

Article

Understanding Shanghai Residents' Perception of Leisure Impact and Experience Satisfaction of Urban Community Parks: An Integrated and IPA Method

Bingqin Yu ^{1,*}, Shengquan Che ¹, Changkun Xie ¹ and Shu Tian ²

¹ Department of Landscape Architecture, School of Design, Shanghai Jiao Tong University, Shanghai 200240, China; chsq@sjtu.edu.cn (S.C.); xiechangkun12345@163.com (C.X.)

² Shanghai Songjiang Industrial Investment Co., Ltd., Shanghai 201613, China; ts_per@hotmail.com

* Correspondence: yubingchin1983@126.com

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Abstract: This exploratory study employed an integrated methodological approach to examine the relationship among several factors for residents in Shanghai when it came to the use of urban park spaces. The study was conducted using two sample groups of 1200 residents each, and around three community parks that contained a variety of recreation-related impacts. Open-ended and closed-ended questionnaires and correspondence analysis were used to reflect residents' basic attitudes, recreational perception, and satisfaction evaluation by Importance Performance Analysis (IPA) method, and mirrored preferences for future development of community parks. The results suggest that for residents, high levels of satisfaction with landscape and environment were advantages, but recreation space and facility were critical for the perception of the community parks. In comparison, management was found to be an opportunity factor to improve leisure satisfaction. The findings emphasized landscape, environment, space, facility, and management as elements that enhance recreational perception and avoid passive interference.

Keywords: community parks; importance–performance analysis; leisure impacts; perceived satisfaction and importance; recreation experiences

1. Introduction

The fields of community parks, planning, management, and research face new challenges today in that they are serving an increasingly diverse urban population. Studies conducted in compact cities such as Hong Kong, Shanghai, and Hangzhou City have suggested that age, gender, family size, education, and culture determine how diverse individuals will use open space for recreation [1]. Additionally, research shows that these elements, such as biodiversity, environment, accessibility, usability, esthetic quality, recreational, and ecological functions, will resolve park users' perception of the space [2–4]. Although comparative studies in urban and wildland contexts have identified differences among users' leisure needs, their preferred activities, and perceived satisfaction, information about factors affecting residents' recreational satisfaction remains the hot research topic [5]. Further, more research has been done looking at the importance of these factors in enhancing leisure function in urban community parks.

Recreational impact factors, their importance, and satisfaction evaluation are critical for residents, from space planning and design, to environment improvement, park management, and future development [6]. To build on the findings of comparative research on broadly defined social aggregate groups, we have focused on the role, nature, and meaning of leisure within different cultural groups [7]. However, studying the leisure perception, experience, and open-space needs of residents in a certain

area may help provide suggestions for local green space planning and design [8,9]. This tactic can help researchers understand common reasons and impact factors and their significance that affect residents' recreational perception and satisfaction.

In order to discuss the correspondence between significance and the importance of users' recreational perception, this research project combined an open-ended questionnaire and a closed-ended scale. Additionally, this combined a sociological survey methodology and a statistical analytical method in order to achieve both qualitative description and quantitative analysis. This, we believe, can help planners, designers, and managers identify key approaches to improvement quickly and correctly, thus refining leisure function in community parks. Three community units in Shanghai were chosen as a case study to study leisure perception, due to their accessibility, since the results can be seen as representative and universal in compact cities in China. In addition, plans to build ecological communities and community parks in Shanghai have provided a pragmatic and timely context in which to understand recreational impacts, residents' perceived satisfaction, and its importance.

2. Related Literature

In terms of contingent valuation, recreation amenity was estimated in urban green spaces. Visitation is mainly induced by accessibility, followed by high green coverage and quality of ambience [10]. 96.6% of respondents were willing to pay to use urban green spaces, which indicates the importance of salubrious outdoor recreation as a leisure pursuit [10]. Green spaces are one important indicator of urban quality of life, and the revitalization and construction of urban parks were found to reduce access barriers for residents by providing more desirable and safer public spaces for leisure and recreation [11]. A lot of factors in urban green space might affect perception of recreational values, such as biodiversity, littering, accessibility, usability, living context, and quality of vegetation, as well as gender, education, monthly income, and dwelling location of residents [4,5,12,13]. Furthermore, in urban residential areas, green spaces were more connected to frequent physical activity in association with commuting, indicating that investing in infrastructure for safer walking and bicycling could promote public health and perception [9]. Residents' preferences for landscape elements and attributes of urban green space are examined using principal components analysis [4]. In addition, regression analysis identifies that coherence and vegetation are the most relevant factors correlated with perceived overall appropriateness in urban parks [10]. Urban green spaces hold great potential for promoting an active lifestyle that allows urban residents to achieve important health benefits. Using ordinal logistic regression, the factors were analyzed affecting residents' satisfaction levels in physical activities in green spaces, which indicated that the living context, quality of vegetation, and accessibility of urban green spaces had a significant effect on residents' satisfaction levels [14].

Satisfaction is a multidimensional concept described by a number of independent impacts [15]. Generally, satisfaction is considered to be a comparison between expectation and actual experience. That is, when there is a negative gap between experience and expectation, individuals and communities feel dissatisfied [16]. At the same time, satisfaction is easily affected by individual perception, which can be altered based on personal experience, psychological status, social impacts, environmental factors, and group interaction [17]. In the 1970s, Pizam put forward a theory of satisfaction and laid the basis for relevant study [18]. In the late 1980s and into the 21st century, the study of satisfaction has been extended from the area of manufacture and service quality to outdoor recreation, natural landscape, culture heritage, and national parks.

2.1. Satisfaction Implications

Existing research on satisfaction and leisure provides a useful theoretical guide for this work, focusing on five aspects: implication, impact factors, evaluation system, model establishment, and empirical research. Comparative studies between expectation and experience and their positive effects by Pizam have been widely accepted in tourism, as well as the theory that satisfaction can

be evaluated on many levels [15,18,19]. Baker extended this theory and found that satisfaction can be understood as a comprehensive assessment of tourists on landscape, environment, activities, facilities, and management at a given destination [20]. He found that these determinations are related to both function and image in consistency [21]. Others offer reasons why satisfaction is used in sociology, outlining the field of attitude feedback after comparison. Recreational satisfaction is a subfield of satisfaction research, and is considered using three progressive levels: physical, mental, and social [14,22,23]. Leisure satisfaction of destination is constituted by the disparities between anticipation and the users' perception of landscape, environment, facility, and service [23,24].

2.2. Satisfaction Impact Factors

Research on impact factors affecting recreation satisfaction has suggested that distinct objects or resources result in relative differences. However, Ryan controlled for leisure impacts and found that the impact factors consist of four principal factors that break down into: demographic characters (e.g., age, occupation, culture, lifestyle, household size, experience, and leisure time), interfering variables (e.g., poor behavior, leisure capacity, and resource impact), behavioral preferences (e.g., recreation motivation, expectation value, costs, and accessibility), and recreation needs (e.g., landscape feature, facility, and management) [25]. Moreover, other impact factors in urban green space might affect perception of recreational values and satisfaction levels, such as biodiversity, littering, accessibility, usability, living context, quality of vegetation, and infrastructure, as well as gender, education, monthly income, and dwelling location of residents [4,5,9,12,13]. With IGS (Informal urban greenspace) evaluation, respondents' attitudes towards urban nature were correlated. Littering was perceived as the most common problem, but reported by only 20% of users [5]. Geographic (e.g., IGS type prevalence) and cultural (e.g., human–nature relationship) contexts represented potential influence factors [5].

2.3. Assessment System and Model

Oliver and Lind created three models in order to evaluate user satisfaction; they included the expectancy disparity model, perception performance model, and expense acquisition model [26]. Following their research, others proposed a mutual model of recreation experience and developed new expectancy disparity concept models [26–28]. Based on the analytic hierarchy process, Dong identified the main factors affecting leisure satisfaction of tourist attractions [29]. He also created an evaluation system and mathematical model. However, taking Huangshan Scenic area, China, as an example, Wang found that a satisfaction assessment model could be made up of six modules, including environmental awareness, recreation expectation, visiting value, loyalty, and complaints [30].

2.4. Empirical Research

Currently, most empirical research has analyzed users' perceived satisfaction using questionnaires with evaluation indexes. They then use factor analysis to extract the impacts affecting leisure satisfaction. Wan and Ding looking at one of the famous tourist cities in China, Nanjing City, found that there are regional differences in users' satisfaction and impacts [31]. Ma and Yang determined that the characteristics of tourist expectation and actual perception could be calculated in terms of variation in Co-plot for factors such as accommodation, catering, transportation, landscape, shopping, entertainment, etc. [32].

As discussed above, both the expectancy disparity model and factor analysis are generally used to assess satisfaction and guide management in scenic areas. The factors are identified through the Analytic Hierarchy Process (AHP), and the resulting clustering and differences are analyzed by a Co-plot and T test, making use of data collected from questionnaires. However, when carrying out analysis, it is important to note that there are significant differences in assessment systems. For national parks or urban parks, leisure satisfaction involves four impacts: visitor character, poor behavior (e.g., resource utilization and interference), preferences, and recreation needs (e.g., landscape style,

facility, and management). While there is a substantial body of research on recreation satisfaction and its impacts, the system of evaluation for study on a regional or scenic scale is not fully applicable to urban community parks. This is principally because urban parks are part of the culture of an urban community, managed by the community, and residents participate in daily leisure activities in these locations frequently. Few studies have documented visitor perception in community parks, which means there is little literature that looks at how these impacts affect visitor experience [33]. There are even fewer studies that apply any sort of integrated approach for understanding the mechanisms of satisfaction in community parks. Indeed, closed-ended questionnaires have been used in only a limited fashion in past research and were generally designed using relative literature and experience, so responses were limited, given that they excluded unexpected factors that were mentioned by participants. The importance of factors identified by AHP depends principally on expert scoring, which may be influenced by individual recreation experience.

Building on past research, this study utilizes Importance Performance Analysis (IPA) to investigate the extent to which visitors perceived recreational impact factors on urban community parks. It carried out a correspondence analysis on both importance and satisfaction using six elements (33 impact factors) that affected resident leisure perception. These included landscape, space, facilities, environment, management, and interference. Open-ended questionnaires and scales were employed to gather information from residents. The strength of such an integrated approach is that it combines qualitative description with quantitative analysis, therefore optimizing the investigation method based on a closed-ended questionnaire. The weight of leisure perception impact factors was set via the cumulative percentage of open-ended questions as reported by residents. This was so that subsequent assessment on resident satisfaction would be in line with psychological expectations. Results reflected by correspondence analysis were thus direct, pointed, and accessible across the following fields: sociology, tourism, urban planning and landscape architecture, guiding planning, management, and improvement of recreational function. Given the paucity of research that employs such an integrated approach to understanding resident leisure perception, its impacts, importance, and experience satisfaction, this exploratory study addresses the gap by providing an empirical example of how an integrated method can be applied, and what might be learned from such an application.

Together, the theoretical perspectives and empirical research of this study provide a useful framework for addressing issues related to leisure satisfaction and open-space needs in Shanghai urban community parks. This study addresses three research objectives: (1) to identify impact factors and their importance in terms of how they affect resident leisure perception; (2) to evaluate the extent of satisfaction around recreation perception in community parks; (3) to understand the functional relationship between a variety of factors (impacts, their effect on leisure experience, planning, management, and future development of community parks) according to correspondence analysis on perceived impact importance and satisfaction.

3. Methods

This integrated study utilizes two independent but related sets of data that were collected during the same time period from September 2012 to 2013. The first data set was collected using open-ended questionnaires which identified impact factors and their importance for recreation at the study sites. The second set assessed residents' perceived satisfaction of these same impact factors and quantified their subsequent effects on user leisure experience in community parks.

3.1. Study Area

Study sites were selected according to time sequences of urban community forming in the Shanghai area, from the year 1909 to 2004. Three community parks were chosen, one in the center of Shanghai City, and the other two in suburbs and outskirts, respectively. They are: (1) Fu Xing Park, a 6.8-ha community park in Rui Jin Community, located in the center of Shanghai city, (2) Xin Cheng

represent the importance of impact factors relative to recreation experience and perceived satisfaction. Assessments were performed before residents' perceived satisfaction data was gathered.

3.3. Measuring Perceived Satisfaction

According to the recreation impact factors identified by accumulative percentage of feedback in residents' reports, a two-page, self-administered written questionnaire was completed. This questionnaire included instructions, demographic characters, and a satisfaction survey. The questionnaire began with an explanation about the aims of the research. The second section requested information on the respondent's gender, age, education, household size, and other selected information. The third and final section of the questionnaire asked participants to select a number on a scale to indicate their perceptions of the community park with regard to their leisure experience. In order to understand residents' attitudes and to qualify their satisfaction related to recreation impacts, a Likert scale was used to measure perceived satisfaction. The scale looked at specific recreation impacts, including those respondents reported in their recreation impact assessment completed earlier. The elements and impact factors included in this section were: landscape (i.e., plant design, landscape style, diversity, sights amount, and regional features), space (i.e., recreation capacity, space variety, connection, privacy, and scale perception), facilities (i.e., quantity, security, illumination adequacy, guidance accuracy, and plant explication), environment (i.e., humidity, mosquito bites, water quality, air quality, noise stimulation, and soil erosion), management (i.e., cleanliness, facility maintenance, public security, plant conservation, and parking management), and depreciative behavior (i.e., litter dropping, yelling aloud, plant defloration, activity interference, graffiti painting, and facility damage). Respondents were asked to rate their perceived satisfaction based on a 5-point scale ("extremely unsatisfied" or "this impact factor greatly reduced my enjoyment" {1} to "very satisfied" or "this impact factor greatly increased my enjoyment" {5}) for each of the 33 types of leisure impact factors.

Using the terms of the questionnaire distribution method proposed by Raymore, the closed-ended questionnaires were delivered to visitor groups at random, at each entrance of the three community parks [35]. A single visitor could be considered a group and participants were chosen in the group using a random number method. A total of 1200 questionnaires were completed between September 2012 and the following year. However, only 1002 (83.5%) of recovered questionnaires ($n = 1002$) were valid ($N_{fx} = 312$, $N_{xc} = 340$, $N_{cp} = 350$, Figure 1). Of these, 461 (46%) were completed on working days while 541 (54%) during festivals.

3.4. Data Analysis

Data collected from recreation impact assessments were summarized in terms of the frequency of each impact type; its percentage was then calculated to represent importance. Valid questionnaires were coded, transcribed, and input into SPSS (version 17). Generally, Cronbach's α is exploited to measure reliability of Likert scales [36]. When α is higher than 0.7, the scales are more reliable. Scales with moderate credibility can be used for further analysis when they are between 0.5 and 0.7. Using Equation (1), the Cronbach's α of scales completed in closed-ended questionnaires was 0.819, with 33 observed variables representing perceived satisfaction. Therefore, the scales used in this study to measure residents' leisure perception and satisfaction were strongly dependable.

$$\alpha = \frac{K}{K-1} \left(1 - \frac{\sum_{i=1}^K \sigma_{Y_i}^2}{\sigma_X^2} \right) \quad (1)$$

Equation (1) can be used to measure the reliability of scales (α), with the number of samples (K), overall variance of samples (σ_X^2), and variance of current observed samples ($\sigma_{Y_i}^2$).

Perceived satisfaction data were summarized, and weighted means were calculated to quantize the extent of perceived satisfaction on impacts and their effects on experiences. Data were tabulated

and analyzed by the SPSS (version 17) statistical software program, in order to evaluate participants' attitude, perception, and satisfaction of impacts affecting leisure experience in community parks.

4. Results

4.1. Sample Instruction

The subjects of this user-perceived satisfaction study were the valid samples from 1002 residents (45% males and 55% females) from the three target communities. Of the respondents, 49.3% were younger than 30 years old, 23.7% were between the ages of 31 to 50, and 22.8% were older than 51, accounting for 95.8% of respondents. Residents in these three age groups seemed to have strong recreation needs and make up the main users of community parks. The elderly and children refused to give feedback at a high rate, due to limitations of vision and writing abilities. In terms of education, participants with a college degree or undergraduates account for 57.6% of respondents, followed by groups with senior high school or technical secondary school educations (31.5%), and 10.9% of respondents had only primary education. The occupation of respondents can be divided into six categories: realistic, investigative, artistic, social, enterprising, and conventional [15]. This was taken into account because profession could be closely related to the amount of and how spare time is used. Also, a total of 24.2% of respondents were students or retirees. Last but not least, household size was another element affecting leisure needs. Of respondents, 42% were couples with one child, followed by 4–5-member families, but only a few singles or couples without children took part in the investigation (2.8% and 8.2%, respectively). This indicates that the main recreation needs in community parks revolve around the needs of children and the elderly, and new needs for space and facilities might change with the age of these two groups.

Leisure preferences indicated by the closed-ended questionnaire suggest that 51.1% of the total sample walk to community parks because of their service radius, and only 9.0% drove. As a result, parking management might not be a critical factor affecting leisure perception in community parks. Almost no residents complained about parking problems in questionnaires due to accessibility. The result was supported by the research of Pietila in 2015, which is that green spaces were associated with commuting, safe walking, and bicycling [9]. Of respondents, 32.3% took part in community activities in parks for exercising as recreation motivation, followed by entertainment (28.4%) and family company (26.4%), while just 12.9% of respondents went to community parks for neighborhood communication. In response to the question, "How often do you use the recreational activities?" most (55.9%) reported that they went to community parks for leisure once a month, while 41.7% were there every day. The vast majority (94.1%) stayed less than two hours. The statistics show that users of the three community parks intensely enjoyed their participation in leisure activities.

4.2. Importance of Leisure Perception Impacts

The cumulative percentages of open-ended questionnaires ($n = 1200$) revealed that landscape ($n = 200$, 16.7%), leisure space ($n = 270$, 22.5%), facilities ($n = 220$, 18.3%), environment ($n = 215$, 17.9%), management ($n = 166$, 13.8%), and poor behavior ($n = 129$, 10.8%) were the most commonly mentioned elements (Table 1). In terms of proportion of total landscape architecture impacts, the top impact factor influencing recreation experience was noted as plant design (6.33%). Recreation capacity had the most occurrences ($n = 66$) in terms of leisure space, followed by interactive experience ($n = 56$) and space variety ($n = 54$). Quantity (6.17%) ranked first for leisure facilities, with the second most noted factor being frequency. For recreational environment, 4.42% of respondents considered humidity as an affecting experience, followed by mosquito bites (4.08%). Some respondents were not satisfied with the service or management of community parks and reported that surrounding cleanliness (3.5%) and facility maintenance (3.25%) were crucial to leisure perception. Litter on the ground was perceived as a depreciative behavior, and was reported by 2.92% of subjects, while 2.67% also noticed yelling aloud as an impact.

Table 1. MDS of leisure perception impact factors and their weights in urban community parks ($n = 1200$).

Elements	Impact Factors	na	Rb (%)	Mean (%)	Elements	Impact Factors	n	R (%)	Mean (%)
Landscape Architecture	Plant design	75	6.33	3.43	Leisure Facility	Facility quantity	74	6.17	3.67
	Landscape style	43	3.67			Facility security	45	3.75	
	Landscape diversity	33	2.83			Illumination adequacy	42	3.50	
	Sights account	28	2.50			Guidance accuracy	32	2.67	
	Regional feature	21	1.83			Plant explication	27	2.25	
Leisure Space	Recreation capacity	66	5.50	3.79	Recreational Environment	Humidity feeling	52	4.42	3.07
	Interactive experience	56	4.67			Mosquito bites	48	4.08	
	Space variety	54	4.58			Water quality	32	2.75	
	Space connection	34	2.83			Air quality	31	2.67	
	Space privacy	32	2.75			Noise stimulation	29	2.50	
	Scale perception	28	2.42			Soil erosion	23	2.00	
Management	Surrounding cleanliness	42	3.50	2.83	Depreciative Behavior	Litter dropping	34	2.92	1.88
	Facility maintenance	38	3.25			Yelling aloud	31	2.67	
	Public security	32	2.75			Plant defloration	21	1.83	
	Plant conservation	30	2.58			Activity interference	19	1.67	
	Parking management	24	2.08			Graffiti painting	13	1.17	
	Dog waste nearby	1	0.08			Facility damage	10	1.00	

The study sites were three community parks located in the center, suburb, and new town of Shanghai City. Multidimensional Scaling (MDS) was used as an overall assessment of the study objects by each impact factor. Number of occurrences of impacts reported by respondents in open-ended questionnaires were summarized. Cumulative percentage of occurrence in the total sample size was measured as the impacts' importance.

The importance of each impact factor was transcribed from its average cumulative percentage of occurrence reported by respondents. Therefore, the sequence of importance, ranging from high to low, was leisure space, facilities, landscape architecture, recreational environment, management, and depreciative behavior (3.78%, 3.67%, 3.43%, 3.07%, 2.83%, and 1.88%, respectively). The data in Table 1 suggests that for the current leisure functions of community parks, respondents were sensitive to the top three factors (space, facility, and landscape) as well as perception of recreation capacity, interactive experience, facility quantity, security, and plant design, according to their higher weights (which equates to percentage of occurrence). However, dog waste on the trail or grass was hardly reported in open-ended questionnaires, resulting in an invalid effect on leisure perception and satisfaction.

4.3. Evaluation Model of Perceived Satisfaction

The Likert Grading Method was used to divide residents' perceived satisfaction into five levels and expressed from one to five in figures. If the level of perceived satisfaction was higher than 3, the respondents were satisfied with the leisure impact, otherwise they were not satisfied. The evaluation model was framed by calculating the average weight (Equation (2)) of perceived satisfaction on each impact factor, in order to reveal the attitude, extent of leisure perception, and experience satisfaction in terms of landscape, space, environment, facility, management, and obstruction in community parks.

$$X_j = \sum_{i=0}^1 \frac{n_i}{N} m_i \quad (2)$$

Equation (2) can be used to measure residents' perceived satisfaction of each impact factor (X_j) in community parks, with knowledge of the evaluation extent of every respondent (m_i) on perceived impact (i), and its frequency (n) in each rank of the overall samples (N).

4.4. Recreation Perceived Satisfaction of Impacts

Measured by Equation (2), recreation perceived satisfaction of impacts in terms of weighted average could reveal the attitude of residents toward community parks (Table 2).

The closed-ended questions asked directly how each of the 33 impact factors affected users' experience and their satisfaction. These impact factors were only those that were reported as perception influences in the open-ended questionnaires. The results of these closed-ended questionnaires are presented in Table 2. Nineteen of the impacts examined were unsatisfactory, with a weighted average not exceeding three, and were reported as "reduced enjoyment", while the others were satisfactory and reported as "increased enjoyment". All factors measured by mean of weighted average were satisfactory and had a positive effect on users' experience, with the exception of leisure space (2.81) and recreational environment (2.75), which were crucial to residents' leisure perception. The most problematic impact factors in terms of leisure space were private perception, space connection, and interactive experience, with means of 2.77, 2.74, and 2.40, respectively. Humidity feeling (2.02) and mosquito biting (2.48) were critical impact factors in terms of reducing environmental comfort. When responses were collapsed to indicate "very satisfied", "satisfied", "moderate", "unsatisfied", or "extremely unsatisfied", landscape architecture (3.18), poor park-goer behavior (3.02), management (3.00), and leisure facility (3.00) were satisfactory and reportedly had "no effect" or did not "increase enjoyment" in the most common responses. However, it is worth noting that the latter two impact factors with lower weighted mean values did not meet the diversity recreational needs due to lagged management and maintenance, especially when it came to illustration, guiding labels, plant explication, plant conservation, and parking management.

Table 2. Weighted average of residents' perceived satisfaction of impact factors in urban community parks ($n = 1002$).

Elements	Impact Factors	WA ^a	Mean ^b	Elements	Impact Factors	WA	Mean
Landscape Architecture	Plant design	2.78	3.18	Leisure Facility	Facility quantity	3.41	3.00
	Landscape style	3.00			Facility security	3.28	
	Landscape diversity	3.37			Illumination adequacy	2.83	
	Sights account	3.40			Guidance accuracy	2.84	
	Regional feature	3.37			Plant explication	2.64	
Leisure Space	Recreation capacity	3.15	2.81	Recreational Environment	Humidity feeling	2.02	2.75
	Interactive experience	2.40			Mosquito bites	2.48	
	Space variety	2.91			Water quality	2.77	
	Space connection	2.74			Air quality	2.99	
	Space privacy	2.77			Noise stimulation	3.26	
	Scale perception	2.89			Soil erosion	3.03	
Management	Surrounding cleanness	3.00	3.00	Depreciative Behavior	Litter dropping	2.93	3.02
	Facility maintenance	3.25			Yelling aloud	2.99	
	Public security	3.05			Plant defloration	3.00	
	Plant conservation	2.91			Activity interference	2.97	
	Parking management	2.81			Graffiti painting	3.09	
	Dog waste nearby	N/A ^c			Facility damage	3.13	

^a WA is short for weighted average and represents the perceived recreation satisfaction of impact factors. ^b Means based on a 5-point scale anchored by 1 ("extremely unsatisfied"), 2 ("unsatisfied"), 3 ("moderate"), 4 ("satisfied"), 5 ("very satisfied"). ^c N/A indicates the impact factor was reported in open-ended responses but not examined through closed-ended questions and scales in this survey.

4.5. Correspondence Analysis of Importance and Satisfaction

The Importance–Performance Analysis (IPA) method was used to conduct a correspondence analysis as to the importance and satisfaction of impact factors that affect recreation perception. In the analysis, importance equals the cumulative percentage of occurrence in the overall sample, and satisfaction was measured using the perception evaluation model. Data were classified into four quadrants [37], identified as Superiority, Concentration, Opportunity, and Preservation, and they were placed on a wheel in a counterclockwise direction (Figure 2). Two factors were distributed in the Superiority area; these were important to respondents with high-level satisfaction, and included landscape architecture (3.43, 3.18) and leisure facility (3.67, 3.00). Leisure space (3.79, 2.81) and recreation environment (3.07, 2.75) were important but were associated with dissatisfied, and were therefore plotted in the Concentration area. Only one factor was placed in both the Opportunity and Preservation areas, which indicated that respondents were unsatisfied with the service and management (2.83, 3.00) of community parks, though this did not have an effect on leisure perception or experience. However, poor park-goer behavior (1.88, 3.02) was acceptable by users currently, and did not reduce enjoyment nor was it identified as an issue. The results suggest the advantages, disadvantages, problems, and potential issues when it comes to planning and design as well as management of urban community parks. Some of the approaches that can be used given the results to improve recreational perception and functions will be discussed in the next section. In addition, the expectation of users was different. The elderly, young people, the educated, the sporty, etc., behaved differently and were sensitive to a variety of impact factors. Community parks should be designed to provide a variety of conditions in order to satisfy a full range of users.

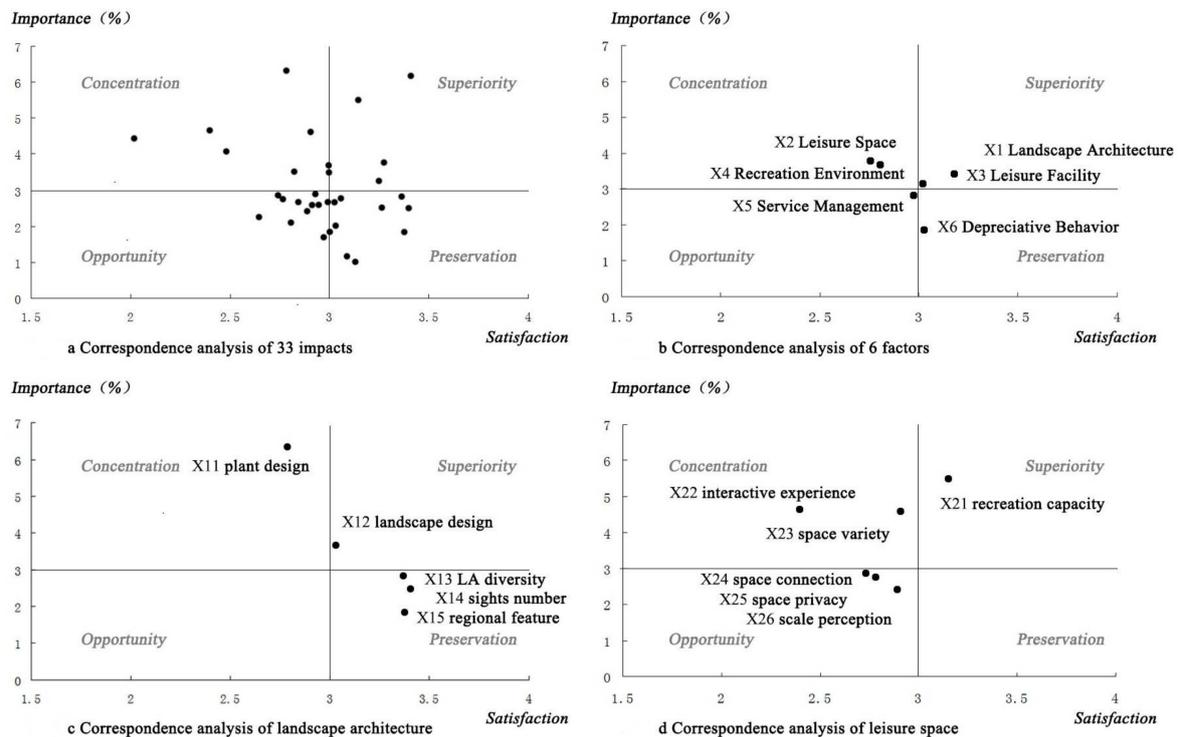


Figure 2. Cont.

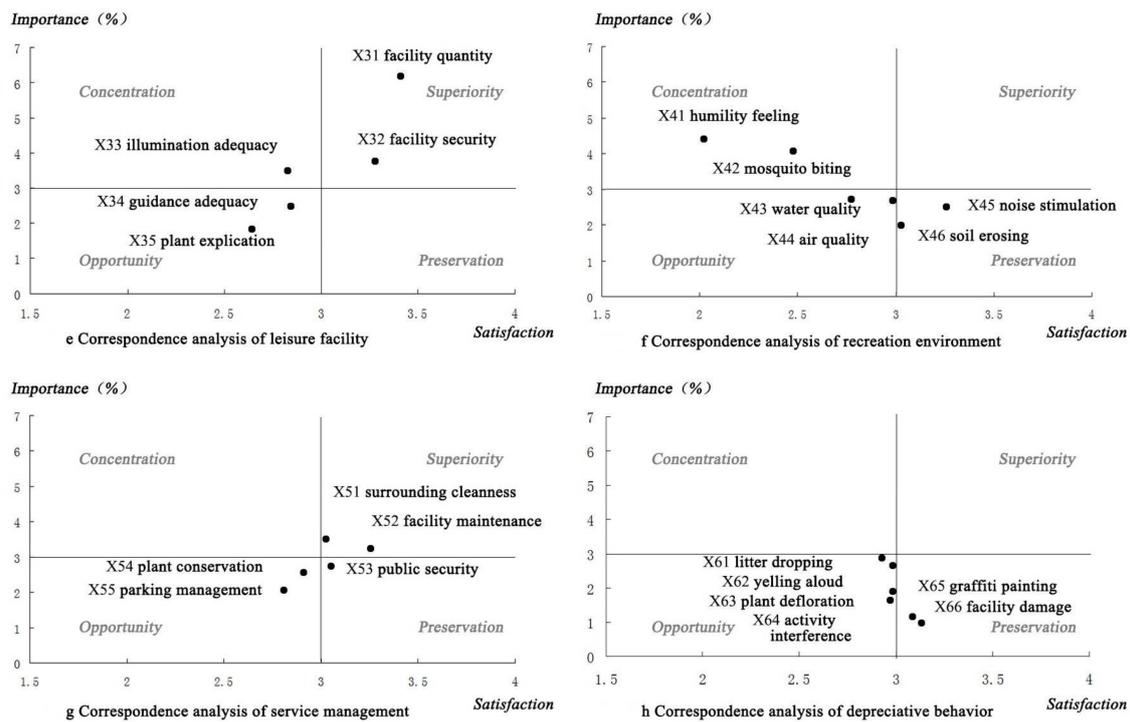


Figure 2. Important Performance Analysis of recreation perceived satisfaction and importance.

5. Discussion

This study was undertaken to improve our understanding of the impact factors of user perceptions, as well as the importance of those factors on recreation experience and perceived satisfaction. The results of a correspondence analysis of importance and satisfaction suggest that the overwhelming majority of users are aware of impact factors during recreation and that those factors do affect leisure experience. The majority (83.5%) of respondents reported that their attitude toward parks' impact factors affects their enjoyment. These findings were consistent with those of Lo and Madureira et al. who found that a majority of users were able to identify recreation impact factors [1,38]. About 70% of the residents visited urban parks at least weekly. Major companions were family members and then children [1]. Exercise, space variety, and quality of environment topped the list of visit purposes and impact factors [3]. The recreational pattern is associated with the private living condition, ages, and performance, which push people to the public open areas to relax [39]. However, the results of this study were inconsistent with some earlier research that indicated users were often unaware of impact factors such as habitat and biodiversity [40]. It is possible that users are becoming more aware of environmental factors because of increasing environmental attentiveness and educational campaigns. In terms of correspondence analysis on perceived impact importance and satisfaction, advantages and disadvantages were identified. This means that the results can provide a foundation for planning, management, and future development, according to the quadrant distribution.

5.1. Priority Area

When impact factors were distributed in priority areas, it indicated that they were critical for residents' recreational perception, and residents were satisfied with the current situation. This means that these indicated advantages should be preserved and popularized [41–44]. In this study, residents were sensitive to and satisfied with six impact factors, including landscape style (3.67, 3.00), leisure capacity (5.50, 3.15), facility quantity (6.17, 3.41), facility security (3.75, 3.28), surrounding cleanness (3.50, 3.00), and facility maintenance (3.25, 3.25). These impacts could easily be prioritized during the planning and design of urban community parks in the future. Since these factors are of such high

importance, they should take priority in the development of community parks; their absence can easily reduce leisure perception if the impacts do not satisfy users. In addition, as most residents took part in recreational activities weekly, the sporty people and families paid more attention to factors such as leisure capacity, facility quantity, and security, due to activities with high intensity.

5.2. Concentration Area

Residents were sensitive to the impact factors in the concentration area, which indicates that they are some of the elements that urgently need to be improved in community parks. This is because the impacts identified in this quadrant affect users' recreation perception and reduce enjoyment. As Figure 2b revealed, leisure space and environment were critical points affecting experience, but were not up to user expectation and needed to be optimized. When it came to leisure space, variety and interactive experience were issues focused on by planners in order to enhance recreational functions, and their satisfaction was closely correlated to space connection, landscape diversity, regional feature, facility quantity, and plant design, according to the correlativity analysis (Table 3). Additionally, rich leisure activities, high recreation frequency, and social communication needs should be paid attention to, since they will increase with the growth of children and the elderly, who are the principal users of urban parks. The elderly accompanied by children usually spend a lot of time in community parks for recreation. They prefer community, interaction, and activities with low intensity, such as singing, walking, and dancing. Adequate facilities and space are significant impact factors for designers to consider. Furthermore, since 20.3% of residents exercised in the evening, illumination at night was a high priority for adult users of the space. Another high impact, perceived by 36.2% of respondents, was perception of temperature and humidity, as well as mosquito biting, responses which indicated they were issues that needed to be addressed immediately. Table 3 shows that their satisfaction was closely related to plant design, water quality, and surrounding cleanliness.

Table 3. Correlativity analysis of impacts disturbed in Concentration (Important–Unsatisfactory) area.

Impact Factors	Impact Factors Perceived by Majorities Needed to Be Improved					
	X11	X22	X23	X33	X41	X42
Plant design	1.000	0.080 *	−0.068 *	−0.006	0.050 *	−0.060 *
Interactive experience	0.08 *	1.000	0.205 **	0.128 **	0.012	0.052
Space variety	−0.068 *	0.205 **	1.000	0.163 **	0.069 *	0.097 **
Space connection	−0.056	0.349 **	0.696 **	0.135 **	0.040	0.104 **
Landscape diversity	0.004	0.239 **	0.256 **	0.168 **	0.046	0.070 *
Regional feature	0.001	0.233 **	0.256 **	0.165 **	0.037	0.072
Facility quantity	−0.357 **	0.151 **	0.294 **	0.130 **	0.038	0.113
Water quality	−0.018	−0.001	−0.018	0.181	0.252 **	0.492 **
Surrounding cleanliness	−0.042	0.038	−0.042	0.216	0.151 **	0.219 **

¹ The Spearman coefficient was applied to test correlation for dual measurements. When the confidence level is 0.01 (**), the correlation is extremely significant. When the confidence level is 0.05 (*), the correlation is significant. Impacts perceived by majorities (X11. plant design; X22. interactive experience; X23. space diversity; X33. illumination at night; X41. temperature and humidity feeling; X42. mosquito biting) need to be improved when they are correlative with other impacts.

5.3. Opportunity Area

Currently, residents' perception of impact factors in Opportunity areas was not strong enough to be reported by most respondents, and they were not satisfied either. Therefore, those factors were not primary problems to be solved for the improvement of leisure function. They included service and management, as well as 13 impact factors (space connection, space privacy, scale perception, guidance adequacy, plant explication, water quality, air quality, plant conservation, parking management, activity interference, etc.). Although at this stage the impacts mentioned above are not the most important recreational effects in terms of perception, they present significant opportunities to enhance residents' satisfaction of leisure function in planning and design or future development of community parks. Simultaneously, these impact factors might shift from unimportant to important as the community

management unit matures, and as construction increases to meet residents' recreational needs. Because major companions were family members and then children, exercise and clean air topped the list of visit purposes [1].

5.4. Preservation Area

Impact factors that fell in the Preservation area were not important for residents' perception, due to present high satisfaction. However, this does not mean that they are elements that should not be optimized. The results indicate that landscape diversity, sights quantity, regional feature, noise stimulation, soil erosion, public security, graffiti painting, and facility damage must be preserved in order to maintain satisfaction with leisure time. Four factors were specifically referred to: landscape architecture, recreation environment, management, and poor park-goer behavior. While residents were satisfied with the impact factors, the existing situation should be maintained and could even be improved to adjust for the leisure needs of residents at different ages and for various cultural groups. Indeed, if users' perceived satisfaction of these factors decreases, their importance value will increase, and they will become primary factors that will be necessary areas of focus in the meantime.

6. Implications

Given the research on expectancy disparity models, this study explored both importance and satisfaction of impact factors that affect leisure perception in urban community parks. It looked at resident populations that were typical in compact cities, focusing on parks in and around Shanghai City. In its sampling choice, the study was able to determine both reasonable samples and high credibility. Results of open-ended questionnaires and accumulative percentage suggest that leisure space (3.79) was the impact factor that residents paid the most attention to. This was followed by recreation facilities (3.67) and then landscape architecture (3.43). The weighted mean value of closed-ended questionnaires indicated that, among six elements identified as influencing leisure perception in urban community parks, residents were most satisfied with current landscape architecture (3.18), followed by poor park-goer behavior (3.02), recreational facilities (3.00), and management (3.00). In terms of correspondence analysis of importance and satisfaction, landscape architecture (3.43, 3.18) and leisure facilities (3.67, 3.00) were considered the most significant factors affecting recreational function in urban community parks, indicating relatively high satisfaction. However, leisure space (3.79, 2.81) and environment (3.07, 2.75) were unsatisfactory, which means they are critical factors constraining recreation functions and should be improved immediately. Finally, maintenance, service, and management (2.83, 3.00) after construction were shown to present a significant opportunity factor for future development of urban community parks.

The findings of this study have implications for planners, managers, and future research into urban parks. Results around user perception and experience can aid planners to identify priority impacts or help managers formulate impact management strategies and prioritize management actions. Leisure space and facilities, for example, might require relatively more attention than planners and managers thought. Not only did this study find that these impact factors were particularly problematic in terms of resident experience and satisfaction, but they could also lead to further physical and mental wellbeing as well as promoting cultural conservation and social communication problems.

The findings also have implications for designers, managers, and researchers in terms of how to best gauge visitor perceptions of recreational impact factors. The respondents were easily affected by psychological implications based on the closed-ended questionnaire generally used, because they were sensitive to the impact of prompts. Asking visitors about particular impacts directly could reduce the quality of recreation experience, and they might overestimate the importance of some impacts while underestimating their satisfaction around others. However, open-ended questions can yield much richer recall and a better understanding of the perception process and its context. When respondents reported impact factors and their satisfaction they noticed, we can better understand what aspects of impacts are noticeable and why they become problems affecting leisure perception. By using

open-ended questions, for instance, we learned that 6.33% of residents considered plant design and mosquito bites (4.07%) to be important impact factors, even though these are not typically included in studies of recreational experience. Given the paucity of literature regarding leisure perception in community parks, as well as work on importance and its effect on satisfaction, open-ended questions and qualitative approaches are warranted for extensive use. This method allows the view of residents' subjective perception and uses the information to calculate the cumulative percentage of occurrences in order to characterize the weight distribution of leisure perception. This, in turn, was able to correctly reflect the relative importance of each index in the whole evaluation system. Using the IPA method, correspondence analysis on importance and satisfaction of users' leisure perception revealed how those impact factors affect leisure functions in community parks. The method was also able to indicate the degree of urgency with which addressing issues was necessary.

Given the literature on recreation perception using AHP or closed-ended questions, an integrated approach with open- and closed-ended questions was combined to analyze users' leisure perception quantitatively and qualitatively. A further advantage is the fact that impact factors and weight mean value identified by open-ended questions and selecting frequency were in accordance with the psychological expectation of respondents in subsequent closed-ended questions that were refined and targeted. Results were tested with SPSS (version 17.0) software as well as analyzed for the satisfaction and correlation of impacts, making them more scientifically valuable. In addition, the IPA method was easily integrated into questionnaires and the results of correspondence analysis were accessible, which will benefit planners, managers, and researchers in their search to understand crucial impact factors. The model will also help professionals rapidly and accurately address issues affecting users' leisure perception in community parks.

7. Conclusions and Limitations

The generalizability of this study is limited by three factors that are worth noting, and which could be overcome in future studies. First of all, the study was conducted using open-ended questions and scales completed by residents. This was a limitation because respondents mainly consisted of the young and the elderly, but children accounted for a smaller proportion, as well as residents who did not take part in activities frequently but also had recreation needs. Satisfaction of impact factors evaluated by users was indicated using subjective perception, which might be influenced by education, age, occupation, and the individual experience of respondents. As a result, in order to obtain high confidence, the sample should cover a larger number and more representative demographic of community residents (e.g., gender, profession, culture). Secondly, satisfaction of impacts was graded from 1 to 5, and the data did not observe a strictly normal distribution. Some impact data showed a positive or negative skew. For this reason, the Spearman coefficient was used instead of the Pearson coefficient in order to test the correlation among impact factors, which is suitable for a nonparametric test on non-normally-distributed data to reduce errors. Moreover, either of these possible differences as existing states of community parks or characteristics of residents who participated in the survey could have affected their leisure perceptions, experiences, and satisfaction, as well as recreational functions and leisure needs. Therefore, the importance and satisfaction reflected by percentages and weighted average might only reveal the basic attitudes, feelings, and judgments of residents near Shanghai urban community parks.

Despite the above limitations, this study has demonstrated the utility of an integrated approach using methods established in urban planning and recreation social science in exploring resident leisure perception, impact factors affecting experiences, and satisfaction. Further application of this approach would contribute to an enhanced understanding of recreation resource impact factors in terms of planning and the design of urban ecological communities. Moreover, it could aid in the sustainable management of leisure resources and outdoor recreation opportunities in urban communities.

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