psychological effects of green spaces on urban life. According to SRT, exposure to green spaces causes an automatic emotional response that is beneficial for relieving stress and promoting relaxation. Similarly, Attention Restoration Theory *(ART)* by Kaplan and Kaplan *(1989)* explains how natural environments alleviate cognitive stress and facilitate mental restoration.

Universities occupy a considerable amount of space in cities, hosting green spaces with reduced noise and pollution. Urban university campuses with green spaces are complex combinations of environmental, architectural, and psychological concepts. Together, these components produce campuses that are aesthetically beautiful while also promoting social engagement and cognitive renewal. As integral parts of larger metropolitan systems, campuses also bear responsibility for environmental preservation. Turner *(1984)* emphasizes how native vegetation, water conservation, and habitat creation are some of the ways that green campus designs support sustainability. The concept of biophilia, or the natural human connection to nature, is fundamental to the design of green campuses *(Kellert et al., 2008)*. By incorporating natural elements into campus architecture, this method creates visually beautiful and mentally healthy settings. In urban campuses, well-kept green spaces are essential for improving mental health and fostering creativity.

In the development of higher educational settings, the campus model with large green spaces is a relatively new model. The first universities in Europe were founded and firmly embedded in the urban context in the 12th century *(Brockliss, 2000, 165)*. They were city universities that were organically dispersed across different locations. However, from the 19th century onwards, universities in the United States were designed in campus settings that featured large green and natural surroundings. The first campus typology was also seen in the University of Virginia, built in 1817 by Thomas Jefferson, with a spatial concept of designing a green academic village in which students and academics could study and concentrate, far from the distractions of city life *(Turner, 1984, 12)*. Turner's research *(1984)* emphasized the early incorporation of green spaces into university settings, with a particular focus on improving academic experience and mental health.

Green spaces on urban university campuses provide valuable social and mental relief from the rapid pace of city life, allowing students to relax, reflect, and recover from academic stress. Extensive research in environmental psychology *(Berto, 2014; Ulrich et al., 1991; Kaplan & Kaplan, 1989)* demonstrates that green settings improve mental health and well-being. According to Ulrich et al. *(1991)*, green spaces may promote relaxation while decreasing stress and anxiety levels, which is critical for students under academic

pressure. Han *(2009)* discovered that students who spent more time in green settings reported lower stress levels and improved academic satisfaction. Similarly, Hipp et al. *(2016)* discovered a positive relationship between students' impressions of green spaces and their quality of life. The design of open spaces on campuses has a substantial impact on students' physical, mental, and social well-being *(Mohamed, 2023; Alshimaa, 2019)*, improving academic performance and fostering mental rejuvenation. According to Jiang, Chang, and Sullivan *(2014)*, green spaces facilitate a range of student activities, including leisure and academic endeavors. These various needs should be accommodated in green space design.

Green spaces in universities are important for fostering social bonds among students. They play an important role in influencing campus social dynamics, thereby contributing to the optimal educational experience. University campuses are sites for both academic and social activities. Students engage in lectures, extracurricular activities, and socializing, with green spaces playing an important role in these interactions. Ulrich *(1984)* discovered that exposure to natural components such as plants benefits students, particularly in stressful situations such as exams. Kuo et al. *(1998)* discovered that green spaces improve a sense of community and belonging, especially in urban settings with more extensive vegetation. According to Chawla et al. *(2014)*, green spaces play an important role in facilitating different activities and high-quality social interactions among students, increasing mutual understanding and trust.

Green spaces on campuses provide two sorts of interactions: active and passive. Each type addresses specific goals and psychological demands of students. Active interactions are direct interactions with nature, such as walking, sports, or group studies outside. Pretty et al. *(2005)* discovered that such physical activities in natural settings reduce stress, anger, and weariness, hence providing psychological benefits. Passive interactions entail less direct interaction, such as sitting or reflecting in green places. According to Kaplan and Kaplan *(1989)*, these interactions rejuvenate cognitive talents and aid students in recovering from mental tiredness. Students' interactions with green spaces differ; some favor physical activity, while others prefer quiet thought or relaxation. This diversity is critical to their overall mental health and academic performance. Campus green spaces should be designed to allow for both active and passive interactions, taking into account students' diverse preferences. This technique helps to maximize the educational and psychological benefits of contact with nature.

Anxiety, depression, and stress are all common psychological concerns among university students nowadays. These concerns, which are often caused by academic expectations and life challenges, have a substantial impact on students' well-being. Due to the complex and multifaceted characteristics of depression and anxiety, this study focuses specifically on stress and the ways in which green space aids in its management among the student population.

Research indicates that university students have significant rates of anxiety *(up to 50% - Stallman, 2010)* and depression *(up to 36% - Eisenberg et al., 2013)*. Stress is also a widespread issue, with a sizable proportion of students reporting high levels of stress. Psychological concerns can cause physical symptoms, social disengagement, relational difficulties, and even substance abuse. They are connected to decreased life satisfaction and increased stress *(Beiter et al., 2015)*.

Regular connection with green places can help university students manage their stress. Ward Thompson et al. *(2012)* emphasize the value of easily accessible green space in stress reduction, highlighting its potential as a resource for psychological relaxation and well-being in academic settings.

The inclusion of green spaces on university campuses has received attention due to its potential to improve the educational experience. Coles and Bussey *(2000)* found that such surroundings can have a impact on students' social engagement and community development. Furthermore, Maas et al. *(2006)*

Table 1: *Comparative Metrics of the Six Observed Universities' Campuses.*

№	Name of the University	University Type	Number of Students	Total Area of the University	The scale of the green space	Green space per student
1	Istanbul Technical University Maslak Campus	Public, campus university	30 000	2.64mln m^2	650 000 m^2	21.67 m^2
2	Yildiz Technical University Besiktas Campus	Public, campus university	4 000	170 000 m^2	70 000 m^2	17.5 m^2
3	Bilgi University Santral Campus	Private, campus university	3 000	118 000 m^2	60 000 m^2	20.0 m^2
4	Sabanci University Main Campus	Private, distinct university	5 000	1.26mln. m^2	630 000 m^2	126 m^2
5	Özyegin University Çekmeköy Campus	Private, campus university	15 000	280 000 m^2	112 000 m^2	7.47 m^2
6	Yeditepe University Ağustos Campus	Private, campus	17 000	125 000 m^2	68 000 m^2	4.00 m^2

and Cervero and Kockelman *(1997)* found that green spaces play an important role in building a sense of community and encouraging physical and social activities, both of which are critical for student well-being and academic achievement.

Research Design

The study is based on a mixed and two-stage method to explore the psychological effects of green spaces on university students in two university campuses. The quantitative phase began with the selection of six university campuses that have a considerable amount of green space within the campuses in İstanbul. They are İstanbul Technical University *(Maslak Campus)*, Yıldız Technical University *(Beşiktaş Campus)*, İstanbul Bilgi University *(Santral Campus)*, Sabancı University, Özyeğin University *(Çekmeköy Campus)*, and Yeditepe University *(Ağustos Campus)*. The analysis of these six campuses is based on a comparison of some key features, including university population and the use of an indicator on the green metric for campuses. This indicator is based on total open space area divided by total campus population *(Table 1)*. The amount of green space accessible for each student was an important consideration, with a minimum of 10 square meters set as the baseline.

A Statistical Descriptive Analysis of Green Spaces. The findings derived from the quantitative analysis of green spaces across six university campuses in Istanbul provided valuable insights into the accessibility and distribution of such spaces for students. The analysis was performed utilizing Microsoft Excel, relying on its comprehensive features to generate a range of descriptive statistics. *(table 2)*

- *Mean (Green space Per Student on Average):* Across all campuses, the average green space per student - 32.78 square meters. This indicates a predominantly positive distribution of green space per student among the universities.
- *Standard Deviation:* The calculated standard deviation for the green space per student is 46.21 square meters. Although certain campuses have adequate green spaces, others offer substantially lower.
- *Minimum and Maximum Green Space:* The minimum space per student is 4 square meters and a maximum is 126 square meters. The considerable variation highlights the wide range in green space offerings throughout the universities.
- *Median (Middle Value):* An average of 18.775 square meters of green

Name	Green space per student	Statistic	Calculation
Istanbul Technical University Maslak Campus	21,67		
Yildiz Technical University Beşiktaş Campus	17,55		
Bilgi University Santral Campus	20		
Sabanci University Main Campus	126		
Özyeğin University Çekmeköy Campus	7,47		
Yeditepe University Ağustos Campus	4		
		Mean	32,78166667
		Std. Dev	46,21161387
		Minimum	4
		Maximum	126
		Median	18,775

Table 2: *A Statistical Descriptive Analysis of Green Spaces.*

space per student was calculated as the median. This value signifies that fifty percent of the universities offer a lesser quantity of green space per student than this value, emphasizing the asymmetrical distribution in favor of campuses with limited green space availability.

This comparison revealed that the green space per student at Yeditepe and Özyeğin Universities are relatively limited. At Sabancı University and Yıldız Technical University, the total number of students is relatively low, so these campuses were excluded from the second part of the analysis in order to avoid skewed interpretations of student interaction. This decision highlights an important point: it is not enough for academic institutions to simply provide green space—these spaces must also be actively used by students. The World Health Organization *(WHO)* recommends a minimum of 9 square meters of green space per person in urban settings to ensure adequate access to nature. In this regard, both Istanbul Technical University *(ITU)* and Bilgi University meet this criterion, demonstrating a strong commitment to supporting student well-being through accessible green space. This selection emphasized the significance of optimum natural space and student numbers using the campus regularly in improving campus life.

Universities Selected for Qualitative Analysis

The qualitative phase of the study concentrated on Istanbul Technical University *(ITU)* and Istanbul Bilgi University, following a thorough quantitative investigation of six universities. These universities were chosen expressly for their high student involvement with on-campus green spaces, as measured by the ratio of green spaces to students, providing a good foundation for investigating the psychological effects of green spaces.

Secondly, a further in-depth case study is based on the observations and interviews on these two campuses. Visits to each campus allowed for a thorough evaluation of green spaces, including their size, design, and facilities. The observational focus extended to student interactions in these places, analyzing their preferences and activities. This phase was crucial in finding potential interviewees for the following study phase. Photographic evidence *(figure 1)* demonstrated how green spaces were integrated into the fabric of campus life, combining intellectual and recreational functions.

İTÜ and Bilgi University were found to have a substantial amount of green space per student—21.67 square meters and 20.0 square meters, respectively—which aligns with World Health Organization criteria for adequate natural area access. This strategic

Figure 1: *Showing the green space use in a) İTÜ campus b) Bilgi University Santral campus.*

decision allows for a thorough evaluation of the many environmental contexts and their influence on student well-being.

We made observations on the green spaces in Istanbul Technical University *(ITU)* and Bilgi University to explore the active and diverse student use and experience. At İTÜ, students were spending time on grassy areas *(see figure 1)* for leisure activities such as sitting, hanging *(alone or in groups)*, and engaging in social interactions. Similarly, at Bilgi University, students actively used the green spaces for leisure practices, including playing games and socializing together. These observations indicate that students on both campuses actively integrate green spaces into their daily routines for various forms of leisure, physical activity, and social interaction.

In order to learn more about students' daily spatial practices and perceptions of green spaces, as well as their impact on well-being, we conducted semi-structured interviews with 20 students from different departments in the Bilgi and İTÜ Maslak campuses. By combining observation and targeted interviews, the technique provides complete insights into how green space influences student life, emphasizing the value of such spaces in fostering emotional and social health among university students. Purposive sampling was used to identify participants, with a focus on students aged 18 to 30 who were engaged with campus green spaces. Non-enrolled persons, online-only students, and those under the age of 18 were all excluded. Purposive sampling guaranteed that a wide range of experiences and viewpoints were gathered, which strengthened the study's findings.

The interviews, which lasted around 30 minutes, covered topics such as students' interactions with green spaces and their psychological effects. This technique aimed at revealing a deeper understanding of the importance of green spaces in the academic environment than quantitative measures could show. Semi-structured interviews were evaluated qualitatively, mostly using thematic analysis, to uncover patterns and themes about students' interactions in green space.

The analytical journey began with the accurate transcription of interviews, which were transcribed verbatim by using NVivo. The topics were methodically identified using NVivo's querying tools, which highlighted the abundance of phrases and patterns connected to the psychological advantages of green environments by thematic analysis.

Case study

Istanbul Technical University *(ITU)*, a leading Turkish university with over 40,000 students and six campuses, is well-known for its combination of academic and environmental excellence, particularly on its Maslak campus. This campus, located in central Istanbul, is İTÜ's largest, covering over 650.000 m2 of green space. It includes a variety of faculties and sports facilities in a green-space-oriented setting, with gardens, woodlands, and recreational areas accounting for about 40% of the total area. ITU is famous for its green and sustainable campus, ranking 47th globally in the UI GreenMetric rankings and first among Turkish universities. The campus has huge forested areas, strategic green pockets, and a large lake, which improves its ecological footprint and provides a peaceful environment for its population. These green features are not only visually beautiful, but they also

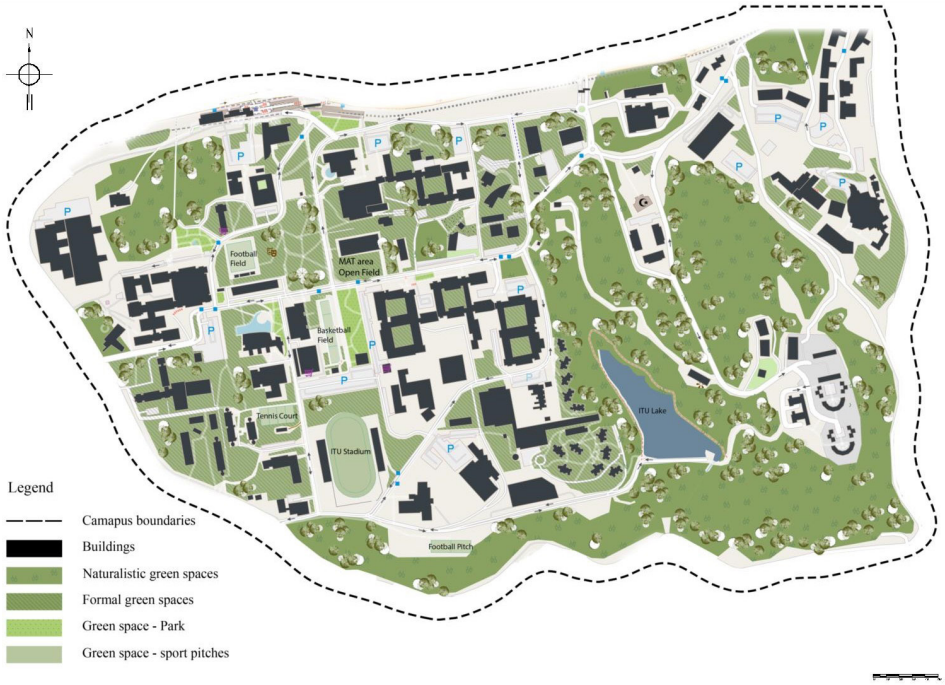

Figure 2: *Map Istanbul Technical University showing open spaces, main campus.*

promote relaxation, informal relationships, and local biodiversity.

Istanbul Technical University *(İTÜ)*, as depicted in Figure 2, positions itself not only as a center of academic excellence but also as an ecological marvel hidden in Istanbul's bustling metropolis. This convergence of nature and infrastructure, particularly the extensive vegetation, presents an exceptional case study for incorporating sustainable practices into educational settings. The most prominent feature of the university is that a substantial portion of its area is devoted to green spaces. There are also a number of informal naturalistic areas of woodland, grassland, long grass, and recreation areas. The sports facilities consist of a tennis court, a football field, and an all-weather pitch area with floodlighting *(figure 2)*.

The campus of Istanbul Technical University serves as a prime example of a well-planned integration of academic facilities and natural surroundings. Six gates are primarily located on the northern border, forming a prominent north-south axis that marks the main pedestrian pathway.

To the east, the campus stretches horizontally from the north to the east, gradually transforming into significant forested terrain. The large forest area, located next to the water, plays a crucial role in providing a place for relief from the academic pressures faced by the university community.

In contrast, the western part of the campus is filled chiefly with academic buildings that are scattered over the open spaces. The MAT area, an open space located in front of the Faculties of Mathematics and Computer Sciences, is frequently used by students for stationary activities and is a popular spot on campus *(see figures 2 and 3)*. This open field functions as a central hub where academic and leisure practices converge, emphasizing its importance as a multifunctional social and learning space.

This design exemplifies İTÜ's commitment to academic excellence and environmental sustainability, showcasing how urban campuses can successfully integrate nature. The strategic placement of green spaces and academic facilities across campus fosters both academic success and student well-being, proving that urban development and environmental conservation can indeed coexist.

Similarly, Bilgi University, a notable private university in Istanbul with over 15,000 students and three campuses, is known for

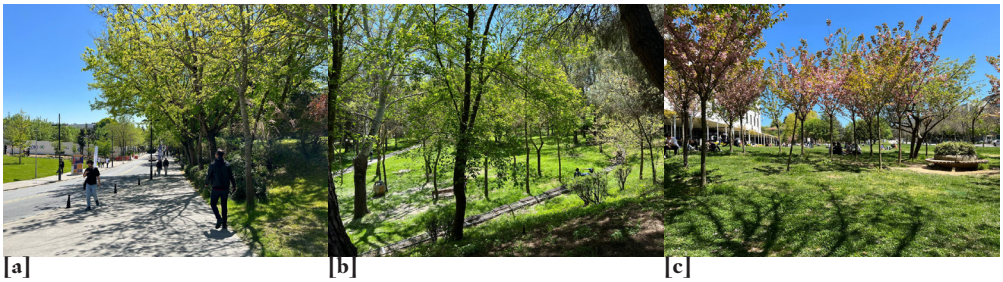
[a] [b] [c]

Figure 3: *Main axis area (a); the park area (b); and the MAT area behind cafes (c) at İTÜ.*

its modern architecture and natural spaces, particularly at its Santral Campus in the Eyüp area. Situated on a 60.000 m2 green-field site near the Golden Horn, this campus seamlessly blends nature with academic and recreational areas. It also uniquely houses Turkey's first power plant, now an Energy Museum, and is celebrated for its lush greenery, which significantly enhances both student well-being and the campus's overall aesthetic.

These green spaces, filled with trees, parks, and gardens, provide a respite from urban life, fostering outdoor education, social activities, and peaceful reflection. They also contribute significantly to environmental sustainability and serve as varied spaces for university activities, study areas, and social gatherings, making them an integral part of the Bilgi University experience.

The campus topology of Bilgi University is defined by three primary entrances *(figure 4)*: two located on the western side, with an additional entrance situated on the southeast side, which borders the city. The western boundary of the campus is defined by a noticeable longitudinal axis that serves as the pivot point for both academic and social activities, providing a central point for the daily routines of the university.

The central axis is reinforced by a variety of educational facilities that are deliberately arranged in a way that maximizes accessibility and promotes interdisciplinary cooperation. The primary open field *(b in Figure 5)*, situated in close proximity to the central axis on the western side, functions as the core of the campus and is where the student body gathers to participate in a variety of academic and social activities.

The southeastern entrance acts as a porous boundary between Bilgi University and the city, fostering a symbiotic relationship between the academic environment and its urban surroundings. The campus design itself embodies an educational structure

Figure 4: *Map of Bilgi University showing open spaces, Santral Campus.*

[a] [b] [c]

Figure 5: *Main Axis area (a); park area (b); To the southeast gate (c).*

that prioritizes both a dynamic student body and the dissemination of knowledge. With its thoughtful arrangement of open spaces and strategic entrances, the campus creates an intellectual environment that is both compact and outward-looking—a sanctuary for learning and a hub for social connection.

Results of interviews

Responses from twenty university students revealed four broad themes, which were broken down into 46 subthemes to explore their complicated experiences.

Engagement of Students with Green Spaces. "Engagement with Green Spaces" provides an in-depth knowledge of how students incorporate these tranquil zones into their daily lives by examining the nature of student interaction with campus green spaces. Through the expansion of three subthemes, namely "Duration," "Frequency," and "Activities," we are able to comprehend both the depth and scope of these interactions. The findings demonstrate a significant consistency with the existing body of literature.

The duration of student visits *(figure 6)* provides insight into the significance and utility of green spaces in their daily academic and recreational activities. The majority of students spend 2 to 4 hours in green spaces in a day, as indicated by 9 mentions, followed by 1 to 2 hours, with 8 mentions, and one mention of spending more than 4 hours. The majority of students prefer to spend a moderate amount of time in green spaces. This finding is supported by Hartig et al. *(2014)*, explaining the stress-relieving and cognitive benefits of prolonged interaction with nature. Students' perceptions of green spaces as "places of relaxation from academic life" reflect this argument.

The frequency of visits *(figure 7)* indicates the importance of these green spaces to student life. The NVivo analysis of student engagement with green spaces reveals numerous patterns and preferences. The results indicate a distinct tendency toward

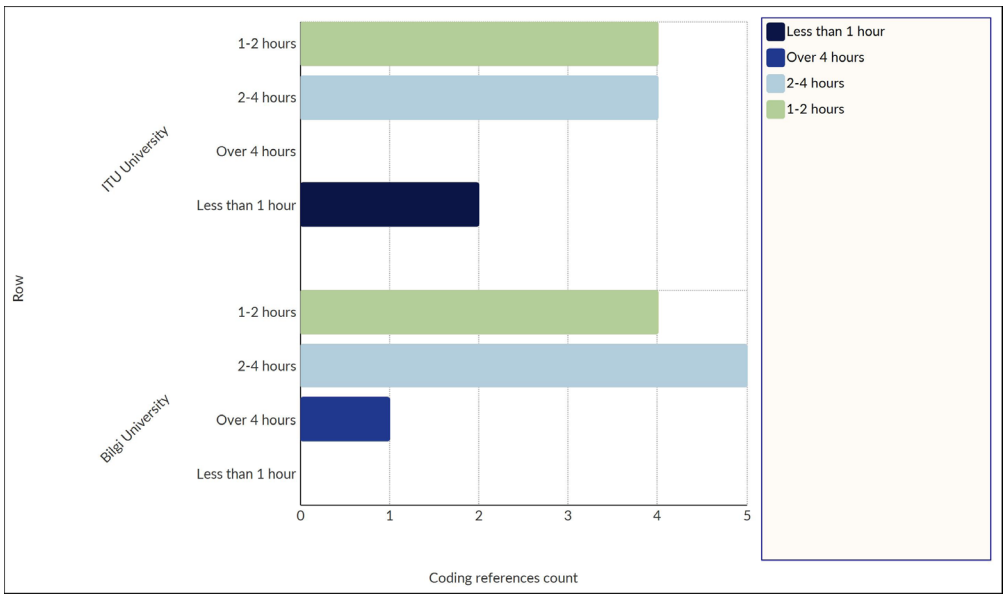

Figure 6: *Bar graph showing students' engagement with green spaces and duration at two universities.*

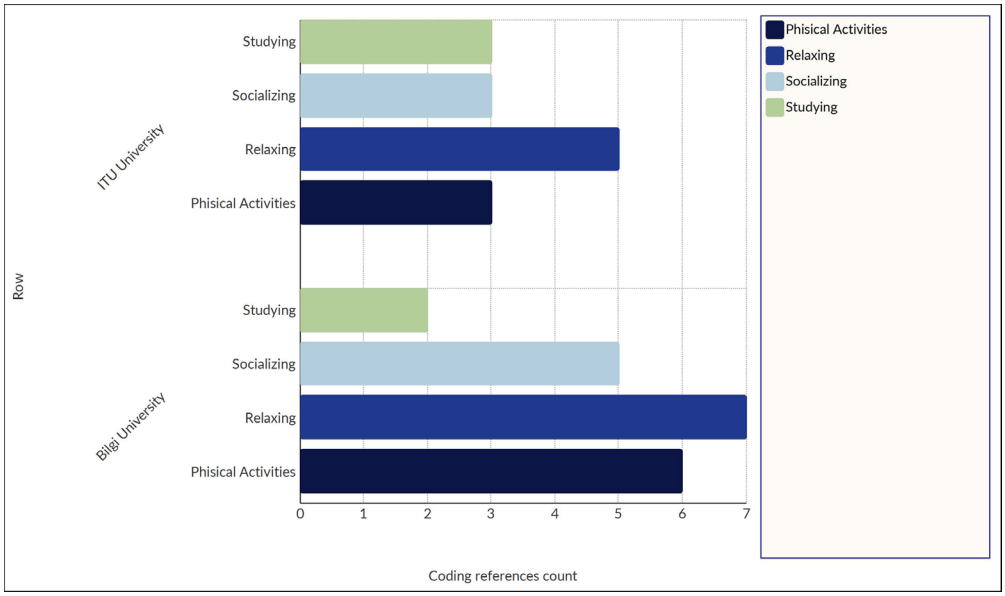

Figure 7: *Bar graph showing students' engagement with green spaces and frequency of visits at two universities.*

daily engagement with green spaces, as it was mentioned 13 times, while weekly engagement was mentioned 6 times and rare engagement was mentioned only once. This suggests that the majority of students interact daily with green spaces. The high daily usage of green spaces supports the findings of Ward Thompson et al. *(2012)* about the stress-relieving benefits of regular nature interaction, highlighting the importance of convenient access to these locations to improve urban sustainability and student well-being.

Figure 8 shows that students primarily use campus green spaces for stress relief and mental restoration, with relaxation emerging as the dominant activity. Although studying is mentioned less frequently, mentioning this activity shows the multifunctionality of these spaces, serving not only as leisure zones but also as alternative learning environments. This diverse range of uses reflects the adaptability and social value of green spaces in meeting students' varying needs throughout the day. This supports Jiang, Chang, and Sullivan's study *(2014)* explaining that nature heals and promotes social and physical well-being.

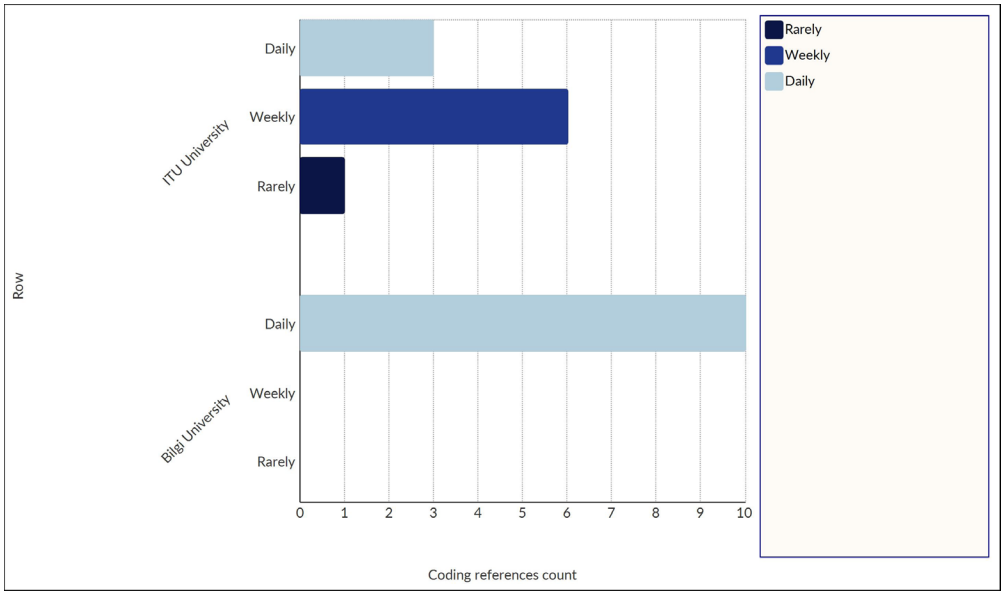

Figure 8: *Bar graph showing students' engagement with green spaces and activities at two universities.*

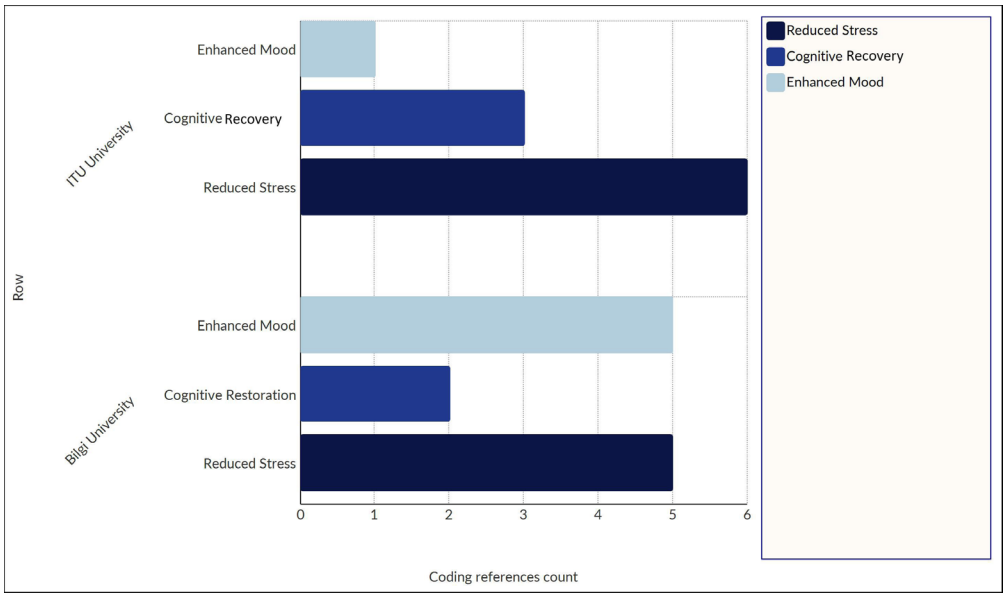

Figure 9: *Bar graph showing psychological impact of green spaces on students' overall well-being.*

The Psychological Impact of Green Spaces on Students' Mental Health. The issue of "Psychological Impact" was prominently evident in the students' comments, as they effectively conveyed a strong correlation between their engagement with the natural environment on campus and their mental well-being. Two discrete subthemes were identified within this overarching theme: "Overall Well-being" and "Positive Emotions."

The subtheme of "Overall Well-being" encompasses the comprehensive mental and emotional conditions that students directly associate with physical interactions on the campus. These emotions are not merely temporary but rather appear to be substantial changes that could potentially have enduring effects on the daily lives of students. Figure 9 shows that students most frequently mentioned the benefit of green space as 'Reduced Stress,' which was cited 11 times in total. The term 'Enhanced Mood' was cited six times, while 'Cognitive Restoration' was specifically mentioned five times. The idea of "cognitive restoration," which is supported by Kaplan's Attention Restoration Theory *(1995)*, highlights the importance of nature exposure for restoring mental clarity and meeting students' cognitive needs. Moreover, the subtheme of "Enhanced Mood" aligns with the findings of Hartig et al. *(2014)*, indicating that natural settings can regulate mood.

A computer engineering student explains, "During exam periods, I feel exhausted because there are too many exams, and the amount of work that we are doing is, I think, too high, and when I feel like this, I go to natural places like forests and lakes in the campus area. It's a good chance to be free from stress factors." This quotation indicates that green spaces are commonly acknowledged for their ability to alleviate stress, but they also have a notable impact on improving students' emotional well-being and aiding in cognitive rejuvenation. The existence of these green spaces thereby fulfills various aspects of students' psychological well-being.

Additionally, the 'Positive Emotions' subtheme highlights how green spaces on university campuses contribute to students' emotional well-being *(Figure 10)*. The most frequently mentioned emotion was 'relaxed,' cited 11 times by participants. The feeling of being 'rejuvenated' appeared seven times, while 'energized' was noted five times. One student expressed, "Personally, the presence of greenery makes me relaxed. When I am in a closed area, I cannot concentrate. But when I spend time in green spaces, my thoughts feel more organized, and I feel calm."

This statement underscores the dual benefit

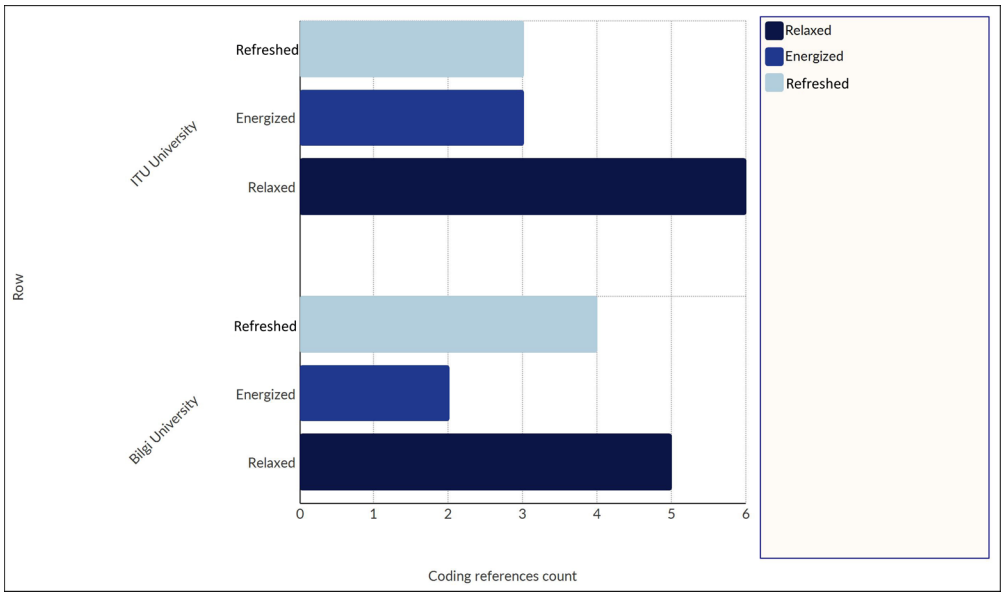

Figure 10: *Bar graph showing psychological impact on students' positive emotions.*

of green spaces—not only as sources of emotional relief but also as environments that enhance mental clarity and focus. The participant links the physical qualities of greenery with a psychological state of being calm, suggesting that natural settings offer a form of mental restoration.

The feelings of being "energized" and "rejuvenated" also emerged as common emotional responses in the interviews. These expressions of positive emotion support Wilson's Biophilia Hypothesis *(1984)*, which emphasizes the innate human affinity for nature and its role in promoting emotional well-being.

Usage Patterns of Students. The topic of "Preferences and Usage Patterns" extensively explores the way in which students utilize and perceive green spaces inside their university. The main theme includes two primary subthemes, namely "Types of Green Spaces Preferred" and "Social Interaction."

Figure 11 shows that students most frequently prefer 'Open Fields' *(13 mentions)*, followed by 'Gardens' *(6 mentions)*, while 'Water Bodies' are the least favored *(2 mentions)*. Based on the available data, it is

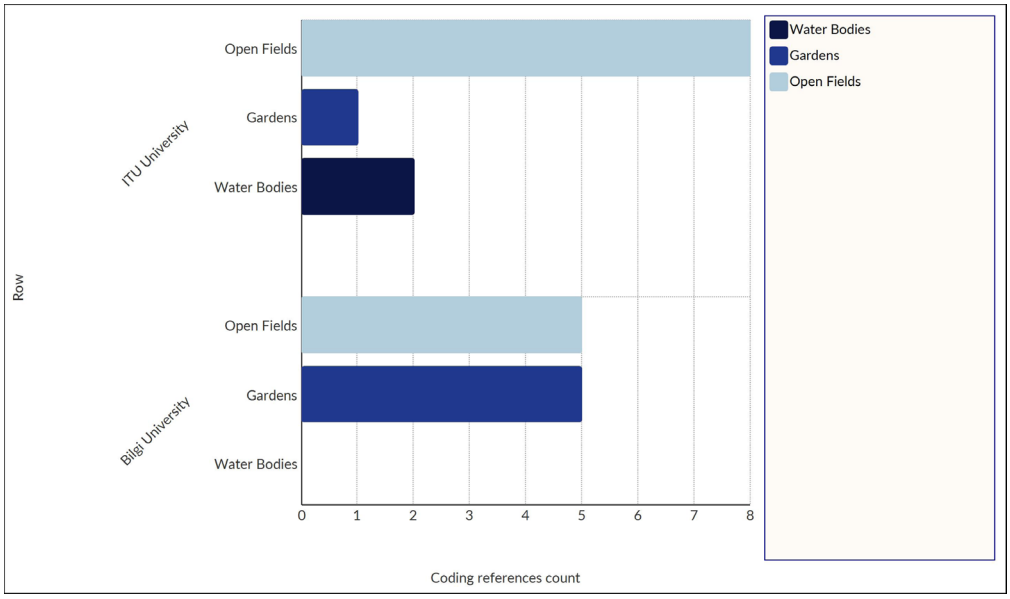

Figure 11: *Bar graph showing students' preferences and usage patterns for types of green spaces at two universities.*

evident that students exhibit a preference for diverse green habitats. However, open fields, due to their adaptability to different uses and accessibility, emerge as the most favored option.

Outdoor spaces are used and valued differently on the campuses of İTÜ and Bilgi University, as students at both institutions show varying preferences between open fields and gardens. At İTÜ, most students prefer the open field, which is centrally located among academic departments and often serves as a venue for student events. Its large size and strategic placement make it ideal for socializing, relaxing, and studying.

In contrast, students at Bilgi University show a more balanced preference between open fields and gardens. The campus's open field, situated near academic buildings but at the edge of the campus, provides access to both a vast field and nearby smaller gardens. The proximity of the gardens to academic units appeals to students seeking quieter, more secluded spaces for study or rest. These preferences may also be influenced by the size and layout of each space. While İTÜ's centrally located open field functions as a vibrant student hub, Bilgi's campus culture supports both active social engagement in open areas and a more tranquil atmosphere in garden spaces.

Two campuses have significantly different green space visit frequencies. Most Bilgi University students visited green spaces daily. This persistent interaction suggests a campus culture that actively incorporates green spaces into student life, either due to a more flexible academic schedule or a campus design that encourages regular encounters. Lack of vegetation in the previous facility made it more confined and less appealing. This testimony shows how green spaces improve campus life and students' well-being.

At İTÜ, many students use green places weekly, a smaller percentage daily, and one rarely. The difference may be due to this university's dense academic program, typical of a public university. İTÜ students may visit green spaces less due to academic pressure. These data highlight the link between academic duties and students' use of green spaces.

The interviews *(figure 12)* also show that students mostly prefer friendly gatherings, which was cited 20 times. Additionally, there were 5 mentions of "Solitary Time" and 3 mentions of "Group Studies." Based on the aforementioned evidence, it can be concluded that green spaces serve a purpose beyond simple leisure areas, since they function as integral social areas. The platform provided serves both social activities and

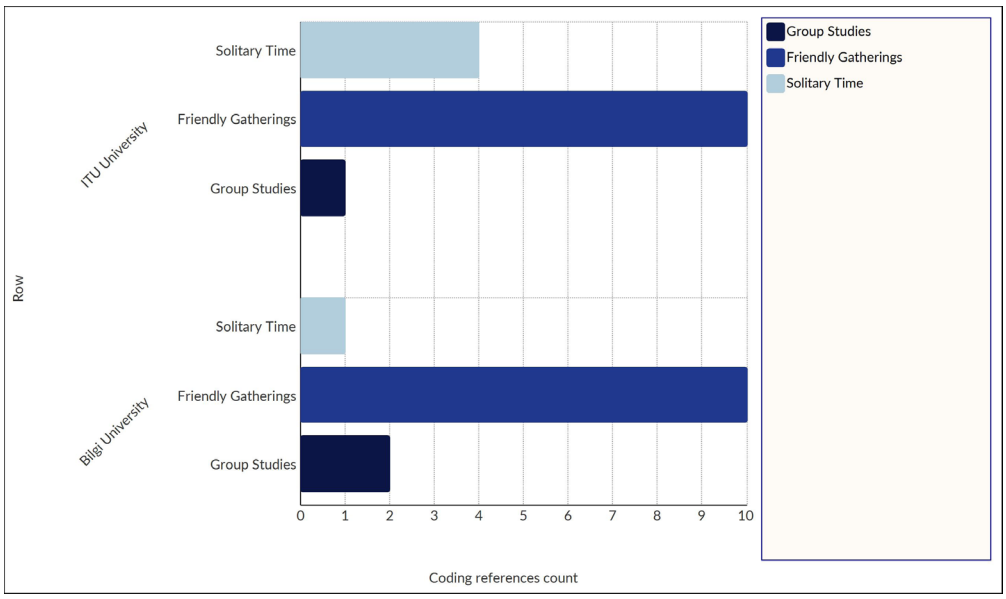

Figure 12: *Bar graph showing students' preferences and usage patterns for social interaction.*

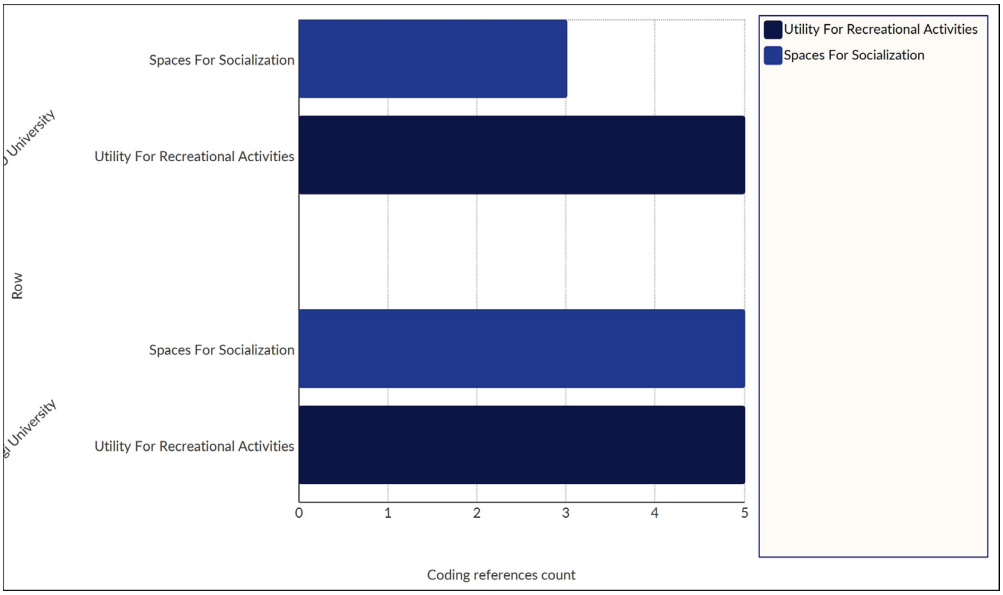

Figure 13: *Bar graph showing students' satisfaction regarding the functional use of the campus.*

personal reflection, with friendly gatherings being particularly favored by users. According to Coles and Bussey *(2000)*, green spaces provide opportunities for social contact in urban contexts. This argument supports the potential for campuses that offer green spaces between academic units to create a community for students. In addition, group studies, as mentioned, include interviews as a part of student activities in open spaces, though less prevalent, and demonstrate how green spaces could enhance academic activities.

Satisfaction with Campus Green Spaces.

The theme emerged as a key topic among students, offering insight into the various reasons that shape their experiences of these areas. Analysis of the responses revealed two distinct subthemes: "Functional Use" and "Accessibility & Availability."

The "Functional Use" subtheme *(Figure 13)* highlights the practical and purposeful role of green spaces in meeting students' needs and preferences. The most frequently mentioned use was for recreational activities *(10 times)*, followed closely by their use as spaces for socialization *(8 times)*. These findings suggest that students not only value green

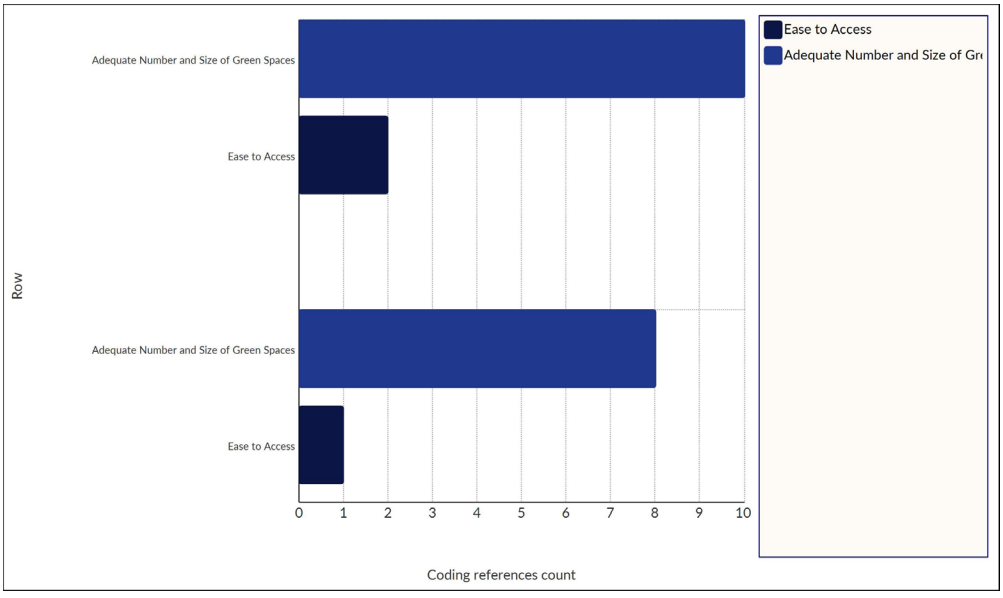

Figure 14: *Bar graph showing students' satisfaction regarding accessibility and availability of green spaces.*

spaces for relaxation and leisure but also recognize their importance in fostering social interaction and community on campus.

The "Accessibility & Availability" subtheme *(Figure 14)* relates to how easily students can access green spaces and whether there are enough of them across the campus. The most discussed aspect was the adequate number and size of green areas, with seven mentions, indicating general satisfaction. However, the issue of ease of access received only three mentions, suggesting concern for improvement in terms of the physical accessibility of these spaces.

Conclusion

This study focuses on exploring how green spaces on university campuses influence students' psychological well-being. We conducted a case study using observations and interviews at two university campuses in İstanbul to explore how green spaces contribute to stress reduction, cognitive recovery, and emotional enrichment. Previous findings revealed a strong link between green space and various psychological well-being factors, including sensory experiences and emotional attachments. To address the research questions, we employed a mixed-methods approach, combining quantitative green space evaluations with qualitative student experience. The flexible, semi-structured interviews provided in-depth, personalized accounts, illuminating the importance of green spaces beyond their visual appeal.

According to the interviews, green spaces on these campuses are an integral part of students' academic life. Students use these areas daily, typically spending 2 to 4 hours there each day. Green spaces offer a variety of uses—including recreational, leisure, and social activities—whether alone or in groups. Their proximity to academic buildings enhances accessibility, providing students with convenient places to take a break and escape from their academic routines.

One of the most important findings of this study is that green spaces significantly enhance student mental health, promoting not only physical well-being but also reducing stress, supporting cognitive recovery, and fostering emotional balance. They create supportive areas in the learning environment that boost both academic performance and emotional resilience. Open spaces near to academic units, in particular, contribute to cognitive and physical health due to their adaptability; students can relax directly on the grass or bring chairs, demonstrating their practicality and popularity. The expansive and inclusive nature of these spaces enriches the educational experience by providing physical renewal and encouraging mental flexibility and openness—qualities especially valuable in the often stressful university setting.

The findings align with Kaplan and Kaplan's *(1989)* Attention Restoration Theory, which suggests that aesthetically pleasing environments such as gardens and water bodies facilitate mental restoration from cognitive fatigue. From an evolutionary perspective, humans have an innate affinity for natural elements like plants, trees, and water, which not only offer visual appeal but also historically increased survival chances *(Wilson, 1984)*. Additionally, the preference for open fields supports Ulrich's *(1984)* assertion that larger, open natural areas are particularly restorative, offering a sense of freedom and escape from urban constraints.

Another critical issue is that the presence of green spaces significantly influences students' university choices, underscoring their importance to the overall university experience. Students who prioritize a green environment often cite aesthetic value, wellness benefits, and the inherent importance of natural spaces as key factors in their decision.

In conclusion, green spaces within a campus play a critical role in shaping the university environment. The value of these spaces is closely tied to understanding that university students' habits differ significantly from those of city residents. Unlike city dwellers, students typically follow rigid academic schedules, which creates a unique rhythm of

campus life. This underscores the need for adaptable and easily accessible open areas within the campus that support socializing, relaxation, and various activities, ideally positioned near academic buildings.

In two campuses, open spaces are centrally located among academic units, enhancing accessibility for students. This spatial arrangement highlights the importance of thoughtful design in educational institutions, where the layout directly influences student well-being and social interaction. The findings emphasize the need for adaptive, comprehensive design strategies in campus development, suggesting that recognizing open fields as flexible spaces that cater to diverse student needs can significantly enhance campus life.

Possible future study areas may involve doing a comparative examination of green space in various university environments, investigating potential differences in student involvement and preferences. This study concluded that while green spaces are universally admired for their aesthetics, students subjectively acknowledge their psychological benefits. However, the positive effects were widely recognized, emphasizing the importance of environmental considerations in campus design and policy. This study shows the relevance of green spaces in improving university life and recommends prioritizing them in educational planning and growth to support and enrich student well-being.

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