



THE RELATIONSHIP BETWEEN URBAN PARK LANDSCAPE PERCEPTION AND PLACE ATTACHMENT IN PARK CITY, CHINA

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Abstract

Based on the Park City concept proposed by the Chinese government in response to rapid urbanization, urban parks should be constructed to be open and shared to enhance place attachment. Research indicates that visitors' perceptions of urban green space benefit their management and people's quality of life. However, how the landscape perception of urban parks is associated with residents' place attachment is poorly understood. This study aimed to gain more empirical insights into the associations between the perceived quality of urban parks and the two components of public place attachment (i.e., place dependence and place identity) in Park City, China. An online survey collected 237 questionnaires from Huancheng Park visitors in Chengdu City (the pilot city of the Park City concept). The questionnaire included three parts: demographic characteristics, landscape perception (i.e., *nature*, *serene*, *space*, *refuge*, *culture*, *prospect*, and *social*), and a place attachment scale. Factor analysis and regression analyses were subsequently conducted. The results indicated that (1) landscape perception is more able to affect place identity than place dependence, (2) the dimensions of landscape perception (excluding *space* and *social*) had a significant positive effect on place attachment and place identity, and (3) the dimensions of landscape perception (except *serene*) had a significant positive effect on place dependence. Therefore, during construction, *nature*, *culture*, *prospect*, and *space* dimensions of urban park landscape perception should receive more attention to enhance the public sense of identity and belonging and promote Park City's sustainable development.

Keywords: Landscape perception, Place attachment, Urban Park, Park City, China

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INTRODUCTION

Urbanization has led to the uniformity of urban construction and the serious homogenization of urban public space landscapes, reducing people's feelings about the place. The loss of this sense of place not only affects people's emotional perception of urban space, but also reflects the limitations of modern urban space design in responding to human needs. Traditional function-oriented spatial layouts are no longer sufficient to meet the public's expectations for a high-quality living environment (Elif et al., 2023). Urban spaces urgently need to transition from being merely "functional" toward being "experiential" and "affective."

In this context, place attachment (PA) has attracted increasing attention from scholars and urban policymakers as an important psychological concept describing the emotional and functional connections between individuals and specific locations (Patwardhan et al., 2020). Previous studies have shown that strong PA not only enhances individuals' willingness to use and protect public spaces but also contributes to equitable urban planning, improved well-being, and enhanced social cohesion (Albers et al., 2021). Understanding the formation and influencing factors of PA is therefore essential for creating inclusive, resilient, and people-oriented urban spaces.

In recent years, increasing attention has been paid to the role of environmental perception in shaping place attachment. Urban parks, as a key type of green space, serve multiple functions: they support ecological health, offer spaces for daily recreation and social interaction, and contribute to residents' physical and mental well-being (Zhu et al., 2022). Moreover, parks often reflect local culture and memory, shaping urban identity and enhancing users' emotional connection to place. Their landscape features and perception significantly influence how people interact with and evaluate park environments (Amira et al., 2019). Therefore, understanding the impact of park landscape perception on sense of place provides important insight into human–environment interaction in urban settings.

Presently, numerous cities in China are renewed and revitalized while urban development is gradually shifting from 'incremental expansion' to 'stock optimization'. High-quality development is reflected in improving the living environment and the satisfaction of residents' expectations for a better life. Moreover, the "Park City" concept was first proposed in Chengdu in February 2018, marking a shift in urban planning towards ecological civilization, liveability, and green infrastructure-led development (Zhang et al., 2023). As a result, urban parks in Park City should pay more attention to the public perception of urban park landscapes. By studying the landscape perception that influences PA, urban planners and policymakers can create more inclusive, engaging, and sustainable urban park environments and promote Park City's sustainable development.

This study aimed to investigate the effect of urban park landscape perception on PA in Park City, China. The following research questions were sought to be addressed in this paper: (i) What are the visitors' landscape perceptions of urban parks in Park City? (ii) What are the visitors' PAs to urban parks in Park City? (iii) What are the relationships between visitors' urban park landscape perceptions and PA in Park City?

LITERATURE REVIEW

Landscape Perception

Landscape perception of urban parks is essential for enhancing the quality of life in urban areas. Recently, Amira et al. (2019) highlighted the importance of urban park effectiveness through visitors' perceptions, emphasizing criteria contributing to positive park experiences. Moreover, the perceived sensory dimensions (PSDs) put forward by Grahn and Stigsdotter (2010) are the most widely used and typical tools to evaluate the quality and characteristics of landscapes (Xie et al., 2023). The eight dimensions included in the PSDs are *nature*, *serene*, *space*, *rich in species*, *social*, *prospect*, *culture*, and *refuge*. Researchers examined the relationship between these eight landscape features and people's restorativeness, emotion, and experience in parks. For example, Xie et al. (2023) discovered that perceived park characteristics quality had a significantly positive effect on satisfaction. Qi et al. (2021) found that the eight PSDs of artificial lake space, except for *social*, were positively correlated with overall satisfaction and restorativeness, and *serene* was the most significant characteristic. Conversely, Chen et al. (2019) discovered that *rich in species* and *culture* were the least common, while *social* was the most common dimension of perception. Because the importance of landscape perception dimensions cannot be precisely ranked, empirical research is required. Most significantly, limited research is available on the relationship between PSDs and PA in urban parks in Park City.

Place Attachment (PA)

PA is a multidimensional concept that has been extensively studied across various disciplines. It involves emotional bonds and connections individuals form with specific places (Patwardhan et al., 2020). Place identity (PI) and place dependence (PD) are two dimensions of PA. The PI concept is considered the cognitive facet of the person–place relationship, contributing to personal and social identity to define the individual's identity (Albers et al., 2021). On the other hand, PD refers to the functionality of a resource in one place that cannot be transferred to other places and cannot be compared with other places regarding the functions of the place (Patwardhan et al., 2020). While additional PA dimensions, including familiarity and social bonding, have been studied recently,

PI and PD remain the fundamental PA dimensions in research, with crucial roles in shaping individuals' relationships with places (Plunkett et al., 2019).

The literature on PA has highlighted its importance in explaining tourists' emotions and behaviour, particularly in tourism, urban planning, psychology, and environmental management (Kuo et al., 2021). Moreover, PA is not static but dynamic and is influenced by various factors, including social interactions, personal experiences, and psychological evaluations (Beccaria et al., 2021). Overall, research on PA helps clarify the relationship and interaction mechanism between people and their environment.

Park City

Park City is a city in a park whose concept is based on Howard's Garden City, Singapore's Garden City, Qian Xuesen's Shan-Shui City, and London's National Park City (Zhang et al., 2023). With the humanistic characteristics of people-oriented cities, Park City represents a new phase in urban development and a theoretical innovation based on domestic and foreign urban development models. Although Park City differs from the combination of 'Park' and 'City', urban parks are vital in developing and constructing park cities as green ecological products shared by all people (Zhang & Xu, 2023).

Although extensive research has been conducted on Park Cities in China since 2018, international research on Park Cities is limited. The literature on this topic includes park visitation or use, park behaviour or preference (Swapan et al., 2022), accessibility (Tan et al., 2022), environmental effect (Feng et al., 2023), landscape perception (Zhang et al., 2022; Zhu et al., 2022), equity-efficiency (Zhang & Xu, 2023), and audio-visual integration (Yang et al., 2023). Moreover, studies related to landscape perception have indicated that *serene* and *refuge* in the PSDs considerably affect the restorative components of attention (Zhu et al., 2022). In terms of different values, different landscapes attract different groups (Zhang et al., 2022). However, a small body of literature is available on urban park landscape perception and PA in Chengdu Park City.

RESEARCH METHODOLOGY

Study Area

This study was conducted in Chengdu Huancheng Park, which is located within 500 metres on each side of Chengdu's first metropolitan beltway and on seven surrounding wedge-shaped plots of land, spanning 12 districts and encompassing 133 square kilometres of ecological land (Figure 1). Huancheng Park, comprising lines and beads in a chain, is a unique carrier of Park City in China.

Since the completion of the greenway system of Huancheng Park in 2022, many Chengdu citizens have actively engaged in leisure activities. With convenient transportation and tourism, the park caters to local citizens and

undertakes activities for people from the surrounding areas of Chengdu and foreign tourists.

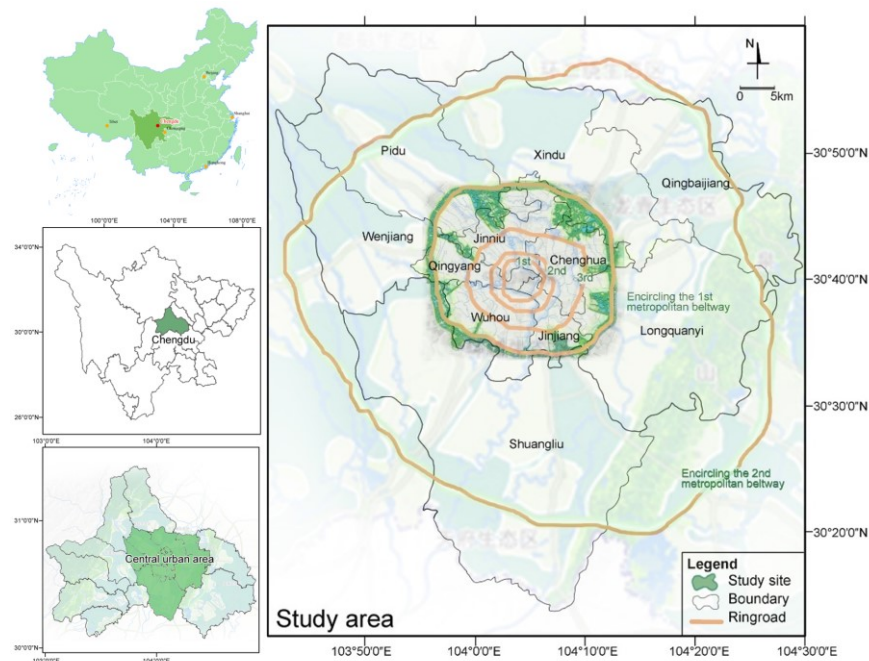


Figure 1: Location of the Study Area
 Source: Chengdu institute of planning & design (2019)

Questionnaire and Data Collection

The questionnaire included three sections: sociodemographic variables, a landscape perception scale, and a PA scale. The respondents were adults with a self-reported age of 18 years or older who have visited Huancheng Park. First, respondents were asked if they had ever been to Chengdu Huancheng Ecological Park. If they responded 'No', no further responses were needed, and they were excluded from the analysis. Respondents could enter the data collection part of the questionnaire after ensuring they had visited the case sites.

The social demographic statistics table in the first part included the following seven aspects: gender, age, educational background, occupation, arrival time, transportation, and place of origin.

The second part was designed to collect the respondents' perceptions of Huancheng Park using seven PSDs: *nature*, *serene*, *space*, *refuge*, *culture*, *prospect*, and *social* (modified from the eight PSD scale of Grahn and Stigsdotter, 2010) (refer to Table 2). A five-point Likert scale (i.e., 1 = strongly disagree, 2 = disagree, 3 = neither, 4 = agree, and 5 = strongly agree) was used to measure 30

items. The respondents were asked to rate their agreement score for each sentence on the scale. The reliability was good (i.e., Cronbach's alpha: *nature*, 0.883; *serene*, 0.828; *space*, 0.832; *refuge*, 0.847; *culture*, 0.817; *prospect*, 0.815; and *social*, 0.906).

The third section included the 8-item PA scale [including PI (4 items) and PD (4 items)] (refer to Table 3), which was examined as per Jorgensen & Stedman (2001) with a five-point Likert scale and proved to have good validity (i.e., Cronbach's alpha: PI, 0.825; PD, 0.833).

This study used the 'Wen Juan Xing' app with participants' agreement to complete a questionnaire survey. The questionnaires were distributed from February 20 to March 15, 2024, and 250 questionnaires were collected. Except for 13 invalid questionnaires, 237 valid questionnaires were obtained; the recovery rate of valid questionnaires was 94.80%.

ANALYSIS AND DISCUSSION

Analysis

Data was analysed using SPSS version 27.0. The internal consistency of the different scales was calculated. Furthermore, the mean of each variable was calculated based on the different items that comprised each subscale. Additionally, the descriptive statistics [mean (M) and standard deviation (SD)] of all the variables were calculated. Correlations and regression analyses of urban park landscape perception and PA were conducted using a similar program.

Socio-demographic Statistics

Statistical analysis of the basic characteristics of the respondents was mainly described from eight aspects: gender, age, educational background, place of origin, occupation, income, means of transportation, and travel time. The valid questionnaire samples were statistically analysed, as shown in Table 3.

Regarding sex, 48.95% of respondents were men, and 51.05% were women. The largest proportion of respondents was 18–25 years old (35.44%), followed by 26–35 (17.62%), and 36–45 (17.05%). Regarding educational background, people with a degree were the most represented (48.95%), and those with college degrees or above accounted for 56.12%, indicating that the sample's overall knowledge and cultural level were relatively high. Regarding occupation, students (28.27%) and company or enterprise employees (21.94%) were the main visitors. Regarding transportation means to reach the park, public transportation (28.69%) was the most popular, followed by cycling. Green travel methods were chosen by 26.16% of the respondents. Regarding travel time, the time spent reaching the park was 15–30 minutes (41.35%), followed by fewer than 15 minutes (31.65%), indicating that most visitors can access the park conveniently within 30 minutes. Regarding the place of origin, Chengdu locals accounted for

61.18% of respondents, which means in addition to residents, this park also attracted man tourists.

Table 1: Summary of the Sociodemographic Characteristics of the Survey Respondents.

Total		Frequency	Percentage
Gender	Male	121	51.21%
	Female	116	48.79.%
Age	17 and below	13	5.49%
	18-25 years old	84	35.44%
	26-35 years old	42	17.62%
	36-45 years old	41	17.05%
	46-60 years old	38	16.28%
	61 and above	19	8.11%
Occupation	Student	67	28.27%
	Company or corporate occupation	52	21.94%
	Private business owner	29	12.24%
	Civil servants	25	10.75%
	Teachers, doctors and other institutions	25	10.34%
	Freelance work	22	9.28%
	Retiree	2	0.84%
	Other	15	6.33%
Qualifications	Junior high school and below	19	8.02%
	High school/Secondary technical school	46	19.41%
	Diploma	39	16.46%
	Degree	116	48.95%
	Master and above	17	7.17%
Means of transportation	Public transportation (bus/subway)	68	28.69%
	Walk	67	28.27%
	Cycling (bicycle / electric car)	62	26.16%
	Private car	34	14.35%
	Other	6	2.53%
Travel time	<15 min	75	31.65%
	15-30 min	98	41.35%
	30-60 min	47	19.83%
	>1 h	17	7.17%
Place of origin	Residents	145	61.18%
	Tourists	92	38.82%

Source: Author's Calculation

Urban Park Landscape Perception

The visitors' urban park landscape perception was investigated according to seven aspects of PSDs suggested by Grahn & Stigsdotter (2010). The results indicated that the visitors had a generally positive attitude towards urban park landscape perceived quality, as represented by a mean composite score of 3.95 ($SD = 0.94$) and a mean range of 3.68–4.09 (refer to Figure 2). The most common positive attitudes were *space* ($M = 4.05$, $SD = 0.86$). The highest mean score items were 'The vegetation in the park is growing well with varied contours' ($M = 4.09$, $SD = 0.85$) and 'There are sunny places and shady places in the park' ($M = 4.09$,

$SD = 0.88$). The item with the lowest mean score was related to ‘It is possible to watch entertainment, like a park concert’ ($M = 3.68$, $SD = 0.90$).

Table 2: Descriptive Statistics of Urban Park Landscape Perception

Variable	Label	Item	Mean	SD
Nature	N1	The vegetation in the park is growing well with varied contours	4.09	0.897
	N2	The topography of the park is full of changes.	4.01	0.934
	N3	The urban park has a natural quality.	3.99	0.923
	N4	The urban park has a wild and untouched quality.	3.84	1.007
Serene	Se1	The urban park is silent and calm	3.94	0.955
	Se2	One is able to spend time here without coming into contact with too many people.	3.88	0.989
	Se3	The park is clean and well-maintained	3.99	0.866
	Se4	There is no traffic noise from the surroundings.	3.73	0.976
Space	Sp1	The park is experienced as spacious and free	4.06	0.928
	Sp2	The space for people to gather in the park is not crossed by roads and paths.	4.05	0.867
	Sp3	There are sunny places and shady places in the park.	4.09	0.779
	Sp4	The plants and terrain can be combined to create changes in the spatial pattern.	4.01	0.873
Refuge	R1	Recreation and leisure facilities can meet the needs of visitors	4.04	0.927
	R2	Corresponding places in the park are equipped with safety facilities.	3.85	0.943
	R3	It feels safe to spend time in the urban park.	4.01	0.948
Culture	C1	The overall landscape reflects the local culture or creates a historical experience.	3.73	1.078
	C2	The urban park is decorated with statues.	3.82	0.984
	C3	The urban park has different water features.	4.06	0.866
	C4	The plant landscape can reflect the local culture.	3.8	1.069
Prospect	P1	The urban park has a good view	4.03	0.913
	P2	Landscape nodes with good visual effects	3.96	0.88
	P3	The urban park has various viewing angles.	4.03	0.848
Social	So1	It is possible to watch entertainment	3.68	1.069
	So2	It is possible to watch exhibitions.	3.84	1.022
	So3	It is possible to visit a restaurant or a simpler open-air restaurant.	3.73	1.048
	So4	There are several seats and benches.	4.03	0.938
	So5	Road access in the park	4.03	0.916
	So6	There is access to restrooms.	4.07	0.929
	So7	The roads are well-lit up.	4.08	0.847
	So8	There are plenty of people and movements.	4.03	0.88

Source: Author's Calculation

Place Attachment

The mean scores for visitors' PA after visiting the urban park were measured using the PA Scale (Liu et al., 2021), which comprised two dimensions. The results indicated that the respondents had generally a positive PA toward the urban park, as represented by a mean composite score of 3.79 ($SD = 1.03$) and a mean range of 3.61–3.81 (Figure 3). Moreover, the visitors reported more positive emotions about PI ($M = 3.85$, $SD = 1.01$) than PD ($M = 3.72$, $SD = 1.05$).

Table 3: Descriptive Statistics of Place Attachment

Variable	Label	Item	Mean	SD
Place Identity	PI1	Everything in this place is a reflection of me	3.89	0.957
	PI2	This place has a special meaning to me.	3.98	0.936
	PI3	I feel that I can truly be myself in this place.	3.91	0.939
	PI4	This place reflects the type of person I am	3.63	1.144
Place Dependence	PD1	I truly miss this place when I am away	3.81	0.977
	PD2	No more ideal place than this place	3.84	0.993
	PD3	This place is the best place for doing the things that I enjoy most.	3.64	1.125
	PD4	As far as I am concerned, there are better places to be than in this place.	3.61	1.086

Source: Author's Calculation

Influence of Urban Park Landscape Perception on PA

Correlation and regression analyses were conducted to identify the relationship between urban park landscape perception and PA. The results of 2-tailed Pearson correlation analyses revealed a positive correlation between PA and *nature* ($r = 0.579$, $p < 0.01$), *serene* ($r = 0.390$, $p < 0.01$), *space* ($r = 0.386$, $p < 0.01$), *refuge* ($r = 0.595$, $p < 0.01$), *culture* ($r = 0.461$, $p < 0.01$), *prospect* ($r = 0.557$, $p < 0.01$), and *social* ($r = 0.448$, $p < 0.01$).

Regression analyses explored the relationship between urban park landscape perception and PA components (i.e., PI and PD). Landscape perception significantly influenced PA ($F = 101.981$, $p < 0.001$), which explained 50.4% of the PA variance (Table 4). *Nature*, *prospect*, *refuge*, *culture*, and *serene* [except *space* ($p > 0.05$) and *social* ($p > 0.05$)] significantly impacted PA, with the degree of influence in the following order: *nature* (0.258) > *prospect* (0.235) > *refuge* (0.176) > *culture* (0.130) > *serene* (0.094). The nature dimension of landscape perception was a salient predictor of PA ($\beta = 0.258$, $t = 7.470$, $p < 0.01$). In contrast, *space* ($p > 0.05$) and *social* ($p > 0.05$) hardly affected PA.

Landscape perception significantly affected PI ($F = 99.617$, $p < 0.001$), which explained 49.8% of the PI variance (Table 5). Similarly, *nature* was a major PI predictor ($\beta = 0.272$, $t = 7.821$, $p < 0.01$). *Space* ($p > 0.05$) and *social* ($p > 0.05$) also had few impacts on PI. *Nature*, *prospect*, *refuge*, *culture*, and *serene* impacted PI with degrees of influence in the following order: *nature* (0.272) > *prospect* (0.209) > *refuge* (0.164) > *culture* (0.112) > *serene* (0.096).

Table 4: Results of the Regression Analyses of Landscape Perception on PA.

	B	SE B	β	t	p	VIF
(Constant)	0.250	0.153		1.636	0.102	
Nature	0.256	0.034	0.258	7.470	0.000	1.694
Serene	0.094	0.030	0.094	3.107	0.002	1.292
Space	0.051	0.034	0.048	1.499	0.134	1.459
Refuge	0.177	0.042	0.176	4.202	0.000	2.494
Culture	0.117	0.032	0.130	3.651	0.000	1.787
Prospect	0.221	0.034	0.235	6.499	0.000	1.695
Social	0.019	0.035	0.021	0.534	0.594	2.158
R ²			0.504			
F			101.981			
P			<0.001			

Source: Author's Calculation

Table 5: Regression Analysis Results of Landscape Perception on PI.

	B	SE B	β	t	p	VIF
(Constant)	0.290	0.154		1.733	0.084	
Nature	0.124	0.034	0.272	7.821	0.000	1.694
Serene	0.071	0.031	0.096	3.163	0.002	1.292
Space	0.112	0.034	0.049	1.515	0.130	1.459
Refuge	0.346	0.042	0.164	3.887	0.000	2.494
Culture	0.131	0.032	0.112	3.139	0.002	1.787
Prospect	0.194	0.034	0.209	6.020	0.000	1.695
Social	0.041	0.035	0.046	1.169	0.243	2.158
R ²			0.498			
F			99.617			
P			<0.001			

Source: Author's Calculation

Table 6: Regression Analysis Results of Landscape Perception on PD.

	B	SE B	β	t	p	VIF
(Constant)	-0.011	0.165		-0.069	0.945	
Nature	0.138	0.037	0.127	3.752	0.000	1.694
Serene	-0.046	0.033	-0.041	-1.400	0.162	1.292
Space	0.130	0.036	0.112	3.561	0.000	1.459
Refuge	0.175	0.045	0.159	3.875	0.000	2.494
Culture	0.272	0.034	0.274	7.909	0.000	1.787
Prospect	0.134	0.036	0.126	3.421	0.001	1.695
Social	0.178	0.038	0.180	4.728	0.000	2.158
R ²			0.502			
F			101.075			
P			<0.001			

Source: Author's Calculation

Landscape perception significantly affected PD ($F = 101.075$, $p < 0.001$), which explained 50.2% of the PI variance (Table 6). Interestingly, *culture* was a salient predictor of PD ($\beta = 0.274$, $t = 7.909$, $p < 0.01$), with degrees of influence in the following order: *culture* (0.274) > *social* (0.180) > *refuge* (0.159) > *nature* (0.127) > *prospect* (0.126) > *space* (0.112). *Serene* ($p > 0.05$) negatively impacted PD.

DISCUSSION

This study was conducted at Chengdu Huancheng Park and investigated PD and PI from seven dimensions of landscape perception: *nature*, *serene*, *space*, *refuge*, *culture*, *prospect*, and *social*. Landscape perception affected PI more than PD among the PA dimensions. Similarly, respondents' PI ($M = 3.85$) was higher than their PD ($M = 3.72$). PI is an essential link in the connection between an individual and their environment and affects the environment in which they live. Therefore, studying landscape design and improving the public's perception of landscapes is necessary to improve PI and PD, which significantly influence affective responses and well-being (Bazrafshan et al., 2023). They are central to achieving a harmonious coexistence between man and nature and fundamentally ensuring people's well-being by protecting the ecological environment, which is a core of Park City.

Generally, visitors had positive attitudes towards urban park landscape perception as each dimension represented a mean score of around 4.0. However, not all aspects of landscape perception significantly impacted the two constructs, PI and PD. In this study, *nature*, *prospect*, *refuge*, and *culture* were found critical in forming PA, including PI and PD. *Space*, *social* and *serene* were not the most significant PA dimensions because *space* ($p > 0.05$) and *social* ($p > 0.05$) had no significant impacts on PA and PI, and *serene* ($p > 0.05$) scarcely impacted PD.

Nature was the most salient predictor of PA and PI, similar to a previous study (Akpınar, 2021). Thus, nature should be highlighted in urban park design and management, and natural resources should be used to create a green environment and healthy ecosystem. Moreover, in addition to increasing the local green area rate and promoting green development, natural parks can help reduce stress and provide space for physical and mental relaxation, positively impacting human mental health (Wang et al., 2020). Physical and mental happiness and health also help promote PA formation (Gillespie et al., 2022). *Prospect* and *refuge* were at the medial level. With the support of Park City's policy, more people are participating in parks. The visitors are of different ages and identities, indicating different needs. Therefore, comprehensively considering multiple aspects of *refuge* is necessary to promote the public's sense of security, comfort, and belonging in the environment and promote a better understanding of the relationship between people and places (Qi et al., 2021). *Culture* also had a significant impact on PA and the most significant dimension of PD ($\beta = 0.274$).

However, *culture* got the lowest mean score ($M = 3.85$), which means that visitors had a low level of perception of the local culture or historical experience embodied in the landscape of Huancheng Park. Therefore, this component should be considered in park design improvements. Every city has its own unique cultural and historical background. Facilities and landscapes in the park can become carriers of urban memory, such as sculptures and monuments, forming a park landscape with 'stories and connotations' that resonate with the public (Bazrafshan et al., 2023). In this study, although *space* got the highest mean score ($M = 4.05$), it had no significant impact ($p > 0.05$) on PA and PI. A high *space* score indicated that the park was experienced as spacious and free and had a certain amount of connectedness (Grahn & Stigsdotter, 2010). Additionally, one can move around in it, which does not help build emotional bonds with the place and reduces PI. Surprisingly, *social* had no significant impact on PI ($p > 0.05$); however, it was the second significant dimension for PD ($\beta = 0.180$). The results illustrated that social interaction can effectively increase visitors' PD, improving the parks' utilization rate and functional value. However, PI is usually influenced by many factors, such as personal experience and background, rather than just social perceptions (Gillespie et al., 2022). Additionally, the lowest mean score of items was related to 'It is possible to watch entertainment, like a park concert' ($M = 3.68$), though the mean score of *social* was the fourth ($M = 3.93$). Therefore, urban parks should provide opportunities to actively engage in social interactions: to talk, eat, drink, dance, shop, or play, to improve the public's PA and happiness (Stoltz & Grahn, 2021). Finally, *serene* ($p > 0.05$) scarcely impacted PD, indicating that the park is in an undisturbed, silent, and calm environment (Grahn & Stigsdotter, 2010). It is also replaceable in Chengdu based on the urban park construction since the Park City concept has been proposed.

This study faced the same constraints as other studies on landscape perception and PA. First, the sample was not typical of the urban population. It is recommended that future studies employ more representative samples and consider expanding the population to encompass a greater variety of socioenvironmental situations. Another limitation of the study is related to the perceived sensory dimensions of park visitors. Recently, several scholars have studied the visual and auditory senses separately and suggested that visual imagery may be an important indicator of park soundscapes (Yang et al., 2023). As a result, future studies could further investigate the relationships between each sensory dimension in urban parks to demonstrate a better relationship between the effects of the park environment and the sense of place. Third, this study included only the basic demographic characteristics of the participants, while PA and landscape perception were significantly associated with physical and psychological health status (Li et al., 2023).

CONCLUSION

Based on the new Park City concept proposed by the Chinese government in response to rapid urbanization, urban parks should be constructed to be open and shared to enhance PA. Individuals' perceptions of their surroundings are crucial in shaping their attachment to a place. A survey of 247 urban park visitors revealed that the perceived quality of the landscape significantly affected PA, especially the PI aspect. Additionally, the dimensions of landscape perception (excluding *space* and *social*) had a significant positive effect on PA and PI, whereas the dimensions of landscape perception (except *serene*) had a significant positive effect on PD. Moreover, this study provides practical insights for construction and marketing strategies to enhance the public sense of identity and belonging and promote Park City's sustainable development.

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REFERENCES

- Akpinar, A. (2021). How perceived sensory dimensions of urban green spaces are associated with teenagers' perceived restoration, stress, and mental health? *Landscape and Urban Planning*, 214. <https://doi.org/10.1016/j.landurbplan.2021.104185>
- Albers, T., Ariccio, S., Weiss, L. A., Dessi, F., & Bonaiuto, M. (2021). The role of place attachment in promoting refugees' well-being and resettlement: A literature review. In *International Journal of Environmental Research and Public Health* (Vol. 18, Issue 21). MDPI. <https://doi.org/10.3390/ijerph182111021>
- Amira, F., Shafee, A., & Kamaruddin, S. M. (2019). The Effective Characteristics of an Urban Park Through Visitors Perception Case Study: KLCC Park. In *Built Environment Journal* (Vol. 16, Issue 2).
- Bazrafshan, M., Spielhofer, R., Wissen Hayek, U., Kienast, F., & Grêt-Regamey, A. (2023). Greater place attachment to urban parks enhances relaxation: Examining affective and cognitive responses of locals and bi-cultural migrants to virtual park visits. *Landscape and Urban Planning*, 232. <https://doi.org/10.1016/j.landurbplan.2022.104650>
- Beccaria, L., McIlveen, P., Fein, E. C., Kelly, T., McGregor, R., & Rezwanul, R. (2021). Importance of attachment to place in growing a sustainable Australian Rural Health Workforce: A rapid review. In *Australian Journal of Rural Health* (Vol. 29, Issue 5, pp. 620–642). John Wiley and Sons Inc. <https://doi.org/10.1111/ajr.12799>
- Chen, H., Qiu, L., & Gao, T. (2019). Application of the eight perceived sensory dimensions as a tool for urban green space assessment and planning in China.

- Urban Forestry and Urban Greening*, 40, 224–235.
<https://doi.org/10.1016/j.ufug.2018.10.001>
- Elif Merve ALPAK, A., Tuğba DÜZENLİ, A., & Emine TARAKÇI EREN, A. (2023). Does “Place Identity” Support Sustainability of Community at the Urban Parks. In *Online Journal of Art and Design* (Vol. 11, Issue 1).
- Feng, X., Yu, J., Xin, C., Ye, T., Wang, T., Chen, H., Zhang, X., & Zhang, L. (2023). Quantifying and Comparing the Cooling Effects of Three Different Morphologies of Urban Parks in Chengdu. *Land* 2023, Vol. 12, Page 451, 12(2), 451.
<https://doi.org/10.3390/LAND12020451>
- Gillespie, J., Cosgrave, C., Malatzky, C., & Carden, C. (2022). Sense of place, place attachment, and belonging-in-place in empirical research: A scoping review for rural health workforce research. *Health and Place*, 74.
<https://doi.org/10.1016/j.healthplace.2022.102756>
- Grahn, P., & Stigsdotter, U. K. (2010). The relation between perceived sensory dimensions of urban green space and stress restoration. *Landscape and Urban Planning*, 94(3–4), 264–275. <https://doi.org/10.1016/j.landurbplan.2009.10.012>
- Jorgensen, B. S., & Stedman, R. C. (2001). SENSE OF PLACE AS AN ATTITUDE: LAKESHORE OWNERS ATTITUDES TOWARD THEIR PROPERTIES. *Journal of Environmental Psychology*, 21(3), 233–248.
<https://doi.org/10.1006/JEVP.2001.0226>
- Kuo, H. M., Su, J. Y., Wang, C. H., Kiatsakared, P., & Chen, K. Y. (2021). Place attachment and environmentally responsible behavior: The mediating role of destination psychological ownership. *Sustainability (Switzerland)*, 13(12).
<https://doi.org/10.3390/su13126809>
- Li, X., Zhang, X., & Jia, T. (2023). Humanization of nature: Testing the influences of urban park characteristics and psychological factors on collegers’ perceived restoration. *Urban Forestry and Urban Greening*, 79.
<https://doi.org/10.1016/j.ufug.2022.127806>
- Liu, Q., Zhu, Z., Zhuo, Z., Huang, S., Zhang, C., Shen, X., van den Bosch, C. C. K., Huang, Q., & Lan, S. (2021). Relationships between residents’ ratings of place attachment and the restorative potential of natural and urban park settings. *Urban Forestry and Urban Greening*, 62. <https://doi.org/10.1016/j.ufug.2021.127188>
- Patwardhan, V., Ribeiro, M. A., Payini, V., Woosnam, K. M., Mallya, J., & Gopalakrishnan, P. (2020). Visitors’ Place Attachment and Destination Loyalty: Examining the Roles of Emotional Solidarity and Perceived Safety. *Journal of Travel Research*, 59(1), 3–21. <https://doi.org/10.1177/0047287518824157>
- Plunkett, D., Fulthorp, K., & Paris, C. M. (2019). Examining the relationship between place attachment and behavioral loyalty in an urban park setting. *Journal of Outdoor Recreation and Tourism*, 25, 36–44.
<https://doi.org/10.1016/j.jort.2018.11.006>
- Qi, Y., Fang, X., Gao, T., & Qiu, L. (2021). The Effects of Artificial Lake Space on Satisfaction and Restorativeness of the Overall Environment and Soundscape in Urban Parks. *Frontiers in Built Environment*, 7.
<https://doi.org/10.3389/fbuil.2021.664442>

- Stoltz, J., & Grahn, P. (2021). Perceived sensory dimensions: An evidence-based approach to greenspace aesthetics. *Urban Forestry and Urban Greening*, 59. <https://doi.org/10.1016/j.ufug.2021.126989>
- Swapan, M. S. H., Iftekhar, M. S., & Li, X. (2022). Factors Influencing Use–diversity of Urban Parks: A Cross-cultural Study Between Chengdu (China) and Perth (Australia). *Environment and Urbanization ASIA*, 13(2), 203–217. <https://doi.org/10.1177/09754253221120616>
- Tan, R., Wang, R., Wang, Y., Yi, D., Chen, Y., Cai, W., & Wang, X. (2022). The Park city perspective study: Revealing the park accessibility influenced by experiences of visitors under different travel modes. *Frontiers in Environmental Science*, 10, 924996. <https://doi.org/10.3389/FENV.2022.924996/BIBTEX>
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health*, 17(5). <https://doi.org/10.3390/ijerph17051729>
- Xie, X., Li, Y., Wang, R., & Gou, Z. (2023). Park Recreation Intention and Satisfaction of Blue-Collar Workers Based on the ACSI Model: A Case Study of Anning Industrial Park in Yunnan. *Land*, 12(4). <https://doi.org/10.3390/land12040798>
- Yang, Z., Zhao, X., Zhu, L., Xia, Y., Ma, Y., Wu, J., Xiong, X., Yang, N., & Lu, M. (2023). Research on the Healing Potential of Urban Parks from the Perspective of Audio-Visual Integration: A Case Study of Five Urban Parks in Chengdu. *Land* 2023, Vol. 12, Page 1317, 12(7), 1317. <https://doi.org/10.3390/LAND12071317>
- Zhang, J., & Xu, E. (2023). Investigating the spatial distribution of urban parks from the perspective of equity-efficiency: Evidence from Chengdu, China. *Urban Forestry & Urban Greening*, 86, 128019. <https://doi.org/10.1016/J.UFUG.2023.128019>
- Zhang, K., Tang, X., Zhao, Y., Huang, B., Huang, L., Liu, M., Luo, E., Li, Y., Jiang, T., Zhang, L., Wang, Y., & Wan, J. (2022). Differing perceptions of the youth and the elderly regarding cultural ecosystem services in urban parks: An exploration of the tour experience. *Science of The Total Environment*, 821, 153388. <https://doi.org/10.1016/J.SCITOTENV.2022.153388>
- Zhang, Z., Ma, G., Lin, X., & Dai, H. (2023). Accessibility in a multiple transport mode urban park based on the “D-D” model: A case study in Park City, Chengdu. *Cities*, 134. <https://doi.org/10.1016/j.cities.2023.104191>
- Zhu, Z., Hassan, A., Wang, W., & Chen, Q. (2022). Relationship between PSD of Park Green Space and Attention Restoration in Dense Urban Areas. *Brain Sciences* 2022, Vol. 12, Page 721, 12(6), 721. <https://doi.org/10.3390/BRAINSCI12060721>

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