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HISTORIC URBAN GREEN SPACES AND ELDERLY RESILIENCE: INSIGHTS FROM TAIPING LAKE GARDENS A PLACE IN AGEING

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Abstract

Historic urban green spaces play a key role in promoting elderly resilience and active ageing, yet their potential remains underexplored in Malaysia. Taiping Lake Gardens, the nation's oldest public park, offers a unique environment where nature and heritage converge, presenting opportunities to enhance elderly well-being. This study investigates how such spaces, particularly Taiping Lake Gardens, support the physical, mental, and social resilience of the elderly. Adopt a mixed-methods approach, the study explores usage patterns, accessibility, and perceived benefits among elderly visitors. The objectives are: (1) to examine the relationship between the use of historic green spaces and elderly resilience in terms of physical activity, psychological well-being, and social interaction; (2) to assess the accessibility, safety, and inclusivity of Taiping Lake Gardens for active ageing; and (3) to develop design and policy recommendations for elderly-friendly improvements. Findings reveal that the park facilitates daily mobility through walkable paths, supports mental wellness via nostalgic and restorative landscapes, and encourages social interaction in communal spaces. However, barriers such as uneven pathways, limited shaded seating, and safety concerns reduce its effectiveness. The study proposes improvements based on universal design and ageing-friendly policies, including participatory planning and targeted programmes. It offers practical insights for optimising historic green spaces to support healthy and resilient ageing in Malaysia.

Keywords: Elderly Resilience; Active Ageing; Historic Urban Green Spaces; Taiping Lake Gardens; Well-being

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INTRODUCTION

Urban green spaces play a fundamental role in enhancing the well-being of ageing populations by providing opportunities for physical activity, social interaction, and psychological relaxation. As urbanisation intensifies, the preservation and adaptive use of historic parks become increasingly important in maintaining a high quality of life for the elderly. Taiping Lake Gardens, established in 1880, is Malaysia's oldest public park and serves as a unique example of a historic urban green space that seamlessly integrates natural landscapes, cultural heritage, and community engagement.

However, while such spaces are widely recognised for their recreational and ecological values, their specific contributions to elderly resilience and active ageing remain underexplored. Many historic parks have not been systematically assessed for their role in fostering resilience among elderly individuals. Given Malaysia's rapidly ageing population, understanding how Taiping Lake Gardens supports active ageing is essential for informing future planning strategies and policy development. This study aims to evaluate how historic urban green spaces, specifically Taiping Lake Gardens, contribute to the physical, mental, and social resilience of elderly users by assessing their usage patterns, accessibility, and perceived benefits through a mixed-methods approach. To achieve these aims, several key objectives are outlined: (i) to examine the relationship between the use of historic urban green spaces and elderly resilience across physical activity, psychological well-being, and social engagement; (ii) to assess the accessibility, safety, and inclusivity of Taiping Lake Gardens in facilitating active ageing among the elderly; and (iii) to develop strategic design and policy recommendations for improving the role of historic parks in promoting healthy and resilient ageing.

To address these objectives, the research seeks to answer the following questions: (i) How do elderly individuals engage with Taiping Lake Gardens to support their physical, social, and mental well-being (ii) What spatial and environmental characteristics of the park contribute to elderly resilience and active ageing and (iii) What design and policy interventions can enhance the usability and accessibility of Taiping Lake Gardens for the ageing population. By addressing these questions, this study contributes to the broader discourse on urban ageing, landscape resilience, and cultural heritage. It uniquely contributes to the growing body of literature on heritage landscapes and elderly resilience by contextualising these dynamics within Malaysia's urban planning framework. While prior studies have examined green space benefits for ageing populations, few have explored how historic parks such as Taiping Lake Gardens simultaneously serve as heritage assets and therapeutic landscapes. The findings provide planning insights for integrating cultural identity with age-friendly design in Malaysia's urban environments.

LITERATURE REVIEW

The Role of Urban Green Spaces in Elderly Well-Being

Urban green spaces play a pivotal role in enhancing the health and well-being of ageing populations in Perak. Exposure to natural environments has been shown to foster physical activity, reduce stress, and promote social engagement among the elderly. A systematic review by Ali et al. (2020) highlights the significant influence of green space characteristics on the subjective well-being of elderly individuals.

In Malaysia, several studies have examined the psychological and physiological benefits of urban green spaces. Mohammed Shobri (2024) and Mokhtar et al. (2018) found that both Taman Botani Perdana and Jalan Bukit Bintang in Kuala Lumpur contributed positively to the mental health of visitors. Similarly, Sazali et al. (2021) explored the role of urban green open spaces in fostering health resilience among the elderly, emphasising the need for quality environments to support healthy ageing. Service quality also plays a role in elderly engagement and well-being. Research by Sazali et al. (2022) in Penang revealed that satisfaction with park facilities directly influenced the health and lifestyle resilience of the elderly users, suggesting that well-maintained and accessible green spaces encourage active ageing. While existing literature underscores the benefits of green spaces for elderly well-being, limited attention has been given to historic green spaces. Further research is needed to examine how these culturally significant landscapes support cognitive function, mobility, and social interaction. Insights from such studies can inform inclusive urban planning strategies that promote resilience and quality of life among the ageing population.



Figure 1: Nostalgic landscapes in Taiping Lake Gardens strengthen memory and identity, enhancing elderly users' psychological health

Elderly Resilience and Active Ageing

Resilience among the elderly refers to their ability to adapt and maintain well-being despite age-related challenges. Recent research highlights social engagement, physical health, and psychological well-being as essential components of successful ageing. Urban green spaces contribute significantly by offering settings that support outdoor activity, social interaction, and cognitive stimulation. When designed with age-friendly infrastructures, such as accessible paths, adequate seating, and safety measures, these spaces enhance the quality of life for the elderly. In Malaysia, studies have begun exploring the built environment's role in promoting active ageing. Jumadi et al. (2019) examined elderly Muslims' housing environments, revealing the importance of supportive surroundings for physical, social, and psychological well-being. Similarly, Ismail et al. (2023) investigated preferred retirement village features, stressing the need for age-friendly designs tailored to elderly needs. Ali et al. (2020) introduced the Seniors' Outdoor Survey (SOS), an environmental audit tool evaluating green space elements like fascination, being away, extent, and compatibility, which influence attention restoration among the elderly.



Figure 2: Communal spaces promote social interaction, reinforcing social resilience and community bonding

Accessibility and Inclusivity of Public Parks for the Elderly

Accessibility is a critical factor in ensuring that urban green spaces effectively support elderly users. Recent studies have highlighted the importance of designing parks that accommodate diverse mobility needs, including wheelchair-accessible paths, well-maintained walking trails, and shaded seating areas. For instance, Ibrahim et al. (2024) found that natural environments and greenery significantly enhance urban residents' psychological perceptions of walkability that improving visual quality, thermal comfort, safety, and perceived walking

distance. These factors collectively promote walking accessibility, underscoring the crucial role of green spaces in urban planning and public health.

In the Malaysian context, several studies have highlighted the accessibility challenges faced by the elderly in urban environments. Wazani et al. (2021), for example, investigated mobility issues in George Town, Penang, and found that narrow sidewalks, uneven surfaces, and physical barriers on pathways obstruct safe and easy movement. Although the study focused on persons with disabilities, the findings are equally applicable to the elderly population, who often encounter similar challenges when navigating outdoor spaces. In the case of Taiping Lake Gardens, evaluating these accessibility elements provides valuable insight into whether the park meets the needs of its ageing visitors. Improving infrastructure to include age-friendly features, such as flat, unobstructed walkways, sufficient rest areas, and clear safety signage, can significantly enhance the elderly's park experience (Jing and Misni, 2024). Ultimately, ensuring physical accessibility in urban green spaces contributes to healthier, more inclusive environments that support active and resilient ageing in Malaysia.



Figure 3: Featuring mature trees and lakeside seating in Taiping Lake Garden are ideal for rest breaks, promoting comfort and prolonged outdoor engagement for the elderly

Cultural and Emotional Significance of Historic Green Spaces

Historic urban green spaces are vital cultural landscapes that offer ecological, recreational, and symbolic value—particularly for elderly populations. These spaces often carry layers of collective memory, intergenerational attachment, and place identity, which contribute significantly to the emotional resilience and mental well-being of the elderly (Wang, 2024; Ruchi & Kumar, 2024). However, in Malaysia, the cultural and emotional potential of these spaces remains largely underexplored and underutilised in both policy and design.

Taiping Lake Gardens, as the oldest public park in the country, exemplifies these challenges. Despite its heritage status, it suffers from insufficient maintenance, inaccessible infrastructure, and a lack of age-friendly amenities. These reflect broader national issues, such as weak heritage protection policies, fragmented management, and a disconnect between planning and cultural values. Studies in Malaysia (Mohd Yusof & Mat Yasin, 2024) and globally (Bell et al., 2014; Tanikaga et al., 2021) highlight how neglect or insensitive interventions can lead to the erosion of social and historical functions in historic gardens. Yan et al. (2023) and Yan & Geng (2024) emphasise that the elderly often form deep emotional bonds with landscapes tied to formative life experiences. When poorly managed, these spaces risk becoming irrelevant or inaccessible, undermining their restorative potential.

International case studies from Japan and the UK demonstrate how heritage gardens, when well-preserved and inclusively designed, can act as therapeutic landscapes, supporting memory recall, emotional reflection, and healthy ageing. To date, such integration is limited in Malaysia. Thus, Taiping Lake Gardens presents a critical opportunity to reimagine historic landscapes not just as preserved relics, but as adaptive, inclusive spaces that address the evolving emotional and social needs of ageing populations.

Research Gap and Theoretical Framework: Bronfenbrenner's Social-Ecological Theory

While numerous studies have explored the benefits of urban green spaces for elderly populations, there remains a paucity of research specifically examining the role of historic green spaces in fostering elderly resilience within the Malaysian context. Much of the existing literature tends to focus on generic urban parks, often overlooking culturally and historically significant landscapes such as Taiping Lake Gardens (Mohd Yusof & Mat Yasin, 2024). As one of the oldest public gardens in Malaysia, Taiping Lake Gardens embodies not only ecological value but also deep socio-cultural meaning that may influence elderly users' sense of place, identity, and well-being.

Recent research highlights the importance of integrating natural environments into age-friendly strategies and retirement care settings. For instance, Ali et al. (2022) investigated elderly preferences and requirements for green garden spaces at RSK Taiping, Perak, and revealed the role of therapeutic landscapes in promoting active ageing and enhancing quality of life. Similarly, Mohammed Shobri (2024) highlighted the mental health benefits of urban parks, advocating for designs that are responsive to the cognitive and emotional needs of elderly users. Despite these insights, there remains a research gap in understanding how the interaction between elderly individuals and historically meaningful green spaces supports resilience, defined as the capacity to adapt and maintain well-being amidst physical, social, and psychological changes.

associated with ageing. To address this gap, the present study adopts Bronfenbrenner's Theory (1979) as its guiding theoretical framework. This model provides a comprehensive lens to examine how multiple layers of environmental systems, from immediate settings such as home and park (microsystem), to community networks (mesosystem), policy and planning frameworks (exosystem), and broader cultural values (macrosystem); influence the experiences and resilience of the elderly. By situating elderly individuals within this multi-layered ecological system, the framework enables a nuanced understanding of how personal, social, and environmental interactions converge to shape elderly well-being in historic urban green spaces. Specifically, the study will explore how features of Taiping Lake Gardens support physical activity, social engagement, emotional connection, and place attachment, thereby contributing to a more resilient ageing process.

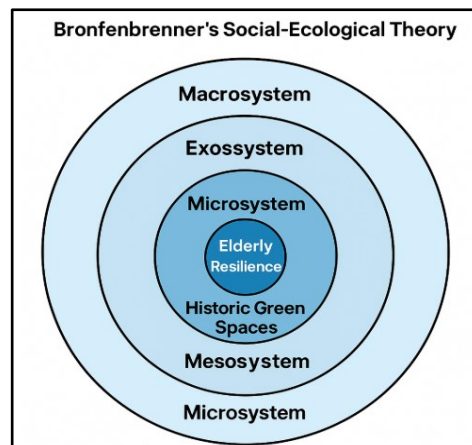


Figure 4: Theoretical Framework of Bronfenbrenner's Social-Ecological Theory to Elderly Resilience in Historic Green Spaces

Integrating perspectives from environmental psychology, social gerontology, and landscape architecture, this research contributes to the development of age-inclusive green space design and planning. It also aims to inform policies that support ageing in place through the preservation and enhancement of culturally significant urban landscapes.

METHODOLOGY

Research Design

This research has adopted a mixed-methods approach, integrating both quantitative and qualitative data collection techniques. Quantitative data were gathered through structured surveys distributed to elderly individuals (aged 55 and above) who frequent Taiping Lake Gardens. The survey aimed to capture

patterns of engagement, perceived benefits, and environmental preferences. Simultaneously, qualitative observations were conducted on-site to document behavioural patterns, spatial interactions, and environmental qualities experienced by elderly users. This dual approach will ensure a comprehensive understanding of how elderly visitors engage with the park, what environmental features contribute to their resilience, and what gaps exist in terms of inclusive and age-sensitive design. However, the study acknowledges certain limitations, including the reliance on self-reported data, which may be subject to bias, and the site-specific nature of the research, which may limit the generalisability of findings to other historic urban green spaces.

Site Study

Taiping Lake Gardens, established in the 1880s, is Malaysia's first public park, renowned for its scenic landscapes, colonial heritage, and mature rain trees. Located in the heart of Taiping, Perak, it serves as a vital urban green space for local communities, especially the elderly. Its tranquil environment, accessibility, and cultural significance make it an ideal case study for examining how historic urban parks can support elderly well-being, resilience, and active ageing through daily interaction, emotional attachment, and inclusive environmental features.



Figure 5: The Base Map of Taiping Lake Garden

Source: <https://www.mptaiping.gov.my/index.php/en/taiping-heritage-trail>

Sampling Criteria and Sample Size

Participants were selected based on specific criteria to ensure relevance to the study objectives. Firstly, all participants were required to be aged 55 years and above. Secondly, they had to be regular visitors to Taiping Lake Gardens, with a minimum visitation frequency of once per week. Lastly, participants needed to be both willing and able to respond to the survey questions to ensure meaningful and reliable data collection. A purposive sampling method was employed to

identify respondents who met these criteria. A total of 50 elderly respondents participated in the survey, providing adequate data for descriptive statistical analysis. In addition, systematic on-site observations were conducted over one week, covering both weekdays and weekends, to capture variations in park usage patterns and user behaviour. While the use of purposive sampling and a relatively small sample size ($n = 50$) limits the generalisability of the findings beyond the Taiping Lake Gardens context, this approach was appropriate for exploratory research focusing on a specific demographic group within a defined setting. Future studies employing larger and randomised samples across multiple heritage parks are recommended to enhance representativeness and strengthen the validity of comparative analyses.

This research was conducted in accordance with established ethical guidelines for studies involving human participants. All respondents were clearly informed of the study's objectives and procedures, and their participation was entirely voluntary. Informed consent was obtained before data collection, and all responses were treated with strict confidentiality and used solely for academic purposes.

Conceptual Framework

Guided by three complementary theories, Person–Person–Environment Fit Theory, Place Attachment Theory, and Social Ecology Theory, the research framework posits that elderly resilience is shaped by a dynamic interplay of physical, emotional, and socio-environmental factors. The framework comprises of three interrelated domains: (i) User Engagement: Investigates the frequency of visits, types of activities performed, and perceived health and emotional benefits; (ii) Environmental Attributes: Examines the spatial and sensory characteristics of the park such as comfort, accessibility, natural features, and heritage value; and how they influence resilience and active ageing; and (iii) Design and Policy Implications: Identifies barriers to accessibility and usability and proposes strategic interventions for improving inclusivity and well-being outcomes. This framework (see Figure 6) illustrates how elderly individuals' well-being is supported through fit with the environment, emotional bonds to meaningful places, and social context, reinforcing the importance of designing with both human and ecological systems in mind.

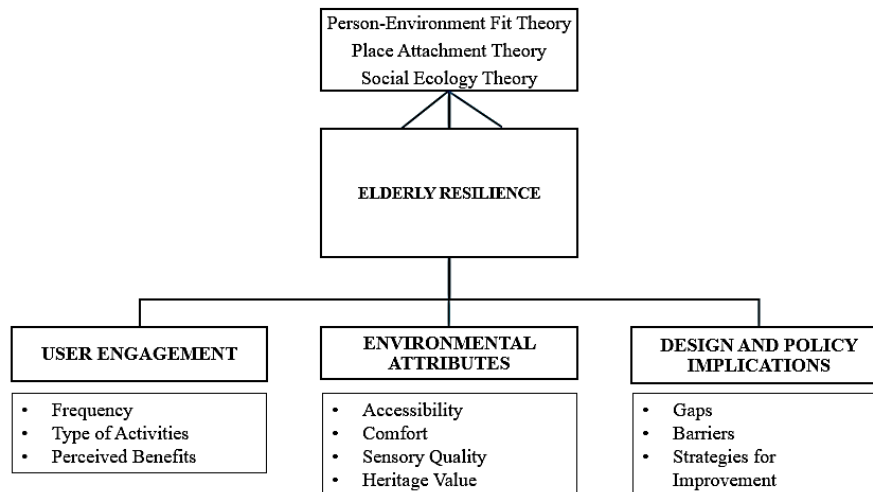


Figure 6: The Conceptual Framework for Elderly Resilience

FINDING & DISCUSSION

Elderly Engagement with Taiping Lake Gardens

The SPSS analysis reveals that 78% of respondents were aged 55 and above, affirming Taiping Lake Gardens' role as a significant public space for the elderly in Taiping. Notably, 62% of the respondents have reported that they visit the park daily, while 28% did so weekly (refer to Table 2), indicating that the park is deeply embedded in the everyday lives of the elderly. The most common activities included walking (65%), socialising (48%), and relaxing or meditating (42%), reflecting a strong relationship between routine park engagement and elderly well-being across physical, social, and mental domains. These patterns align with Objective 1, which examines how elderly users engage with the park to support resilience and healthy ageing.

Importantly, this level of engagement is not merely functional but symbolic. As Taiping is one of Malaysia's oldest towns, many elderly respondents have longstanding personal histories linked to the city and its landscapes. The continuity of place and memory, especially among lifelong residents, strengthens their attachment to Taiping Lake Gardens as a space of familiarity, identity, and emotional security. This connection underscores the relationship between the age of the user and the historic city, highlighting how the elderly uniquely value and benefit from heritage environments.

Gender distribution (55% female) supports Wang (2024), who observed that elderly women tend to seek green spaces for emotional support and communal interaction. Additionally, the fact that 72% of respondents live within a 5 km radius highlights the importance of accessibility in sustaining routine park

use, as also discussed by Sugiyama et al. (2008, 2018). These findings are consistent with the Person–Environment Fit Theory (Zhang et al., 2024), which posits that congruence between users’ capabilities and environmental attributes fosters positive health outcomes. With its walkable paths, tranquil settings, and cultural familiarity, Taiping Lake Gardens provides an age-appropriate environment that supports autonomy, mobility, and social engagement—critical components of elderly resilience in a historic urban context.

Environmental Attributes and Elderly Resilience

While a full psychometric analysis awaits future research, the current SPSS results and qualitative observations offer meaningful insights into how environmental features of Taiping Lake Gardens support elderly resilience. These findings directly address objective 2, which seeks to identify the key environmental attributes that foster well-being among the elderly park users. Respondents identified several valued features: a) shaded walkways and seating were appreciated by 70% of respondents, enhancing physical comfort during walks and rest; b) heritage trees and scenic beauty, noted by 63%, evoked a sense of nostalgia and pride in local history; and c) cleanliness and perceived safety, mentioned by 58%, contributed to a peaceful and reassuring environment (*refer to Table 2*).

These responses strongly reflect Place Attachment Theory, which posits that emotional connections to meaningful and familiar environments reinforce personal identity and psychological stability (Lewicka, 2011). The colonial-era landscape elements, mature tree canopies, and historic layout of Taiping Lake Gardens contribute to this sense of rootedness and continuity, an especially crucial factors for elderly individuals facing life transitions such as retirement, bereavement, or social isolation (Julaihi et al., 2022). Further, these findings are also grounded in Social Ecology Theory (Bronfenbrenner, 1979), which recognises the dynamic interplay between individuals, their social systems, and the built environment. The park functions not just as a backdrop for leisure but as a social ecosystem, where communal activities such as routine morning walks, family picnics, and casual peer interactions, reinforce social ties and support networks. Such interactions help the elderly maintain a sense of inclusion, agency, and emotional strength (Ruchi, 2024).

In summary, the environmental characteristics of Taiping Lake Gardens are not merely aesthetic but are deeply functional in sustaining emotional well-being and social connection. These attributes form the environmental scaffolding necessary for elderly resilience, illustrating the significance of maintaining historic, accessible, and emotionally meaningful green spaces within urban contexts.

Design and Policy Recommendations for Age-Friendly Interventions

In addressing objective 3, field observations and qualitative feedback from elderly respondents revealed several design-related limitations that hinder full and equitable use of Taiping Lake Gardens. These include uneven and slippery pathways, limited availability of shaded seating, inadequate lighting during early morning and evening hours, and insufficient signage that is legible for ageing eyes. These design gaps highlight the need to apply universal design principles, which emphasise accessibility, inclusivity, and safety across all age groups and abilities. Key recommendations include (Refer to Table 1):

Table 1: Key Recommendations for Age-Friendly Interventions

Recommendation	Rationale
Non-slip, even walking paths	Reduces fall risk, enhances safety
Resting points every 50–100 metres	Supports physical endurance
Shaded seating and readable signage	Enhances comfort and wayfinding
Elder-friendly exercise and interaction areas	Promotes active ageing and memory reinforcement

These physical upgrades should be supported by policy interventions that embed ageing-in-place principles into local planning strategies. This includes conducting periodic participatory environmental audits involving elderly users to assess usability and gather feedback on park infrastructure and services. Additionally, intergenerational programmes, such as storytelling walks or memory-sharing circles, can be implemented to foster social inclusion and community cohesion. These initiatives encourage knowledge exchange, foster empathy between generations, and reinforce the emotional significance of place for elderly participants (refer to Table 2). By embedding such practices into planning and maintenance strategies, local authorities can ensure that parks remain relevant, restorative, and inclusive spaces that promote healthy ageing and resilience across generations.

Table 2: Summary of Key Findings from Elderly Engagement at Taiping Lake Gardens

Category	Item	Details / Percentage (%)	Implication / Recommendation
Visitation Patterns	Age of Respondents	78% aged 55 and above	Confirms primary elderly user base
	Frequency of Visits	62% daily, 28% weekly	Indicates high dependency and integration into daily routines
	Proximity to Park	72% live within 5 km	Highlights the importance of accessibility for the elderly

Category	Item	Details / Percentage (%)		Implication / Recommendation
Environmental Attributes	Gender Breakdown	55% female		Consistent with studies showing that elderly women seek communal green spaces
	Main Activities	65% walking, 48% socialising, 42% relaxing		Demonstrates multidimensional health benefits (physical, mental, social)
	Shaded Seating & Walkways	70%		Supports comfort and thermal protection
	Heritage & Scenic Quality	63%		Tied to place attachment and emotional resilience
Design & Policy Recommendations	Clean & Safe Environment	58%		Critical for the elderly to feel secure and relaxed
	Common Barriers	Uneven paths, limited shade, poor lighting, weak signage		Identified through field observation and aligned with age-friendly principles
	Design Solutions	Flat walkways, rest stops, shaded seats, clear signage		Align with universal design & WHO age-friendly city guidelines
	Policy Actions	Community audits, ageing-in-place policy, and intergenerational events		Enhance inclusion and park co-ownership by the elderly

The recommendations are aligned with the Age-Friendly Cities Framework, which advocates for public spaces that support active ageing through accessibility, safety, and social participation. Moreover, incorporating heritage-sensitive design ensures that Taiping Lake Gardens retains its historical character while evolving to meet the diverse needs of its users. By bridging environmental design with inclusive policy, these interventions ensure that the park continues to serve not only as a recreational space but as a platform for resilience-building, intergenerational exchange, and ageing with dignity. While the current study focuses primarily on descriptive analysis to capture behavioural and perceptual patterns, future research could incorporate inferential statistical tests (e.g., chi-square or t-tests) to strengthen the interpretation of correlations between demographic factors and elderly resilience indicators.

CONCLUSION

This study set out to evaluate the role of Taiping Lake Gardens as a historic urban green space in supporting elderly resilience within the context of an ageing Malaysian society. Through a mixed-methods approach, the research

demonstrated that the park serves not only as a recreational environment but also as a living cultural landscape, deeply embedded in the daily routines and emotional lives of the elderly. Findings revealed that 82% of respondents experienced improved mood and reduced stress after park visits, 76% engaged in regular physical activity, and 68% expressed a strong emotional attachment linked to personal and collective memories. Observational data reinforced these outcomes, with frequent social interactions observed in accessible, shaded areas.

By integrating the Person–Environment Fit Theory, Place Attachment, and Bronfenbrenner’s Social-Ecological Theory, this study provides a comprehensive framework for understanding the intersection of environment, ageing, and heritage. It contributes to both landscape architecture and gerontology by highlighting the unique role of historic green spaces in promoting holistic well-being among the elderly. To improve the situation, the research recommends that planners and policymakers prioritise:

- (1) age-friendly infrastructure,
- (2) inclusive programmes tailored to senior needs, and
- (3) participatory planning approaches that involve the elderly users directly.

Future research could explore comparative studies across multiple heritage parks, the longitudinal impact of historic landscapes on cognitive health, and the integration of digital technologies (e.g., smart benches, AR interpretation tools) to further enhance engagement. In summary, this research offers a distinctive contribution to heritage landscape studies by situating elderly resilience within Malaysia’s socio-cultural and planning context. By bridging environmental gerontology with heritage conservation, it advances a context-sensitive model for planning inclusive and restorative historic green spaces. Taiping Lake Gardens, in this light, provides a tested and transferable model for designing therapeutic and culturally grounded environments that respond to demographic change while preserving collective memory and identity.

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