

Article

Sustaining Urban Perceived Well-Being Through Routine Park Maintenance: The Roles of Perceived Safety and Restorative Experience

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Abstract

Urban parks, as essential urban green infrastructure, contribute significantly to public health, psychological restoration, and socially sustainable urban living. However, existing research has primarily emphasized landscape aesthetics while paying comparatively limited attention to routine landscape maintenance as an important component of sustainable urban park governance. Drawing on Stress Recovery Theory (SRT), this study examines how landscape maintenance quality influences perceived well-being through perceived safety and restorative experience. Survey data were collected from 278 urban park users in Wangjianglou Park, Chengdu, China, and analyzed using partial least squares structural equation modeling (PLS-SEM). The results indicate that maintenance quality positively affects perceived well-being both directly and indirectly through perceived safety and restorative experience, which serve as significant mediators. Multi-group analysis further reveals demographic differences, with female users demonstrating stronger safety-related responses and older users exhibiting stronger restorative and perceived well-being benefits associated with maintenance conditions. The findings highlight the importance of routine park maintenance in supporting perceived safety, psychological restoration, inclusiveness, and the long-term usability of urban public spaces. The study advances understanding of how maintenance practices shape psychological restoration and urban perceived well-being while providing empirical support for sustainable urban green space management and the achievement of Sustainable Development Goal 11.

Keywords: landscape maintenance quality; perceived safety; restorative experience; perceived well-being; urban parks; Chengdu; China



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1. Introduction

Rapid urbanization has intensified the concentration of populations in high-density cities, creating growing challenges for environmental quality, psychological well-being, and sustainable urban living. According to the United Nations, approximately 68% of the global population is projected to reside in urban areas by 2050 [1]. In response to these challenges, Sustainable Development Goal 11 (SDG 11) emphasizes the importance of developing inclusive, safe, resilient, and sustainable cities [2]. This further highlights the importance of urban green spaces as infrastructures supporting sustainable urban well-being. However, dense urban environments frequently expose residents to environmental stressors such as air pollution, noise, overcrowding, and social pressure, all of which may negatively affect

mental health and quality of life [3,4]. Against this background, improving the capacity of urban public spaces to support psychological restoration and well-being has become an important challenge for sustainable urban governance.

Urban parks are important not only as ecological assets, but also as socially supportive public spaces that contribute to long-term urban sustainability, public health, and quality of life. Studies on urban green spaces have consistently shown that visitors' perceptions of environmental quality, safety, accessibility, and landscape conditions play an important role in shaping the psychological, social, and health benefits derived from urban parks [5–8]. Social sustainability emphasizes the creation and maintenance of inclusive, safe, accessible, and psychologically supportive urban environments that can be equitably experienced by diverse population groups over time. In this context, routine landscape maintenance represents more than a technical management task; it functions as a continuous form of urban governance that sustains the usability, safety, and restorative potential of public green spaces [9,10]. Consequently, sustainable urban development depends on the provision of green infrastructure as well as the long-term quality and continuity of landscape maintenance within public green spaces. However, despite the recognized benefits of urban parks and green spaces, these benefits may be weakened when environmental conditions are poorly maintained. Factors such as facility deterioration, inadequate vegetation management, poor visibility, and visible signs of disorder may negatively influence users' perceptions and experiences, thereby limiting the restorative and well-being outcomes associated with urban parks [11].

Perceived safety is widely recognized as an important factor influencing users' experiences in urban parks, as visible signs of disorder, damaged facilities, inadequate lighting, and limited visibility may reduce feelings of safety and discourage positive engagement with public spaces [12,13]. In contrast, well-maintained environments can enhance feelings of safety and comfort, thereby contributing to more positive park experiences [14,15]. Although previous studies have explored perceived safety in relation to environmental quality, park use, and visitor satisfaction [16,17], limited research has examined its role in linking landscape maintenance quality with restorative experience and perceived well-being in urban parks.

Although previous studies have examined the effects of park aesthetics, spatial design, vegetation characteristics, accessibility, and facility provision on visitor experience, satisfaction, and well-being [18,19], routine landscape maintenance has received comparatively less systematic attention as a long-term governance practice within urban parks [20,21]. Existing studies have often treated maintenance-related elements, such as cleanliness, facility condition, and disorder, as separate environmental attributes rather than examining maintenance quality as an integrated factor influencing psychological outcomes [22,23]. Moreover, while perceived safety and restorative experience have both been discussed in urban green space research [24,25], relatively few studies have examined how maintenance quality may influence perceived well-being through perceived safety and restorative experience. As a result, the contribution of routine landscape maintenance to sustainable urban well-being has not been systematically examined. In addition, previous studies have reported demographic differences in environmental perception and psychological responses to urban green spaces [26,27]. However, whether the relationships among landscape maintenance quality, perceived safety, restorative experience, and perceived well-being vary across gender groups remains insufficiently explored.

To address these gaps, this study adopts Chengdu People's Park as an empirical case. As one of the major high-density cities in southwest China, Chengdu has experienced rapid urban expansion and increasing pressure on public green space management. Chengdu People's Park, characterized by intensive daily use and diverse user groups, provides

an appropriate setting for examining how maintenance practices influence psychological experiences in urban parks. This study examines the relationships among landscape maintenance quality, perceived safety, restorative experience, and individual perceived well-being, while further exploring demographic differences in psychological responses to urban park environments. This study contributes to sustainability-oriented urban park research in three ways. First, it positions routine landscape maintenance as an important sustainability- and public-health-related management practice influencing psychological restoration and perceived well-being within urban green spaces. Second, it develops an integrated explanatory framework linking landscape maintenance quality, perceived safety, restorative experience, and perceived well-being, thereby clarifying the psychological relationships associated with maintenance quality in urban parks. Third, it provides empirical evidence for more inclusive and socially sustainable urban park governance by examining demographic differences in user responses to maintenance conditions. Furthermore, the research integrates sustainability, well-being, and governance perspectives to explain how landscape maintenance quality contributes to psychologically supportive urban environments. The findings position routine landscape maintenance as a strategic component of sustainable urban park management, with implications for urban sustainability, environmental quality, and inclusive public space governance.

2. Theoretical Background and Hypothesis Development

2.1. Theoretical Background

Stress Reduction Theory (SRT) [28] provides an important theoretical basis for explaining how environmental conditions in green spaces may influence psychological restoration and well-being. SRT proposes that exposure to supportive environments can reduce psychological stress, facilitate emotional recovery, and enhance positive affective responses [29]. Consistent with this perspective, previous studies have shown that contact with natural and restorative environments can enhance feelings of relaxation, stress relief, and psychological recovery [30,31]. Furthermore, environments perceived as psychologically secure are more likely to facilitate stress reduction and restorative processes, whereas environments associated with uncertainty or vigilance may constrain psychological recovery and well-being [32].

Perceived safety within urban parks is influenced by a range of environmental cues encountered during use, particularly those associated with routine landscape maintenance practices such as cleanliness management, vegetation care, and facility upkeep [33,34]. These environmental conditions may communicate order, management presence, and social control, thereby influencing users' perceptions of safety. This interpretation is consistent with Crime Prevention Through Environmental Design (CPTED) [35], which suggests that the condition and ongoing maintenance of public spaces influence perceived safety by shaping users' perceptions of surveillance, guardianship, and environmental reliability [36]. Accordingly, perceived safety can be understood as a psychological interpretation of environmental conditions rather than an objective assessment of environmental risk. In this study, CPTED provides a theoretical foundation for understanding how environmental conditions communicate cues of order, management, and safety to park users. These cues are important because they contribute to the creation of a secure and psychologically comfortable environment, reducing feelings of uncertainty and facilitating positive psychological responses among park users.

From a sustainability perspective, urban parks should be understood not only as restorative environments, but also as continuously managed urban systems that contribute to long-term social and public-health sustainability [37,38]. The sustained functionality, safety, and accessibility of these spaces depend on ongoing governance practices rather

than static design attributes alone. Routine landscape maintenance therefore represents an important component of urban park governance, helping to maintain the long-term usability, safety, and inclusiveness of public green spaces [39]. Accordingly, maintenance conditions may play a central role in linking environmental management practices with users' psychological experiences and the sustainable performance of urban park systems.

CPTED and SRT explain complementary but sequential psychological processes in urban park use. CPTED focuses on how environmental cues related to maintenance, visibility, and spatial order shape users' perceived safety and reduce environmental uncertainty [36,40]. In contrast, SRT explains how reduced psychological stress and attentional fatigue enable restorative experiences and improved well-being [32,41]. The integration of CPTED and SRT provides a more comprehensive explanation of how urban park environments influence well-being. CPTED explains how environmental conditions reduce perceived threats and foster perceived safety [35,40], whereas SRT explains how individuals respond once such safety has been established [32]. In this sense, perceived safety occupies a central position in the integration of the two theories, reflecting users' responses to environmental conditions while simultaneously providing the psychological basis for restorative experiences [36,41]. By connecting the formation of safety perceptions with subsequent restorative experiences, the two theories form a continuous explanatory process linking environmental conditions to psychological well-being.

This theoretical connection is particularly important in high-density urban contexts, where residents are frequently exposed to noise, crowding, work pressure, and other stressors associated with contemporary urban life [42,43]. Such conditions may increase psychological fatigue and reduce opportunities for sustained contact with natural environments, thereby increasing the need for accessible settings that support psychological recovery and well-being [44]. In this context, urban parks represent one of the most accessible and frequently used forms of public green space available to urban residents [45]. Compared with more remote natural settings, such as natural forests or nature reserves that are visited only occasionally [46,47], urban parks are embedded within daily life and are more likely to play a continuous role in supporting restorative needs, psychological well-being, and quality of life [48]. Therefore, understanding the factors that influence restorative experiences within urban parks is particularly important for promoting sustainable well-being in high-density cities.

In addition, poor maintenance conditions may weaken restorative experiences through multiple sensory pathways. For example, visible litter, polluted water, and unpleasant smells can reduce visual and sensory comfort, making it more difficult for users to experience relaxation and emotional recovery [49,50]. Such conditions may generate feelings of discomfort and dissatisfaction, making it more difficult for users to experience the restorative benefits commonly associated with urban green spaces. Furthermore, inadequate lighting and obstructed visibility may reduce users' perceptions of safety, particularly during evening hours or periods of reduced surveillance [51]. Under such conditions, individuals may become more attentive to potential environmental risks and less able to fully relax within the park environment. Therefore, landscape maintenance quality should be understood not merely as a physical management issue, but as an important environmental condition influencing perceived safety, restorative experience, and perceived well-being in urban parks.

2.2. Hypothesis Development

2.2.1. Landscape Maintenance Quality, Perceived Safety, and Restorative Experience

Landscape maintenance quality refers to users' perceived condition of visible environmental features in urban parks, including cleanliness, lighting, and the condition of

facilities [52,53]. It reflects the physical condition of park environments as well as users' perceptions of environmental order and management presence. From the perspective of Crime Prevention Through Environmental Design (CPTED), well-maintained environments signal order and active management, which can enhance perceived safety by reducing uncertainty and perceived risk [54,55]. In contrast, neglected environments may generate perceptions of poor control and lower safety [56]. Accordingly, the following hypothesis is proposed:

H1. *Higher landscape maintenance quality enhances perceived safety in urban parks.*

According to Stress Reduction Theory (SRT), restorative experiences are more likely to occur when environmental settings help reduce stress, support emotional recovery, and enable individuals to feel comfortable and relaxed [57]. In urban parks, landscape maintenance quality may facilitate restorative experiences by enhancing users' environmental comfort, relaxation, and enjoyment through the provision of clear and well-maintained sensory environments, such as legible spatial layouts and properly managed vegetation [58]. These conditions can evoke positive emotional responses and reduce psychological stress, thereby promoting restorative experiences. Furthermore, well-maintained park environments often exhibit a higher degree of environmental order, enabling users to more easily understand and predict their surroundings and reducing the cognitive burden and psychological effort associated with environmental uncertainty [59]. At the same time, this enhance individuals' sense of engagement and involvement during interactions with the environment, making it easier for them to obtain positive outcomes such as psychological recovery and emotional relief from their landscape experiences [32]. Therefore, landscape maintenance quality may enhance restorative experiences not only by fostering positive emotional responses but also by reducing environmental uncertainty and cognitive burden. Accordingly, the following hypothesis is proposed:

H2. *Higher landscape maintenance quality facilitates restorative experience.*

2.2.2. Landscape Maintenance Quality and Perceived Well-Being

Perceived well-being refers to individuals' overall psychological state as shaped by their interactions with the surrounding environment. Existing research indicates that environmental conditions play a significant role in influencing users' experiential quality and psychological responses in urban green spaces [60]. In particular, the condition of landscape maintenance, as perceived by users, is closely associated with their emotional comfort and overall experiential evaluation of park environments [61].

Parks with higher perceived landscape maintenance quality can provide cleaner, more comfortable, and more pleasant settings for recreation and outdoor activities, thereby enhancing satisfaction with the park environment and generating more positive evaluations of the place [62]. When environmental settings effectively support users' functional and psychological needs, individuals are more likely to develop positive environmental experiences, which may contribute to higher levels of perceived well-being [63]. Moreover, parks perceived as clean, orderly, and adequately maintained are more likely to generate positive evaluations of environmental quality. Such positive evaluations may strengthen users' perceptions of overall place quality and contribute to broader feelings of life satisfaction and perceived well-being [64]. Therefore, landscape maintenance quality may contribute to perceived well-being not only through the fulfilment of users' recreational and psychological needs but also through the development of positive evaluations of the park environment. Accordingly, this study proposes the following hypothesis:

H3. *Higher landscape maintenance quality contributes positively to individual perceived well-being.*

2.2.3. Perceived Safety, Restorative Experience, and Perceived Well-Being

As multifunctional public spaces, urban parks serve as important public spaces that support recreation, psychological restoration, and well-being. Within such settings, perceived safety influence not only users' evaluation of environmental risk but also their willingness to relax, engage with the environment, and derive restorative benefits from park experiences [33]. Restorative experience therefore represents an important psychological process through which environmental perceptions are translated into broader well-being outcomes [41]. Examining the relationships among perceived safety, restorative experience, and perceived well-being may contribute to a deeper understanding of the psychological mechanisms through which urban parks support human well-being.

Perceived safety plays an important role in shaping restorative experience within urban green spaces. From the perspective of Stress Reduction Theory (SRT), restorative experiences are more likely to occur when environmental conditions help reduce psychological stress and support emotional recovery [32]. In environments associated with uncertainty, inadequate lighting, obstructed visibility, or low surrounding activity, individuals may remain psychologically alert to potential environmental risks, thereby increasing stress and limiting restorative experiences [51]. By contrast, environments perceived as safe may support more relaxed and comfortable interactions with environmental settings, facilitating emotional recovery and restorative experience [55]. Restorative experience reflects a broader psychological process involving stress reduction, emotional relief, and psychological recovery through interaction with supportive environments [65]. Previous studies have suggested that restorative experiences contribute to perceived well-being by enhancing positive emotional states and supporting overall psychological functioning [63,66]. Taken together, these relationships suggest that landscape maintenance quality may influence perceived well-being through sequential psychological processes involving perceived safety and restorative experience. Accordingly, the following hypotheses are proposed:

H4. *Perceived safety positively influences restorative experience.*

H5. *Greater perceived safety contributes positively to perceived well-being.*

H6. *Restorative experience contributes positively to perceived well-being.*

Based on the proposed relationships among landscape maintenance quality, perceived safety, restorative experience, and perceived well-being, the following mediation hypotheses are further proposed:

H7. *Perceived safety mediates the relationship between landscape maintenance quality and perceived well-being.*

H8. *Restorative experience mediates the relationship between landscape maintenance quality and perceived well-being.*

H9. *Perceived safety and restorative experience sequentially mediate the relationship between landscape maintenance quality and perceived well-being.*

These relationships collectively point to a conceptual framework in which landscape maintenance quality is associated with perceived well-being through a series of underlying psychological processes. Specifically, landscape maintenance quality is expected to relate to

perceived safety, which in turn supports the development of restorative experience and is ultimately associated with perceived well-being. The hypothesized research model is presented in Figure 1.

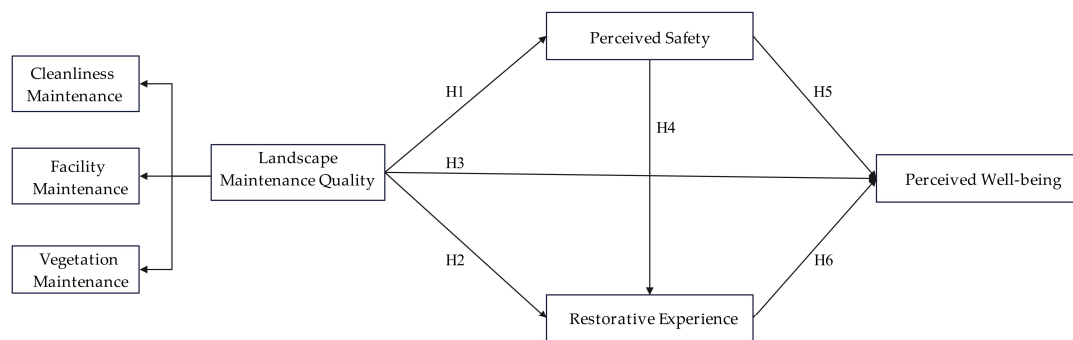


Figure 1. The conceptual model.

3. Materials and Methods

3.1. Research Design

This study adopts a quantitative research design to examine the relationships between landscape maintenance quality, perceived safety, restorative experience, and perceived well-being in urban parks. A survey-based approach was used because the study focuses on users' subjective evaluations of environmental conditions and psychological responses. The key constructs in this study are latent variables that cannot be directly observed and are therefore measured through self-reported indicators. Structural equation modeling (SEM) was employed to test the proposed relationships, as the model includes multiple latent constructs and both direct and indirect effects. SEM is particularly suitable for evaluating mediation pathways linking landscape maintenance quality to perceived well-being through perceived safety and restorative experience. This approach enables the simultaneous estimation of the measurement model and structural model, providing a comprehensive assessment of the hypothesized relationships.

3.2. Study Area

The study was conducted in Chengdu, the capital city of Sichuan Province in south-western China. According to the Seventh National Population Census, Chengdu had a permanent population of approximately 20.94 million residents. The city has experienced rapid urbanization, with its urbanization rate exceeding 80%, resulting in increasing demand for urban green spaces and public recreational environments. Chengdu People's Park is located in Qingyang District, one of the five central urban districts of Chengdu. The district is characterized by a dense urban structure, educational resources, mixed residential and commercial land uses, and a rich historical and cultural heritage. Qingyang District covers approximately 66 km² and has a large service population, indicating a high level of daily urban use and public space demand. Figure 2 shows the geographical location of the study area.

Chengdu People's Park was selected as the study site because it is one of the most frequently visited urban parks in the city center. Based on official park information, the park covers approximately 130,500 m², including about 101,400 m² of green space, with a greening rate of 77.68%. The park contains diverse landscape and recreational settings, including open squares, pedestrian pathways, teahouses, water features, garden landscapes, bonsai and flower display areas, children's recreational facilities, outdoor fitness spaces, and cultural-historical attractions. These facilities support a wide range

of daily activities such as walking, resting, social interaction, tea drinking, sightseeing, boating, fish feeding, physical exercise, and leisure recreation. Due to its central location, high accessibility, diverse landscape characteristics, and intensive daily use, Chengdu People's Park represents a typical urban park environment within a highly urbanized metropolitan context. Figure 3 presents the park layout and representative landscape photographs of major park settings.

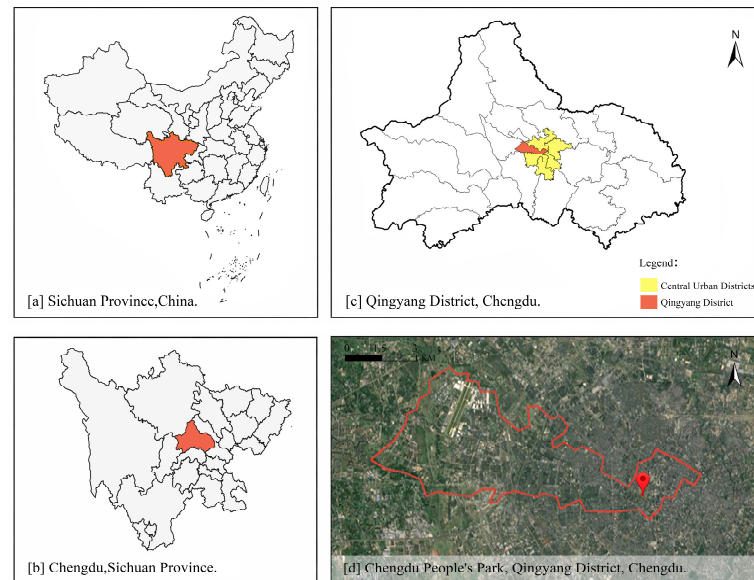


Figure 2. Study area and location map of Chengdu People's Park. Source: Author's compilation based on Google Maps (2026).



Figure 3. Map of Chengdu People's Park and representative landscape photos. Note: (A–D) in the map indicate the locations of the representative landscape features shown in the photographs. (A): Martyrs Monument Plaza, featuring a monument commemorating the Sichuan Railway Protection Movement of 1911; (B): Heming Teahouse; (C): Bonsai Garden; (D): Chrysanthemum Garden. Source: Authors' compilation based on Google Maps (2026); photographs taken by the authors during field investigation in 2026.

3.3. Participants and Sampling

A systematic intercept sampling approach was employed to collect data from adult users of Chengdu People's Park. Prior to participation, respondents were informed about the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses. Informed consent was obtained from all participants, and the survey was conducted in accordance with ethical guidelines. Data collection was conducted across multiple functional areas of the park, including major entrances, open squares, waterside spaces, recreational areas, and culturally significant locations, to capture a diverse range of park users. At each selected location, every *n*th eligible park user encountered was invited to participate in the survey to reduce selection bias and improve representativeness. Only individuals aged 18 years and above who were engaged in on-site recreational or routine park activities at the time of data collection were included. This approach was adopted to approximate probability-based sampling within a naturalistic field setting where a complete sampling frame of park users was not available. The spatial distribution of the questionnaire survey locations is presented in Figure 4.

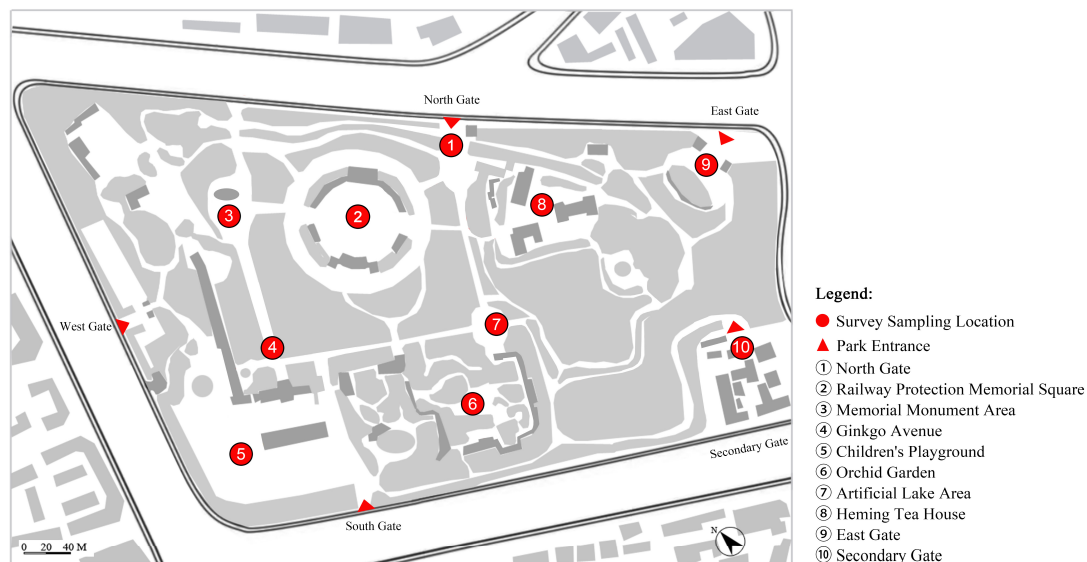


Figure 4. Locations for questionnaire data collection in Chengdu People's Park. Source: Created by the authors.

3.4. Measures

This study employed a structured questionnaire to examine individuals' perceptions and psychological responses within the park environment. The questionnaire consisted of two parts: a socio-demographic section and a measurement section. The sociodemographic section included one open-ended question on age and three closed-ended questions on gender, educational attainment, and occupation. The measurement section included 23 Likert-scale items measuring respondents' perceptions and experiential responses within the park environment.

The measurement items were organized into four reflective constructs: landscape maintenance quality, perceived safety, restorative experience, and perceived well-being. All measurement items were adapted from validated scales in prior studies and modified to fit the urban park context. Specifically, the landscape maintenance quality construct was adapted from previous studies on landscape maintenance and urban park management. Consistent with prior research, the construct was operationalized through three dimensions: cleanliness maintenance, facility maintenance, and vegetation maintenance, which represent key aspects of the visible maintenance condition of urban park environ-

ments [34,67]. The remaining constructs were adapted from established scales for perceived safety, restorative experience, and perceived well-being [14,68,69]. The questionnaire was also reviewed by three experts in urban environmental psychology to ensure content clarity, wording appropriateness, and contextual relevance. All items were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Table 1 presents the measurement items and constructs.

Table 1. The study constructs and measurement items.

Construct	Dimension	Item	Description
Landscape Maintenance Quality (LMQ)	Cleanliness Maintenance (CM)	CM1	This park has a clean environment with little litter.
		CM2	This park has pathways and plazas kept tidy.
		CM3	This park has graffiti and vandalism well controlled and rarely seen.
		CM4	This park has water features kept clean and free of unpleasant smells.
	Facility Maintenance (FM)	FM1	This park has lighting maintained in good working order.
		FM2	This park has seating, waste bins, and signs kept in good condition.
		FM3	This park has play and fitness equipment maintained safely.
	Vegetation Maintenance (VM)	VM1	This park has vegetation pruned regularly to keep sightlines clear.
		VM2	This park has lawns and plantings maintained in healthy condition.
		VM3	This park has green areas kept orderly rather than overgrown.
Perceived Safety (PS)		PS1	In this park, I feel safe during my visit.
		PS2	In this park, I feel safe when walking alone.
		PS3	In this park, I feel safe across different times of day.
		PS4	In this park, I feel little threat to my personal safety.
Restorative Experience (RE)		RE1	I feel mentally refreshed after being in this park.
		RE2	I feel more relaxed when I spend time in this park.
		RE3	I feel that my stress has been relieved in this park.
		RE4	I feel calm and peaceful when I spend time in this park.
Perceived Well-being (PWB)		PWB1	Being active in this park contributes to my physical and mental health.
		PWB2	Activities in this park make me feel happy and emotionally uplifted.
		PWB3	Being active in this park has made me more satisfied with life.
		PWB4	Experiences in this park make my daily life feel more enjoyable.
		PWB5	Being in this park gives me a general sense of well-being.

3.5. Data Collection and Analysis

This study collected data through an on-site survey conducted in Chengdu People's Park between June and July 2025. A paper-based questionnaire was administered using a face-to-face approach. Surveys were carried out during park opening hours, covering both weekdays and weekends at different times of the day in order to capture a diverse range of park users. During the survey process, some park users were unwilling to participate because of time constraints or lack of interest in questionnaire surveys. Nevertheless, the face-to-face administration of paper questionnaires helped facilitate respondent engagement and questionnaire completion. A total of 300 questionnaires were collected. Following data screening for completeness and consistency, 278 valid responses were retained for subsequent analysis. The demographic characteristics of the respondents are presented in Table 2.

Table 2. Socio-demographic characteristics of survey respondents ($n = 278$).

Variable	Category	Frequency	Percentage (%)
Gender	Male	131	47.1
	Female	147	52.9
Age	18–29 years	56	20.1
	30–39 years	70	25.2
	40–49 years	61	21.9
	50–59 years	50	18.0
	≥60 years	41	14.7
Education	Secondary school or below	28	10.1
	High school	70	25.2
	College Diploma/Associate Degree	97	34.9
	Master's degree	56	20.1
	Doctoral degree or above	27	9.7
Occupation	Employed professionals	83	29.9
	Retired	69	24.8
	Self-employed	56	20.1
	Students	42	15.1
	Others	28	10.1

The sample reflected a diverse range of park users in terms of gender, age, educational attainment, and occupation. The gender distribution was relatively balanced, with 52.9% female and 47.1% male respondents. This pattern closely corresponds to the demographic structure of Qingyang District, where females account for 51.69% and males 48.31% of the resident population according to the Seventh National Population Census. The age distribution covered a broad range, with the largest proportion aged 30–39 (25.2%), followed by those aged 40–49 (21.9%) and 18–29 (20.1%). Participants aged 50 and above also accounted for a substantial share (32.7%), indicating representation across different age groups. The sample was generally well educated, with a relatively high proportion of respondents holding college diplomas or higher qualifications. Respondents holding a college diploma/associate degree accounted for 34.9% of the sample, followed by those with master's degrees (20.1%) and doctoral degrees or above (9.7%). Census data indicate that Qingyang District has a resident population of 955,954, of whom approximately 40.7% hold a college diploma or higher qualification. Although the proportion of highly educated respondents in the present sample was somewhat higher than that of the general population,

this difference may be partly attributable to the fact that census statistics are based on the entire resident population, whereas the survey targeted adult park users. Overall, the sample generally reflects the educational characteristics of the study area. In terms of occupation, employed professionals constituted the largest group (29.9%), followed by retired individuals (24.8%), self-employed respondents (20.1%), and students (15.1%), while other occupational categories accounted for 10.1% of the sample.

Following the descriptive analysis of respondent characteristics, the data were analyzed in two stages. First, preliminary data screening and descriptive statistics were performed using IBM SPSS Statistics 27.0. Second, Partial Least Squares Structural Equation Modeling (PLS-SEM) was conducted using SmartPLS 4.0 to test the hypothesized relationships among the constructs. The measurement model was evaluated in terms of reliability and validity, whereas the structural model was assessed using path coefficients, coefficient of determination (R^2), effect sizes (f^2), and predictive relevance (Q^2). Statistical significance was determined using a bootstrapping procedure with 5000 resamples. In addition, common method bias was examined as part of the model assessment procedure.

4. Results

4.1. Descriptive Statistics

Table 3 presents the descriptive statistics of the main variables, including mean, standard deviation, skewness, and kurtosis. The results indicate that all skewness values fall within the range of ± 1 , and all kurtosis values are within ± 2 , meeting commonly accepted criteria for normality [70]. These findings indicate that the data do not exhibit significant deviations from normal distribution and are suitable for subsequent structural equation modeling analysis.

Table 3. Descriptive statistics of study variables.

Construct	Mean	SD	Skewness	Kurtosis
Cleanliness Maintenance	4.165	0.588	−0.230	−0.939
Facility Maintenance	4.163	0.612	−0.268	−1.007
Vegetation Maintenance	4.101	0.635	−0.171	−1.089
Perceived Safety	3.951	1.099	−1.001	0.008
Restorative Experience	3.873	1.177	−0.907	−0.318
Perceived Well-being	3.619	0.761	−0.681	0.430

4.2. Measurement Model Assessment

4.2.1. Common Method Bias

This study used Harman's single-factor test to assess common method bias. All measurement items were entered into an unrotated exploratory factor analysis. The results indicated that the first factor explained 33.10% of the total variance, which did not account for half of the total variance and remained below the recommended threshold of 50%. This suggests that no single factor dominated the covariance among the measures, indicating that common method bias was not a serious concern in the present study [71].

4.2.2. Reliability and Validity

The measurement model was assessed in terms of indicator reliability, internal consistency reliability, and convergent validity. The results indicate that all standardized factor loadings exceeded the recommended threshold of 0.70, ranging from 0.744 to 0.917, suggesting that the indicators adequately represent their respective constructs [70]. Internal consistency reliability was also supported, with Cronbach's alpha values ranging from 0.768 to 0.910 and composite reliability (CR) values ranging from 0.866 to 0.933, both exceed-

ing the recommended threshold of 0.70. In addition, convergent validity was confirmed, as all average variance extracted (AVE) values were above 0.50, ranging from 0.624 to 0.751, indicating that each construct explains a substantial proportion of the variance in its indicators. These results demonstrate that the measurement model achieves satisfactory levels of reliability and convergent validity. The detailed results are presented in Table 4.

Table 4. Construct reliability and validity results (n = 278).

Construct	Dimensions	Items	Loadings	Cronbach's α	CR	AVE
Landscape Maintenance Quality (LMQ)	Cleanliness Maintenance (CM)	CM1	0.743	0.799	0.869	0.624
		CM2	0.809			
		CM3	0.778			
		CM4	0.829			
	Facility Maintenance (FM)	FM1	0.918	0.768	0.866	0.684
		FM2	0.823			
		FM3	0.857			
	Vegetation Maintenance (VM)	VM1	0.918	0.835	0.9	0.751
		VM2	0.822			
		VM3	0.857			
Perceived Safety (PS)	-	PS1	0.843	0.809	0.875	0.637
		PS2	0.814			
		PS3	0.770			
		PS4	0.762			
Restorative Experience (RE)	-	RE1	0.846	0.837	0.891	0.672
		RE2	0.823			
		RE3	0.805			
		RE4	0.804			
Perceived Well-being (PWB)	-	PWB1	0.789	0.854	0.895	0.631
		PWB2	0.773			
		PWB3	0.799			
		PWB4	0.830			
		PWB5	0.780			

Discriminant validity was assessed using the heterotrait–monotrait ratio (HTMT), which has been shown to provide greater sensitivity than the Fornell–Larcker criterion and cross-loadings in PLS-SEM [72]. As shown in Table 5, all HTMT values among the constructs were below the conservative threshold of 0.85, indicating satisfactory discriminant validity. The HTMT values fall within acceptable ranges, suggesting that the constructs capture distinct dimensions and thereby supporting the adequacy of the measurement model.

Table 5. Heterotrait–Monotrait Ratio (HTMT) for discriminant validity.

Construct	CM	VM	FM	PS	RE	PWB
CM						
VM	0.391					
FM	0.406	0.512				
PS	0.484	0.493	0.564			
RE	0.365	0.342	0.327	0.586		
PWB	0.557	0.496	0.561	0.800	0.776	

4.3. Structural Model Assessment

4.3.1. Explanatory Power, Predictive Relevance and Effect Size

The explanatory and predictive power of the structural model were evaluated using the coefficient of determination (R^2), predictive relevance (Q^2), and effect size (f^2). As shown in Table 6, the model explained 30.1% of the variance in perceived safety (PS), 25.2% of the variance in restorative experience (RE), and 63.7% of the variance in perceived well-being (PWB), indicating moderate to substantial explanatory power. In addition, all Q^2 values exceeded zero (0.134–0.341), demonstrating satisfactory predictive relevance of the model.

Table 6. Coefficient of determination and predictive relevance.

Construct	R^2	Q^2
Perceived Safety (PS)	0.301	0.292
Restorative Experience (RE)	0.252	0.134
Perceived Well-being (PWB)	0.637	0.341

To further assess the relative contribution of each predictor construct, effect sizes (f^2) were examined, as reported in Table 7. According to Cohen [73], f^2 values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively. The results show that LMQ exerted a large effect on PS ($f^2 = 0.431$), a small effect on RE ($f^2 = 0.024$), and a small-to-medium effect on PWB ($f^2 = 0.126$). PS had a medium effect on RE ($f^2 = 0.148$) and PWB ($f^2 = 0.185$), while RE demonstrated a medium effect on PWB ($f^2 = 0.327$). These findings provide additional evidence regarding the relative importance of the structural relationships within the proposed model.

Table 7. Effect sizes (f^2) for the relationships among latent constructs.

Predictor	PS	RE	PWB
LMQ	0.431	0.024	0.126
PS	-	0.148	0.185
RE	-	-	0.327

Note: Values represent f^2 effect sizes.

4.3.2. Hypothesis Testing

The structural model was evaluated by examining the path coefficients, their statistical significance, and the model's explanatory power. As shown in Table 8, all hypothesized relationships were positive and statistically significant. Specifically, landscape management exhibited a significant positive effect on perceived safety ($\beta = 0.549$, $t = 11.754$, $p < 0.001$), supporting H1. It also showed a significant positive effect on restorative experience ($\beta = 0.159$, $t = 2.641$, $p = 0.008$), supporting H2. It also had a direct positive effect on perceived well-being ($\beta = 0.259$, $t = 5.503$, $p = 0.001$), supporting H3. In addition, perceived safety significantly influenced restorative experience ($\beta = 0.397$, $t = 6.200$, $p < 0.001$), confirming H4. Perceived safety also showed a significant positive effect on perceived well-being ($\beta = 0.332$, $t = 6.884$, $p < 0.001$), supporting H5. Restorative experience, in turn, showed a significant positive effect on perceived well-being ($\beta = 0.399$, $t = 9.394$, $p < 0.001$), supporting H6. Collinearity diagnostics indicated that all variance inflation factor (VIF) values ranged from 1.000 to 1.642, which are well below the recommended threshold, indicating the absence of collinearity issues.

Table 8. Path coefficients and hypothesis testing results.

H	Path	β	STDEV	T Value	p Value	VIF	Decision
H1	LMQ $\rightarrow$ PS	0.549	0.047	11.754	0.000	1.000	Supported
H2	LMQ $\rightarrow$ RE	0.159	0.060	2.641	0.008	1.431	Supported
H3	LMQ $\rightarrow$ PWB	0.259	0.047	5.503	0.001	1.464	Supported
H4	PS $\rightarrow$ RE	0.397	0.064	6.200	0.000	1.431	Supported
H5	PS $\rightarrow$ PWB	0.332	0.048	6.884	0.000	1.642	Supported
H6	RE $\rightarrow$ PWB	0.399	0.042	9.394	0.000	1.338	Supported

4.3.3. Mediation Analysis

Bootstrapping was employed to examine the indirect effects in the proposed model. As shown in Table 9, LMQ exerted a significant indirect effect on PWB through perceived safety ($\beta = 0.182$, $t = 5.533$, $p < 0.001$), indicating that perceived safety mediated the relationship between landscape maintenance quality and perceived well-being. LMQ also demonstrated a significant indirect effect on PWB through restorative experience ($\beta = 0.063$, $t = 2.523$, $p = 0.012$), supporting the mediating role of restorative experience. Furthermore, the serial indirect effect of LMQ on PWB through perceived safety and restorative experience was significant ($\beta = 0.087$, $t = 4.599$, $p < 0.001$). These findings indicate that perceived safety and restorative experience function as both independent and sequential mediators linking landscape maintenance quality to perceived well-being, thereby providing support for H7–H9.

Table 9. Results of mediation analysis.

Hypothesis	Path	Indirect Effect	STDEV	T Value	p Value	Decision
H7	LMQ $\rightarrow$ PS $\rightarrow$ PWB	0.182	0.033	5.533	0.000	Supported
H8	LMQ $\rightarrow$ RE $\rightarrow$ PWB	0.063	0.025	2.523	0.012	Supported
H9	LMQ $\rightarrow$ PS $\rightarrow$ RE $\rightarrow$ PWB	0.087	0.019	4.599	0.000	Supported

4.4. Multigroup Analysis

Before conducting multi-group analysis, measurement invariance across gender and age groups was assessed using the MICOM procedure based on permutation. For the age-group comparison, respondents aged below 50 years were classified as the younger group, whereas those aged 50 years and above were classified as the older group. This grouping criterion was adopted because age 50 is commonly regarded as a transitional life stage associated with retirement eligibility and changes in leisure and recreational behavior in the Chinese context. Following previous studies, the assessment involved three steps: configural invariance, compositional invariance, and the evaluation of equal means and variances [70]. As shown in Table 10, all constructs satisfied configural invariance in Step 1. Compositional invariance was further established in Step 2, as the original correlation values exceeded their respective 5% quantile values for all constructs in both gender and age-group comparisons. In addition, the results of Step 3 indicated that equal means and variances were supported across the compared groups, confirming full measurement invariance. Overall, measurement invariance was established for both gender and age-group comparisons, which provides the necessary condition for conducting multi-group analysis. Therefore, comparisons of structural relationships across gender and age groups are considered appropriate.

Table 10. Measurement invariance assessment using the MICOM procedure.

Constructs	Gender				Age Group			
	Configural Invariance (Step 1)	Compositional Invariance (Step 2)		Partial Measurement Invariance	Configural Invariance (Step 1)	Compositional Invariance (Step 2)		Partial Measurement Invariance
		Original Correlation	5.0% Quantile			Original Correlation	5.0% Quantile	
CM	Yes	1.000	0.996	Yes	Yes	0.999	0.996	Yes
FM	Yes	1.000	0.998	Yes	Yes	1.000	0.998	Yes
VM	Yes	0.999	0.994	Yes	Yes	0.994	0.992	Yes
LMQ	Yes	0.998	0.995	Yes	Yes	0.999	0.996	Yes
PS	Yes	0.998	0.997	Yes	Yes	0.999	0.997	Yes
RE	Yes	1.000	0.997	Yes	Yes	0.999	0.996	Yes
PWB	Yes	0.999	0.999	Yes	Yes	1.000	0.998	Yes

Following the establishment of measurement invariance, multi-group analysis (MGA) was conducted using both PLS-MGA and permutation approaches to examine potential differences between gender and age groups. The analysis focused on comparing group differences in the structural relationships among the study constructs. According to established criteria, a p -value below 0.05 or above 0.95 indicates a significant difference between groups [70]. As shown in Table 11, significant differences between male and female respondents were observed in the relationships between landscape management quality and perceived safety ($\beta = -0.227$, $p = 0.010$), perceived safety and restorative experience ($\beta = -0.253$, $p = 0.045$), and perceived safety and perceived well-being ($\beta = -0.400$, $p < 0.001$). These results indicated that the corresponding path coefficients were stronger for female respondents than for male respondents. As shown in Table 12, significant age-group differences were identified in the relationships between landscape management quality and perceived safety ($\beta = -0.250$, $p = 0.002$) and restorative experience and perceived well-being ($\beta = -0.133$, $p = 0.024$). These results indicated that the corresponding path coefficients were stronger for older respondents than for younger respondents. Overall, the findings indicated that gender and age group significantly moderated selected relationships.

Table 11. Results of gender-group multi-group analysis.

Relationships	Female (β)	Male (β)	Difference (Male – Female)	p -Value (2-Tailed)	Decision
LMQ $\rightarrow$ PS	0.657	0.430	−0.227	0.010 **	Supported
LMQ $\rightarrow$ RE	0.157	0.126	−0.031	0.804	Not supported
LMQ $\rightarrow$ PWB	0.181	0.308	0.127	0.152	Not supported
PS $\rightarrow$ RE	0.523	0.270	−0.253	0.045 *	Supported
PS $\rightarrow$ PWB	0.547	0.147	−0.400	0.000 ***	Supported
RE $\rightarrow$ PWB	0.326	0.391	0.065	0.413	Not supported

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. p -values are based on the two-tailed permutation test.

Table 12. Results of age-group multi-group analysis.

Relationships	Older Respondents (β)	Younger Respondents (β)	Difference (Younger – Older)	p -Value (2-Tailed)	Decision
LMQ $\rightarrow$ PS	0.718	0.469	−0.250	0.002 ***	Supported
LMQ $\rightarrow$ RE	−0.037	0.211	0.248	0.122	Not supported
LMQ $\rightarrow$ PWB	0.268	0.235	−0.032	0.778	Not supported
PS $\rightarrow$ RE	0.573	0.359	−0.213	0.170	Not supported
PS $\rightarrow$ PWB	0.424	0.291	−0.133	0.335	Not supported
RE $\rightarrow$ PWB	0.263	0.474	0.211	0.024 *	Supported

Note: * $p < 0.05$, *** $p < 0.001$. p -values are based on the two-tailed permutation test.

5. Discussion

This study provides empirical evidence that landscape maintenance quality influences individual perceived well-being through perceived safety and restorative experience in urban park settings. Although previous studies on urban forests, parks, and green spaces have consistently demonstrated positive associations with well-being outcomes [6,10], relatively less attention has been paid to the psychological mechanisms underlying these effects. The present study demonstrates that the psychological benefits derived from urban parks depend not only on the characteristics of the landscape itself but also on whether these characteristics are effectively maintained over time. Unlike previous research that has primarily focused on landscape aesthetics and spatial attributes [13,74], this study highlights the importance of maintenance quality as a complementary environmental factor shaping users' psychological experiences. These results are consistent with international research in urban park contexts, which has increasingly recognized the importance of environmental management and service quality in shaping visitor satisfaction and perceived safety, while extending this perspective by explicitly linking maintenance quality to restorative experience and well-being outcomes.

Furthermore, this study extends Stress Reduction Theory (SRT). While prior research has emphasized the role of natural environments in reducing stress and supporting recovery [25,31,32], most studies have focused on exposure to nature itself rather than the conditions that enable restorative experiences. In urban park settings, particularly in high-density cities, maintenance-related cues such as cleanliness, vegetation care, and facility condition may strongly influence users' perceptions of order, safety, and environmental quality [17,20]. The present study extends SRT by demonstrating that restorative experiences do not arise solely from exposure to natural environments, but also depend on whether environmental conditions are sufficiently supportive to facilitate psychological restoration. While SRT emphasizes the restorative qualities of natural environments [31], the present study highlights the importance of the conditions under which restoration occurs. In this study, landscape maintenance quality functions as an enabling condition that helps create the safety and environmental support necessary for restorative processes to occur. This perspective extends SRT beyond the presence of natural features alone and suggests that the psychological benefits of urban parks depend not only on environmental exposure, but also on the quality of environmental management that supports restorative experiences.

Moreover, because maintenance is a continuous management process rather than a one-time design intervention, its influence on well-being is likely to accumulate over repeated park use, reinforcing stable perceptions of safety and restoration over time. This highlights the importance of long-term governance and maintenance strategies in sustaining the psychological benefits of urban parks.

By highlighting this mechanism, the present study advances the application of SRT in urban park settings and provides new insights into how psychological health benefits are generated through urban green spaces. Moreover, because maintenance is a continuous management process rather than a one-time intervention, its influence on well-being is likely to accumulate through the sustained provision of safe and supportive park environments. This suggests that the psychological benefits of urban parks depend not only on design decisions but also on long-term governance and maintenance practices.

Significant demographic differences were also identified. Female respondents exhibited stronger relationships between maintenance quality, perceived safety, and restorative experience, as well as between perceived safety and perceived well-being. This indicates that environmental order and maintenance visibility play a more important role in shaping women's psychological evaluation of park environments, consistent with prior findings on gender differences in environmental safety perception [75]. This may be because women are

generally more sensitive to environmental cues related to safety and management, making maintenance quality a particularly important factor influencing their park experiences. In the Chinese urban context, female visitors may be particularly sensitive to environmental safety cues when using public parks. Features such as inadequate lighting, restricted sight-lines caused by dense vegetation, and poorly maintained spaces may increase perceptions of uncertainty, particularly during evening hours when visibility is reduced [51]. Under such conditions, limited natural surveillance may heighten perceptions of insecurity among female park users. Consequently, landscape maintenance practices that improve visibility and lighting quality may play an especially important role in supporting perceived safety among female park users [36].

In addition, age differences were also evident. Older respondents showed a stronger relationship between maintenance quality and perceived safety, indicating greater sensitivity to environmental conditions and maintenance cues. Moreover, the effect of restorative experience on perceived well-being was stronger among older adults, suggesting that restorative park environments may be particularly important for perceived well-being in aging populations [76]. Such differences may be particularly relevant in the Chinese urban context, where public parks serve as important venues for leisure and social activities among older adults. Parks often provide spaces for activities such as Tai Chi, Baduanjin, Chinese chess, and other forms of recreational engagement. The frequent and sustained use of urban parks associated with these activities may further increase older adults' reliance on clean, accessible, comfortable, and well-maintained environments for supporting perceived safety, restorative experience, and well-being [74,76]. Collectively, these findings suggest that the psychological benefits associated with landscape maintenance quality vary across demographic groups, reflecting differences in how users perceive and respond to environmental conditions.

5.1. Practical Implications

Beyond the empirical findings, this study offers practical implications for the routine management of urban parks. The findings indicate that routine maintenance should be treated as an essential operational strategy for supporting perceived safety, restorative experience, and public well-being rather than merely a secondary technical task. Figure 5 presents a practical framework for enhancing public benefits through urban park management.

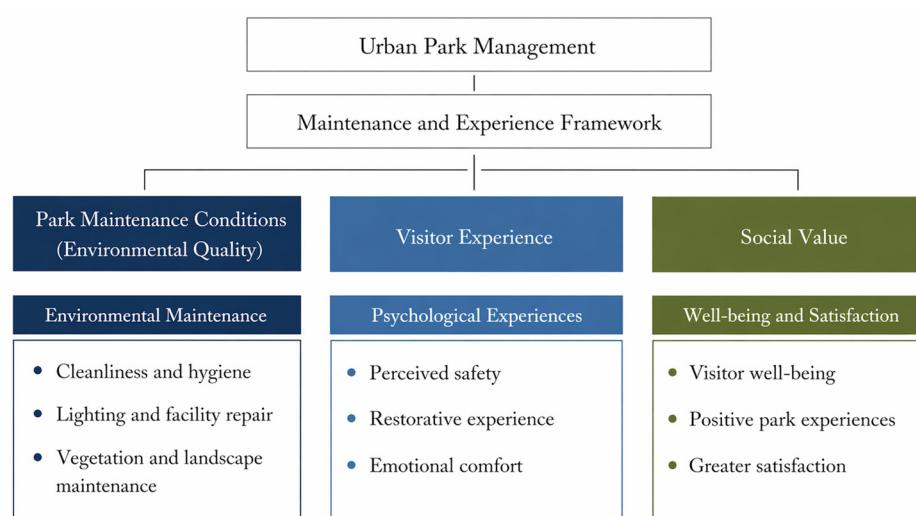


Figure 5. Governance framework for urban park management. Source: Created by the authors.

From a management perspective, urban park managers should prioritize routine maintenance practices such as regular cleaning, vegetation trimming, facility inspection, lighting maintenance, and spatial visibility management, particularly in high-use park areas. These measures may help improve users' perceptions of safety and support restorative park experiences. Compared with large-scale redevelopment projects or security-intensive interventions, routine maintenance strategies are generally more feasible, cost-effective, and adaptable within daily park management. Regular inspection schedules and rapid repair responses for damaged facilities may also help reduce environmental uncertainty and improve visitors' psychological comfort.

The findings also highlight the policy relevance of incorporating maintenance quality into urban park governance and evaluation systems. Rather than being treated solely as a technical or aesthetic issue, routine landscape maintenance should also be recognized as an important environmental management strategy that supports perceived safety, restorative experience, and perceived well-being in urban parks. Strengthening maintenance quality can further contribute to broader public-health and sustainable urban development objectives aligned with SDG 11. Specifically, maintaining clean, safe, accessible, and well-managed park environments can enhance the inclusiveness, safety, resilience, and livability of urban communities, which directly supports the objectives of SDG 11 (Sustainable Cities and Communities). By ensuring that urban green spaces remain welcoming and accessible to diverse user groups, including women and older adults, routine landscape maintenance can help promote equitable access to public spaces, improve quality of life, and foster more sustainable and people-centered urban development.

In practice, regular user feedback surveys, routine environmental audits, and targeted maintenance in high-use park areas may help park managers identify priority management issues and improve park users' experiences. The demographic differences identified in this study further suggest that lighting quality, vegetation management, and spatial openness may be particularly important for female users and older adults. For female users, maintaining adequate lighting, improving visibility along pathways, and reducing visually obstructed areas through regular vegetation management may help enhance perceptions of safety. For older adults, priority should be given to maintaining barrier-free pathways, providing adequate seating and resting facilities, and ensuring that park environments remain clean, accessible, and comfortable for daily use. By responding to the specific needs of different user groups, park management can help create more inclusive, supportive, and psychologically beneficial environments. Finally, regular monitoring of perceived safety, restorative experience, and perceived well-being can serve as a practical indicator for evaluating urban park management effectiveness. Overall, strengthening routine maintenance practices can contribute to more inclusive, safe, accessible, and psychologically supportive urban green spaces, thereby enhancing the social sustainability of urban park systems and supporting long-term sustainable urban governance.

5.2. Limitations and Future Research Directions

While this study provides empirical evidence on the role of landscape management quality in shaping perceived safety, restorative experience, and perceived well-being in urban parks, several limitations should be acknowledged. The most important limitation relates to the study's sampling design, as data were collected from a single urban park within one city. This may limit the generalizability of the findings, and future research could extend the analysis to multiple cities or regions to improve external validity.

A second limitation concerns the omission of additional socio-demographic and behavioral variables, such as income, frequency of park use, and cultural background, which may also influence user responses to park maintenance conditions. In addition, the sample

included a relatively high proportion of respondents with higher educational attainment compared with the general population profile. This difference should be interpreted with caution because the population statistics represent the entire resident population, whereas this study included only adult park users aged 18 years and above. Future studies should include more diverse population groups and broader sampling coverage to improve representativeness and generalizability.

Moreover, all variables were measured using self-reported questionnaires, which may be subject to response bias and individual perception differences despite the assessment of common method bias. Future research could combine subjective evaluations with objective environmental indicators to provide a more comprehensive assessment of park environments. Finally, this study relied primarily on a quantitative cross-sectional design. Although the proposed relationships were theoretically supported, the cross-sectional nature of the data limits the ability to infer causal relationships and examine how psychological responses develop over time. Future research may adopt longitudinal or mixed-method approaches to examine how changes in management practices influence users' perceptions and perceived well-being over time.

6. Conclusions

This study examined how landscape maintenance quality influences perceived safety, restorative experience, and perceived well-being in urban parks using a PLS-SEM approach. The findings show that landscape management quality has both direct and indirect effects on perceived well-being, operating through perceived safety and restorative experience. In particular, perceived safety and restorative experience function as sequential mediators linking environmental maintenance conditions to psychological outcomes.

Theoretical contributions are made by extending environmental psychology and urban green space literature beyond a primary focus on landscape exposure and aesthetic attributes. While previous studies on urban park visitors have largely emphasized environmental characteristics such as vegetation, design quality, and natural exposure, this study demonstrates that routine landscape maintenance represents an additional and distinct explanatory mechanism shaping psychological outcomes. By identifying a sequential pathway from maintenance quality to safety perception, restorative experience, and well-being, the study advances understanding of how environmental management processes contribute to users' psychological responses in urban green spaces [77].

The findings further extend Stress Reduction Theory by showing that restorative benefits in urban parks are not only derived from contact with nature but are also dependent on whether environmental conditions are perceived as safe and well-maintained. In this sense, landscape maintenance quality functions as an enabling condition that supports stress recovery processes in real-world urban park settings.

From a practical perspective, the results suggest that effective park management should integrate routine maintenance with strategies that enhance perceived safety and psychological restoration. The demographic differences identified in this study indicate that park management strategies should account for the diverse needs of different user groups. The findings further highlight that well-maintained urban parks can provide users with a stronger sense of safety, enhanced restorative experiences, and higher levels of perceived well-being, thereby supporting their psychological needs and improving the overall quality of urban life. Overall, the study underscores the role of routine maintenance as a low-cost and scalable approach to supporting perceived well-being and advancing the social sustainability of urban public spaces in line with international sustainable development agendas.

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