



IMPORTANT PARK CHARACTERISTICS THAT PROMOTE SOCIAL INTERACTIONS OF OLDER ADULTS IN ANYANG CITY, HAINAN PROVINCE, CHINA

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Abstract

Urban parks play a crucial role in promoting social interactions among older adults, thereby supporting active, healthy aging. Although the benefits of urban parks are well acknowledged, studies on their efficacy in this regard are limited, particularly in Asia. The question of what role park characteristics play in encouraging social interactions of older adults has remained largely unexplored. This study investigates the influence of perceived park characteristics on the social interactions of older adults in two urban parks in Anyang City, China. Data from 589 participants aged 50 and above were collected through on-site and online distribution methods and analyzed using linear regression models. The findings revealed that park features, conditions, and accessibility significantly affect older adults' social interactions. This evidence lays a scientific groundwork for improving these interactions in urban parks, emphasizing the aspects that should be prioritized in park planning and design to better fulfill their social needs.

Keywords: Social Interactions, Urban Parks, Healthy Aging, Older Adults

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INTRODUCTION

The phenomenon of global population aging is becoming more prominent. It is characterized by both the expanding proportion and rapid surge in the absolute number of older adults. According to the World Health Organization, by 2030, one in six people globally will be older adults aged 60 or above, increasing from 1 billion in 2020 to 1.4 billion, and by 2050, it will double to 2.1 billion (World Health Organization, 2022). There are notable variations in aging issues and their implications for social policy across different regions worldwide. For instance, by 2050, it is projected that 26.1% of the population in Europe and North America, 23.7% in East and Southeast Asia, and 22.9% in Australia and New Zealand will be aged 65 years or older. (United Nations, 2019).

Among these, China, one of the fastest aging countries, is expected to see 28% of its population aged 60 years or older by 2040 (World Health Organization, 2016). These demographic shifts pose several challenges, including an increase in chronic non-communicable diseases, changes in traditional ways of aging, and the intensification of the empty nest syndrome (Langenbrunner et al., 2011; Hu & Peng, 2015; Feng & Phillips, 2024). In response to these challenges, the international community, particularly China, has embraced the World Health Organization's "Healthy Ageing" initiative, aiming to enhance the health and well-being of older adults and ensure a better quality of life through the development of age-friendly cities and communities.

However, there are still many pressing issues that need to be addressed in the face of the challenges posed by aging, especially mental health. The 2018 White Paper on the Mental Health of older adults in China indicates that over 63% of older adults frequently feel lonely, and more than 25% of those aged 60 and over have experienced suicidal thoughts. This loneliness is primarily attributed to social isolation, with research suggesting a significantly increased risk of mortality over the following three years among older adults who lack social connections (Sugisawa et al., 1994). Regular socialization not only strengthens emotional bonds among older adults but also markedly improves their mental and physical health, slows cognitive decline, and prevents various chronic diseases (Zagic et al., 2022). Despite the acknowledged importance of social interaction, the planning and design of urban green spaces often fail to address the social needs of older adults (Zhang et al., 2022). Therefore, this study aims to identify crucial park features that encourage social interaction of older adults, thereby improving their quality of life and social engagement.

LITERATURE REVIEW

Importance of Urban Parks for Social Interactions of Older Adults

Urban parks, which are critical urban green spaces, significantly improve the quality of life and well-being of residents (Bedimo-Rung et al., 2005). Studies

have shown that these green spaces not only promote physical activity, enhance physical fitness and immunity, and prevent geriatric diseases among older adults but also reduce psychological stress and alleviate loneliness and depression, thereby improving their well-being and life satisfaction (Wang et al., 2024; Zhai et al., 2020; Chiesura, 2004). Particularly for older adults experiencing a reduction in social networks post-retirement, parks serve not only as venues for physical exercise but also as vital social spaces for emotional and spiritual support. Quality park design is crucial for the overall well-being of older adults, providing areas rich in social activities and fostering interpersonal interactions that meet their social needs and improve their social interactions (Duque & Panagopoulos, 2010; Kaźmierczak, 2013).

Furthermore, urban parks are critical venues for social activities, enhancing social interaction and cohesion within the community. These parks offer residents a safe, inclusive public space that boosts community satisfaction and fosters a sense of belonging (Jang et al., 2024). Such social interactions are vital for developing social networks and enhancing social capital. For instance, studies have shown that older adults actively seek social connections in parks (Home et al., 2012). These parks allow not only for physical activity to take place but also as crucial ‘encounter spaces’ that mitigate social isolation and promote social health (Enssle & Kabisch, 2020).

Urban parks provide older adults with ample opportunities for social interaction, leisure activities, and encounters with nature, playing a pivotal role in their social lives (J. Jacobs, 1961; A. Jacobs & Appleyard, 1987; Gehl, 2011). By participating in park activities, older adults can increase physical activity (Sallis et al., 2016), boost mental health (Beyer et al., 2014; Nutsford et al., 2013), and alleviate loneliness through social interaction (Bone et al., 2022), thus enhancing their overall well-being. Consequently, optimizing the design and functionality of urban parks to meet specific needs is a fundamental strategy for promoting healthy aging and improving urban life quality.

However, despite their significant potential to foster social interactions of older adults, existing research and urban policies often overlook the full utilization of these spaces to meet their needs (Moulay et al., 2017; Azmi & Karim, 2012). Additionally, many studies focus on the impact of park environments on physical activity, with less emphasis on their influence on social interactions, especially for older populations (Sheng et al., 2021; Cao & Kang, 2019). Research has shown that perceived physical environment characteristics in urban parks have a crucial impact on older adults’ social interactions (Wan et al., 2021). These park characteristics not only shape their park experience but also directly affect their social health and well-being. Therefore, it is crucial to explore methods to improve park design in order to better meet the social interaction

requirements of older individuals, thereby enhancing their quality of life and promoting social engagement.

The Relationship between Park Characteristics and Social Interactions

The physical environment of parks includes diverse characteristics such as features, conditions, accessibility, aesthetics, safety, and policy management, which collectively influence park use and public health impacts (Bedimo-Rung et al., 2005). For instance, park accessibility and safety are crucial determinants of whether older adults are willing and able to visit parks, directly influencing their opportunities for social interaction (Tinsley et al., 2002). Additionally, positive correlations between park characteristics such as amenities and maintenance and social interactions directly impact the attractiveness and potential for socialization within parks (Coley et al., 1997; Rasidi et al., 2012).

Numerous studies highlight the pivotal role of amenities in enhancing park participation and social interaction. Features such as playgrounds, cafes, restrooms, benches, and sports and recreational equipment significantly boost park visitation (Cohen et al., 2007; Bedimo-Rung et al., 2005; Halkos et al., 2021). Comfortable and inviting green spaces attract more visitors, thereby fostering social interaction opportunities. For example, Veitch et al. (2022) demonstrate that providing older adults with shaded, serene environments and convenient walking paths is essential for encouraging physical activity and social interactions. Moreover, perceived safety is a critical factor in encouraging park use and promoting social interactions among older adults, particularly those with physical and psychological limitations (Hong et al., 2018; Liu et al., 2020; Elfartas, 2022). Some studies highlighted that environmental barriers and potential safety concerns significantly impact older adults, notably regarding accessibility, mobility, and safety, making them especially sensitive to park safety, natural beauty, and aesthetics (Wen et al., 2018).

Although there is a general consensus on the influence of physical environment features on social interactions, academic debate persists regarding which specific features are most closely associated with social interactions in urban parks (Chen et al., 2024; Sheng et al., 2021). Furthermore, empirical research directly examining the role of public green spaces in older adults' social interactions is limited (Zhong et al., 2022; Sugiyama et al., 2023). This reveals the urgent need for further studies to explore how park characteristics influence these interactions in urban parks.

Social Interactions

Social interactions are defined as any verbal or non-verbal contact between people, and such exchanges can lead to rich social experiences (Dempsey et al., 2012). Social interactions are not limited to scheduled events; they can be

triggered any time people come together, whether it is a purposeful gathering or a simple exchange of words that stumbles into another person's line of sight (Easthope & McNamara, 2013). Furthermore, urban parks promote such interactions by providing accessible environments that foster social connections. These connections are acknowledged as potential links between green spaces and health (Maas et al., 2009). Research indicates that such social connections are a low-cost strategy for enhancing public health and are essential for achieving effective active aging (Mao & Zhao, 2012; Yuqi Liu et al., 2020).

The frequency of social interactions is a crucial indicator of social engagement, typically assessed by the number of interactions, participants, or the interaction frequency (Kaźmierczak, 2013; Luo et al., 2020). Studies have consistently shown that frequent social interactions correlate strongly with improved mental health, reduced loneliness, and greater life satisfaction (Powdthavee, 2008; Luo et al., 2020). This motivated the study to measure the social interaction frequency of older adults in urban parks.

RESEARCH METHODOLOGY

This study was conducted in Anyang, located in the north of Henan province, China (Figure 1). According to the 2022 census, the resident population of Anyang was approximately 5.41 million, with an urbanization rate of 54.69%. Notably, 34.14% of the population, or about 1.849 million people, were aged 50 years and above, reflecting the current state of population aging in the city. The survey sites included two comprehensive urban parks in the Wenfeng and Beiguan districts, namely Shangwu Park and Renmin Park. These parks are favoured by residents for their convenient and free access, as well as their abundant green spaces and facilities.

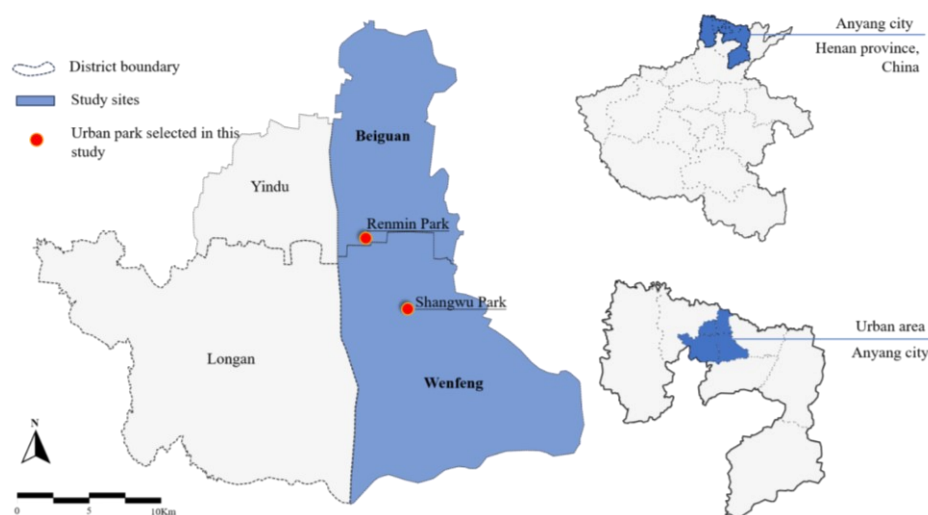


Figure 1: Location of this study

Data collection occurred from June to September 2023, utilizing both on-site and online distribution methods, with a total of 589 completed questionnaires. The survey specifically targeted older adults aged 50 and above, excluding those in long-term care facilities. Participants signed an anonymous informed consent form before completing the questionnaire. Questionnaires were distributed using a simple random sampling method, and respondents who did not have enough time to complete the questionnaire on-site were provided with a QR code so they could complete it at an appropriate time. The online questionnaire was distributed through on-site links and promoted in social media groups (e.g., WeChat) targeting older adults living near the park, thereby expanding the sample's reach. The survey was conducted on weekdays and weekends during favorable weather.

This study used a closed-ended questionnaire to assess how park environmental characteristics affect older adults' social interactions. The questionnaire was divided into three sections: the first section assessed the perceived park characteristics, which were adapted from Bedimo-Rung et al. (2005), including park features, conditions, aesthetics, safety, and accessibility. Each dimension contained several items, totaling 30 questions, using a 5-point Likert scale (from 1= strongly disagree to 5= strongly agree). The Cronbach's alpha for this section of the questionnaire was 0.914, indicating high reliability. The second part measured the social interactions of older adults in the parks, adapted from Jenny Veitch (2022), Moulay (2017), and Lubben's Social Networking Scale (LSNS). It comprised four questions on a five-point scale (from 1=never to 5=always) regarding their interactions with both known and

unknown individuals. This section had a Cronbach's alpha of 0.878, confirming good reliability. The third part gathered socio-demographic information, including gender, age, income, and health status.

Statistical analyses were conducted using SPSS 27.0. The initial descriptive analysis assessed the basic data characteristics, showing that skewness and kurtosis for all variables were within the ± 3 range (as shown in Table 2), meeting the criteria for normal distribution as defined by Hair et al. (2010). Additionally, to ensure variable independence, tolerance, and variance inflation factor (VIF) values were calculated. Following O'Brien's (2007) recommendations, all predictor variables demonstrated tolerance values above 0.30 and VIF values below 4.0, indicating no significant multicollinearity in the analytical model.

Subsequent analysis utilized Pearson correlation analyses to explore relationships between variables. Based on these results, multiple linear regression models were constructed to evaluate the effects of independent variables on the dependent variable. In this analysis, socio-demographic characteristics were incorporated as control variables, park characteristics as independent variables, and social interactions as the dependent variables. This methodology offers insights into the impact of independent variables on the dependent variables, aiming to identify key park characteristics that predict social interactions of older adults.

ANALYSIS AND DISCUSSION

Descriptive Statistics

Table 1 presents an overview of the statistical data pertaining to the population sample. The study includes 589 participants, comprising 45.8% males and 54.2% females, showing a higher proportion of females. The majority of participants are aged between 50 and 65, with only 5.4% over 65, indicating that younger older adults are predominantly active in park usage. Regarding monthly income (CNY), 54.7% of participants earn between 1,500 and 3,000, while 21.1% earn between 3,000 and 4,500. In terms of health status, 53.4% of older adults are reported to be relatively or very healthy, 40.7% are reported to have fair health, and 10.3% are reported to be in poor health.

Table 1: Demographic Information of Respondents (n=589)

Demographic Characteristics	Category	Frequency	Percentage (%)
Gender	Male	270	45.8%
	Female	319	54.2%
Age	50–55 y	266	45.2%
	56–60 y	226	38.4%
	61–65 y	65	11.0%
	65 y above	32	5.4%
	1500 below	54	9.2%
Income (CNY/month)	1500–3000	322	54.7%
	3000–4500	124	21.1%
	4500 above	89	15.1%
	Very poor	13	2.2%
Health status	Relatively poor	48	8.1%
	Fair	214	36.3%
	Relatively healthy	239	40.7%
	Very healthy	75	12.7%

Table 2 presents the results of the subjective perceptions of park features and social interactions among the 589 older adults surveyed. The condition receives the highest score ($M=3.71$, $SD=1.022$), followed by the feature ($M=3.60$, $SD=0.955$) and accessibility ($M=3.56$, $SD=0.947$). The aesthetics scores are slightly lower, with a mean of 3.44 ($SD=0.996$), and safety receives the lowest score ($M=3.04$, $SD=1.107$). Additionally, the social interactions of older participants had a mean of 2.99 with a standard deviation of 1.151.

Table 2: Descriptive Statistics of Park Characteristics and Social Interactions (n=589)

Variables	No. of items	Means	Std. Deviation	Skewness	Kurtosis
Social interactions	4	2.99	1.151	0.043	-1.564
Features	7	3.60	0.955	-1.046	-0.382
Conditions	6	3.71	1.022	-1.299	0.375
Aesthetics	6	3.44	0.996	-0.785	-0.898
Safety	5	3.04	1.107	-0.035	-1.649
Accessibility	6	3.56	0.947	-1.026	-0.402

Correlation Analysis between Variables

Table 3 presents the results of the variable correlation analysis. Social interaction frequency was positively correlated with park features ($r=0.382$, $p<0.01$), condition ($r=0.312$, $p<0.01$), aesthetics ($r=0.2$, $p<0.01$), safety ($r=0.193$, $p<0.01$), and accessibility ($r=0.245$, $p<0.01$). These significant positive correlations indicate that the mentioned park characteristics positively influence the social interactions of older adults. Therefore, these characteristics were selected as independent variables for subsequent multiple-regression analyses.

Table 3: Correlation analysis

Variables	Social interactions
Features	0.382**
Conditions	0.312**
Aesthetics	0.200**
Safety	0.193**
Accessibility	0.245**

** Correlation is significant at the 0.01 level (2-tailed).

Multiple Regression Analysis Results

Table 4 shows that the multiple regression analysis results indicate a strong relationship between park characteristics and social interactions among older adults in urban parks. Specifically, features ($\beta=0.202$, $p<0.001$), conditions ($\beta=0.145$, $p<0.001$), and accessibility ($\beta=0.113$, $p<0.01$) show statistically significant positive correlations with the social interactions. These coefficients indicate that an increase of one unit in features, conditions, and accessibility leads to respective increases in the social interactions by 0.202, 0.145, and 0.113 units, respectively, while controlling for other variables. Collectively, these factors account for 25.2% of the variance in social interactions. Notably, other park characteristics, such as aesthetics and safety, do not demonstrate significant effects.

Table 4: Multiple linear regression model

	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	Collinearity Statistics	
	B	Std. Error				Tolerance	VIF
(Constant)	-0.492	0.327		-1.505	0.133		
Features	0.243	0.052	0.202	4.723	0.000	0.708	1.412
Conditions	0.164	0.047	0.145	3.488	0.001	0.745	1.343
Aesthetics	0.02	0.047	0.017	0.427	0.670	0.787	1.271
Safety	0.061	0.041	0.058	1.477	0.140	0.830	1.206
Accessibility	0.137	0.048	0.113	2.866	0.004	0.835	1.198
R	0.502						
R Square	0.252						
Adjusted R Square	0.240						
F	21.623***						

Dependent variable: social interactions.

DISCUSSION

This study aimed to identify key park characteristics that encourage older adults' social interactions in urban parks. The results showed significant positive impacts of park features, conditions, and accessibility on their social interactions.

Notably, park features had the most substantial effect. This is likely due to their role in creating a welcoming environment that encourages older adults to stay and engage. For instance, amenities like seating and shade offer spaces for rest and socialization, while fitness equipment enables light physical activities, serving as catalysts for social interactions. These findings align with previous research indicating that park amenities and green features such as seating, restrooms, fitness equipment, shaded areas, and lush vegetation are crucial for fostering social interactions of older adults (Moulay et al., 2017; Rasidi et al., 2012; Veitch et al., 2022). Additionally, trees and grassy areas are believed to foster informal social interactions by promoting greater engagement (Coley et al., 1997). A study focused on the motivations of older Australians visiting parks highlighted that amenities like trees and lawns fulfill older adults' needs for autonomy, encouraging repeated visits for participation and socialization (Gibson, 2018).

This study also assessed park conditions, including maintenance, noise levels, and uncivilized behavior. Previous findings have shown that these factors directly affect older adults' use of parks and their activities. Hughey et al. (2016) noted that poor maintenance and uncivilized behavior not only degrade a park's image but can also deter usage by raising safety concerns. Moreover, Wan et al. (2021) emphasized that well-maintained parks not only improve safety perceptions but also enhance the environment's attractiveness, which is crucial for increasing participation and facilitating social interactions. The reason may be that proper maintenance and environmental management may directly improve older adults' psychological well-being and reduce fall risks, thereby encouraging more social interactions. Furthermore, a low-noise, orderly environment provides a serene, enjoyable social space for older adults.

Park accessibility was identified as a critical factor in facilitating social interactions of older adults. While proximity affects visitor choices, internal accessibility is paramount for enabling social interactions. Scott et al. (2007) suggested that abundant leisure activities in popular parks might diminish the perceived impact of distance. Conversely, parks with fewer activities might highlight the importance of proximity. For older adults seeking social engagement, efficient internal accessibility facilitates easier participation in a variety of social activities. This access allows older adults to easily navigate all areas of the park, thereby increasing their opportunities to engage in activities and interact with others. This reduction in physical barriers makes older adults more willing to participate in and enjoy the social opportunities available in the park.

Although numerous studies have emphasized the beneficial influence of aesthetics and safety on park utilization, the current research did not identify a significant correlation between these parameters and social interactions. This discrepancy may arise from differences in research methodologies, geographic

climates, target populations, and cultural backgrounds. Surprisingly, aesthetics did not predict social interactions in this study. This aligns with Onose et al.'s (2020) findings, which pointed out the shortcomings of urban parks in terms of specialized planning or facilities for older adults compared to aesthetic features and the problems older adults face when interacting with other age groups. The study emphasizes that beyond aesthetic factors, the social function of parks is critical for older adults (Onose et al., 2020).

Similarly, although no significant correlation between safety and social interaction was found, this does not diminish its importance. Descriptive statistical analysis revealed that safety had the lowest mean score, suggesting that park safety did not meet older adults' expectations. While not statistically significant, the low score may reflect the fact that respondents' basic expectations of the park environment were already low, or they may have taken self-regulatory measures, such as choosing to visit the park during daytime or crowded hours, in order to avoid situations perceived as unsafe. Issues like poor nighttime lighting might deter older adults due to concerns about falls and safety, discouraging their participation during less illuminated hours. Moreover, fears about crime and injuries, particularly in poorly lit or overgrown areas, may prevail among older adults (Loukaitou-Sideris et al., 2016). Consequently, even if park designs and amenities are conducive to socializing, such as plazas, benches, and shaded areas, older adults might avoid these spaces if they perceive them as unsafe, thus limiting their social engagement.

CONCLUSION

This study highlights the key role of park design in promoting healthy aging through a questionnaire survey. The results demonstrate that park features, conditions, and accessibility significantly influence older adults' social interactions. These findings highlight the potential of park characteristics to foster social interactions of older adults and offer practical insights for urban planners and park managers on enhancing park functions as social spaces. Appropriate design improvements can make parks active centers for physical exercise, social interaction, and cultural exchange for older adults, effectively reducing loneliness and enhancing quality of life. This research emphasizes the need to create inclusive urban parks that promote frequent outdoor social interaction and contribute to healthy aging. Future studies should further explore optimizing these park characteristics to address the challenges of an aging population.

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ETHICAL STATEMENT

This study involved anonymous questionnaires with no collection of personally identifiable information. Informed consent was obtained from all subjects involved in the study.

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