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THE RELATIONSHIP BETWEEN STREETScape QUALITY AND PLACE ATTACHMENT IN THE HISTORIC TOURIST CITY, CHINA

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Abstract

Streetscape quality is crucial for fostering residents' place attachment. The research explores the influence of perceived streetscape quality on residents' place attachment. Streetscape quality contains four dimensions: safety, comfort, walkability, and imageability. Place attachment includes place identity and place dependence. A total of 428 valid questionnaires were collected from residents in Zhengding Ancient City, China. The data were analysed using structural equation modelling (SEM). The results indicate that different dimensions of streetscape quality have differential effects on place identity and place dependence. Comfort and imageability positively impact place identity. Safety, comfort and walkability positively influence place dependence. These results provide valuable guidance for local governments to enhance streetscape quality.

Keywords: Streetscape Quality, Place Attachment, Historic Tourist City

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INTRODUCTION

Place attachment (PA) refers to the emotional bond that people develop with a place (Castro et al., 2023). It plays an important role in shaping residents' attitudes toward spatial changes and urban development (Darabaneanu et al., 2024). The success of urban planning and governance initiatives often depends on residents' acceptance of spatial changes and their willingness to participate in maintaining local environments. In this sense, PA can serve as an important link between spatial policies and residents' behavioural responses.

Many historic cities have encouraged tourism to preserve cultural heritage and strengthen local economies (Kholis & Nugroho, 2023). As tourism expands, historic streets, as the main public spaces, accommodate visitors' activities and residents' everyday lives. Tourism development often reshapes streets through changes in land use, commercial activities, and spatial organisation, which may alter how residents use and experience street spaces.

As shown in Figure 1, residents previously used the street for daily activities such as shopping and social interaction, and leisure. However, these activities have declined after tourism development. The street has become quieter outside peak tourist periods. This suggests that the relationship between residents and the street is changing, making it important to understand how streetscape quality (SQ) influences residents' PA.



Figure 1: Changes in Residents' Street Use after Tourism Development
 Source: Author

Previous research has examined a range of factors influencing PA, grouped into three categories: social, demographic, and physical (Lewicka, 2010). Social factors, such as social ties and community interaction, are associated with stronger emotional connections to place (Novotný et al., 2026). Demographic characteristics, including length of residence, age, homeownership,

community size, and socioeconomic status, also influence PA (Pacheco, 2025; Casakin et al., 2015). Physical environmental factors, such as spatial quality and urban features, affect people's experience and evaluation of their environments (Akoz & Ulusoy, 2025; Latip et al., 2023).

Despite these advances, limited research has examined the role of SQ in shaping PA (Lewicka, 2010). Most existing studies focus on neighbourhood characteristics or general urban environments, while relatively few examine streetscape directly. This gap is particularly evident in historic tourist areas, where tourism development changes the physical environment of streets. Moreover, the concept of SQ remains unclear, and a clear framework for understanding its dimensions and their influence on PA is still lacking. These limitations make it difficult to understand how changes in streetscape affect residents' emotional connections to place.

To address this gap, this study conceptualises SQ through four key dimensions: safety, comfort, walkability, and imageability. Based on place attachment theory, a model was developed to examine the effects of perceived SQ on PA. By examining residents' perceptions in a historic tourist city in China, this study provides new insights into the relationship between streetscape and PA in tourism contexts. It also contributes to theory and offers practical guidance for streetscape planning and management.

LITERATURE REVIEW

Streetscape Quality (SQ)

SQ refers to people's perception and evaluation of street environments. These perceptions are influenced by surrounding physical elements such as buildings, sidewalks, vegetation, and street facilities. Previous studies used different attributes to describe streetscapes, and no single framework has been widely accepted (Fidelista et al., 2025). However, safety, imageability, walkability, and comfort are among the attributes most frequently discussed in studies of streetscape perception (Abass & Tucker, 2021; Fu et al., 2024).

These attributes are also supported by research in urban design and environmental perception. Urban design studies show that people's experience of streets is influenced by safety conditions, pedestrian accessibility, environmental comfort, and the visual character of urban spaces (Harvey et al., 2015). Research on environmental perception also shows that visual and spatial features influence how people perceive urban environments (Qiu et al., 2021). These studies indicate that safety, walkability, comfort, and imageability are important elements in people's experience of streets.

These attributes are especially relevant in historic tourist areas. Tourism development often changes street functions, pedestrian activities, and the visual appearance of streets. Such changes affect residents' daily use and experience of

street spaces. In this context, safety, walkability, comfort, and imageability are key aspects through which residents perceive changes in the street environment. Therefore, this study adopts these four dimensions to examine residents' perceived SQ in a historic tourist city.

Safety refers to the perceived risk of crime and public disorder (Jansson, 2019). Comfort is individuals' subjective evaluation of physical and psychological conditions (Yuhan et al., 2021). Walkability refers to the ease of movement along a street. Imageability is the quality of being distinct, recognisable, and memorable (Ewing & Handy, 2009).

Place Attachment (PA)

PA refers to the emotional bonds that individuals form with particular places (Williams & Roggenbuck, 1989). Humanistic geographers and sociologists have shown increasing interest in the relationship between people and place (Huang et al., 2025; Hoff & Løvoll, 2026). PA consists of three psychological components: affective, cognitive, and behavioural, which lead individuals or groups to develop attachment to a place (Low & Altman, 1992; Nguyen-Viet & Nguyen, 2026). Among these, the emotional component is the most commonly assessed (Chen & Dwyer, 2018).

Numerous researchers regard PA as a complex, multidimensional concept, although there remains no consensus on the exact dimensions involved (Soonsan & Somkai, 2023). Several theoretical approaches conceptualise PA as having one, two, three, or more dimensions (Castro et al., 2023; Chen & Dwyer, 2018). Among them, the bi-dimensional framework is the most widely used in tourism research. It has been validated and supported by empirical studies.

In the present research, PA was measured using two dimensions: place dependence (PD) and place identity (PI). PD reflects how well a location meets users' needs and goals (Khaidzir & Kamal, 2023). It is reflected in the physical features that support functional attachment, such as architecture, neighbourhoods, and local culture, which make a place distinct from others. PI refers to the symbolic significance of a place as a source of emotional attachment, which can make people's lives meaningful and support their sense of purpose (Ali et al., 2022).

Streetscape Quality and Place Attachment

PA develops progressively as individuals engage with their surrounding environment. Among public spaces, streets are the most frequently used by residents. They affect environmental experiences. SQ not only determines how people interact with these spaces, but also influences their emotional bonds with them. Thus, SQ provides a basis for strengthening users' PA.

SQ has a significant impact on residents' psychological states (Pereira et al., 2024). A well-designed streetscape can enhance residents' comfort during routine activities. This helps residents develop positive emotions. Emotional experiences form the basis for residents' PA. Previous studies suggest that better SQ encourages residents to use these spaces more actively. This can increase residents' frequency of use and length of stay. As a result, residents become more familiar with the street and develop functional dependence on it.

Research on the relationship between various dimensions of SQ and residents' PA remains limited. The existing literature suggests that perceived safety is a prerequisite for residents to walk and interact in public spaces (Khemri et al., 2020). Safety positively influences residents' emotional bonds with a space (Wei et al., 2025). Public spaces with comfortable microclimates and accessible resting areas can enhance users' positive feelings during activities in these spaces (Alsadun, 2019). Greater preference for a space is associated with stronger emotional attachment (Chen et al., 2020). Street walkability affects residents' frequency of use, and higher walkability increases their reliance on street functions (Eng & McCormack, 2025). Moreover, distinct and recognisable spaces contribute to users' emotional experiences (Zhang et al., 2024). Thus, the following hypotheses are proposed:

- H1: Safety positively influences PI.
- H2: Safety positively influences PD.
- H3: Comfort positively influences PI.
- H4: Comfort positively influences PD.
- H5: Walkability positively influences PI.
- H6: Walkability positively influences PD.
- H7: Imageability positively influences PI.
- H8: Imageability positively influences PD.

The research model of this study is shown in Figure 2.

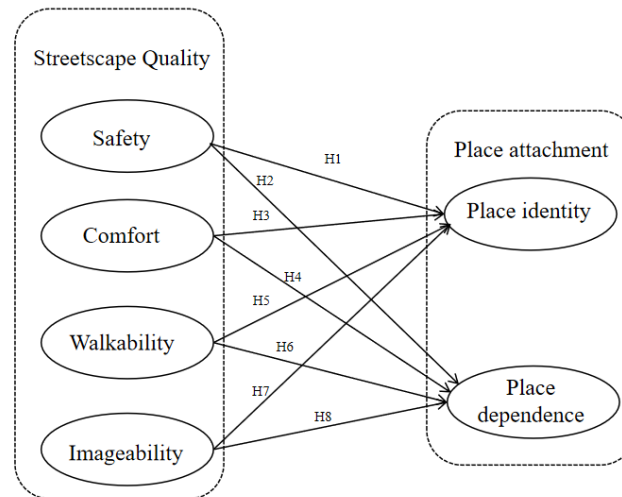


Figure 2: The Research Model
 Source: Author

METHODOLOGY

Study Area

This research was conducted in Zhengding Ancient City. It is located in Zhengding County in the northern part of Shijiazhuang City, as shown in Figure 3. It is a nationally designated historic city. There are nine main streets in Zhengding (see Figure 4). The overall urban pattern follows a double-cross axis structure, and Yanzhao South Street lies along this axis (see Figure 5). Figure 6 shows the historical landscape conservation area of Zhengding Ancient City. Among the nine main streets, Yanzhao South Street is the only one located both along the urban axis and within the historical conservation area (see Figure 7).



Figure 3: Location Map
Source: Author

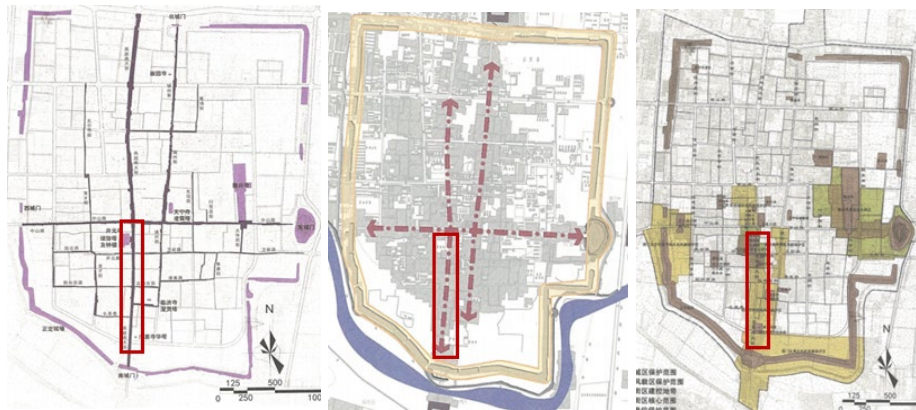


Figure 4: Main Streets Figure 5: Urban Axis Figure 6: Historic Reserve
Source of Figure 4-6: Adapted from Nichun (2016)

Street	Zhen Zhou	Zhong Shan	Yan Zhao	Dong Yuan	Dasi Qian	Wei Qian	Yang He	Kai Yuan	Zhao Yun
Historic Streets	√	√	√	√	√	×	√	√	√
Axis	√	√	√	×	×	×	×	×	×
Protection Area	×	×	√	×	√	×	×	×	×

Figure 7: Selection of Yanzhao South Street as the Study Site
Source: Author

Following tourism development in 2013, Yanzhao South Street underwent major changes in its physical environment (Figure 8). Building façades were restored, street lighting and tourist facilities were upgraded, roadside parking was restricted, and the street layout for pedestrians and vehicles was reorganised. These changes created the physical setting in which residents experience and evaluate the current SQ.



Figure 8: Yanzhao South Street before Tourism Redevelopment (left) and after Tourism Redevelopment (right)

Source: Local government archives (left) and photograph by the author (right)

Sample and Design

Because this study examined residents' perceptions of SQ in a tourism development context, purposive sampling was used to select residents who were familiar with the street and had experienced its transformation over time. Since Yanzhao South Street was developed for tourism in 2013, this research focused on residents aged 30 years or above who had lived on Yanzhao South Street or in the surrounding residential communities for at least 15 years. These criteria were adopted to ensure that participants had sufficient knowledge of the street environment to provide informed evaluations of current SQ (Eisenhart et al., 2019).

The questionnaires were distributed in person in Yanzhao South Street and the surrounding residential communities. It included two sections. The first one collected demographic information. The second one contained items measuring perceptions of SQ and PA.

The questionnaire was adapted from existing scales reported in previous studies and modified for the context of historic tourist streets. The measurement items for SQ were drawn from previous research on streetscape perception (Kyle et al., 2004; Lalicic & Garaus, 2022). The PA items were based on established scales (Williams & Roggenbuck, 1989). All items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). This survey received a total of 451 responses. Questionnaires with

incomplete responses or identical answers were removed. 428 valid responses were retained for analysis.

Data Analysis

The researchers first used SPSS to analyse the respondents' demographic characteristics. The measurement and structural models were then examined using SmartPLS. Gender, age, and length of residence were included as control variables in the structural model to account for potential demographic differences among residents.

RESULTS

Sampling Profile

Table 1 shows the demographic information. Among them, 238 were male (55.61%), and 190 were female (44.39%). By age, participants aged 31-40 years constituted the largest group (43.22%). It was followed by those aged 41-50 (32.71%) and 51-60 (17.06%). Moreover, most participants had lived in the area for more than 25 years (61.92%).

Table 1: Demographic Information of the Participants

		Number	%
Gender	Male	238	55.61
	Female	190	44.39
Age	31-40 y	185	43.22
	41-50 y	140	32.71
	51-60 y	73	17.06
	above 60 years old	30	7.01
Years of Residence	15-20 y	58	13.55
	21-25 y	105	24.53
	> 25 years	265	61.92
Total		428	100

Source: Author's Calculation

Measurement Model

This study tested the reliability and validity of the measurement model. As shown in Table 2, the values of Cronbach's alpha, composite reliability (CR), factor loadings, and average variance extracted (AVE) exceeded 0.7, 0.7, 0.6, and 0.5, respectively. This indicates that the measurement model has satisfactory internal consistency and convergent validity (Sekaran & Bougie, 2010; Nunnally & Bernstein, 1994; Fornell & Larcker, 1981). The research employed the Fornell-Larcker criterion and the heterotrait-monotrait (HTMT) ratio to examine discriminant validity. The square root of AVE for each construct was higher than its corresponding correlation coefficient (Table 3). Moreover, all HTMT values

were below 0.85 (Table 4). These findings indicate that the discriminant validity of the model is acceptable.

Table 2: Results of Reliability and Convergent Validity Analysis

Construct	Items	Factor Loadings	α	CR	AVE
SA	SA1	.804	.917	.934	.669
	SA2	.813			
	SA3	.803			
	SA4	.824			
	SA5	.797			
	SA6	.878			
	SA7	.803			
CO	CO1	.874	.878	.912	.674
	CO2	.830			
	CO3	.845			
	CO4	.813			
	CO5	.737			
WA	WA1	.854	.828	.886	.661
	WA2	.786			
	WA3	.873			
	WA4	.732			
IM	IM1	.862	.891	.925	.754
	IM2	.882			
	IM3	.889			
	IM4	.839			
PD	PD1	.805	.882	.911	.629
	PD2	.821			
	PD3	.741			
	PD4	.793			
	PD5	.797			
	PD6	.801			
PI	PI1	.824	.864	.907	.710
	PI2	.841			
	PI3	.883			
	PI4	.821			

Note: SA=safety, CO=comfort, WA=walkability, IM=imageability, PD=place dependence, PI=place identity
 Source: Author's Calculation

Table 3: Discriminant Validity Using the Fornell-Larcker Criterion

Constructs	CO	IM	PI	PD	SA	WA
CO	.821					
IM	.402**	.868				
PI	.576**	.558**	.843			
PD	.563**	.458**	.452**	.793		
SA	.469**	.553**	.427**	.581**	.818	
WA	.401**	.380**	.303**	.545**	.365**	.813

Note: SA=safety, CO=comfort, WA=walkability, IM=imageability, PD=place dependence, PI=place identity
 Source: Author's Calculation

Table 4: Discriminant Validity Using the HTMT Ratio

Constructs	CO	IM	PI	PD	SA	WA
CO						
IM	.455					
PI	.660	.633				
PD	.638	.515	.514			
SA	.520	.610	.477	.644		
WA	.467	.438	.353	.635	.413	

Note: SA=safety, CO=comfort, WA=walkability, IM=imageability, PD=place dependence, PI=place identity
Source: Author's Calculation

Structural Model

The study examined the explanatory and predictive power of the structural model (Table 5). The R^2 values for PI and PD were 0.460 and 0.527, both exceeding the recommended threshold of 0.33. This indicates that the model has acceptable explanatory power (Chin, 1998). The Q^2 values of these two endogenous latent variables were 0.316 and 0.325, both above zero. This suggests that the model has meaningful predictive capability (Henseler et al., 2009).

Table 5: R^2 , R^2 Adjusted, and Q^2

	R^2	R^2 Adjusted	Q^2
PI	0.460	0.451	0.316
PD	0.527	0.519	0.325

Note: PD=place dependence, PI=place identity

Source: Author's Calculation

Collinearity among the predictor constructs was assessed using inner variance inflation factor (VIF) values. All inner VIF values ranged from 1.003 to 1.633, which were below the recommended threshold of 3.3, indicating that multicollinearity was not a concern in the structural model (Hair et al., 2022). The structural model showed an SRMR value of 0.042, which was below the recommended threshold of 0.08, indicating acceptable model fit (Hair et al., 2022).

Gender, age, and length of residence were included as control variables in the structural model. As shown in Table 6, none of these variables showed significant effects on PI or PD. The inclusion of the control variables did not materially change the structural relationships, the R^2 values, or the Q^2 values, indicating that the model remained robust after accounting for demographic characteristics.

Table 6: Effects of Control Variables on Place Attachment

Path	β	t-Value	p-Value
Gender -> PI	-.024	.346	.729
Gender -> PD	.063	.924	.355
Age -> PI	-.021	.603	.546
Age -> PD	.004	.107	.914
Length of Residence -> PI	-.007	.208	.835
Length of Residence -> PD	.023	.766	.444

Source: Author's Calculation

Table 7 shows the results of the hypothesis tests. Safety had no significant effect on PI ($\beta = 0.026$, $p = 0.652$). H1 was rejected. Safety exhibited a significant positive effect on PD ($\beta = 0.308$, $p < 0.001$), supporting H2. Comfort was positively and significantly associated with both PI ($\beta = 0.418$, $p < 0.001$) and PD ($\beta = 0.273$, $p < 0.001$), supporting H3 and H4. Additionally, walkability had a significant effect on PD ($\beta = 0.299$, $p < 0.001$), while imageability significantly influenced PI ($\beta = 0.383$, $p < 0.001$), supporting H6 and H7. Conversely, no significant associations were found between walkability and PI ($\beta = 0.020$, $p = 0.676$) or between imageability and PD ($\beta = 0.064$, $p = 0.135$), leading to the rejection of H5 and H8. The overall structural model is illustrated in Figure 8.

Table 7: Hypotheses Testing

Hypotheses	Hypothesized path	β	t^2	t-Value	p-Value	Result
H1	SA -> PI	.026	.001	0.457	.647	Reject
H2	SA -> PD	.307	.122	5.972	.000	Support
H3	CO -> PI	.417	.227	7.364	.000	Support
H4	CO -> PD	.274	.112	5.412	.000	Support
H5	WA -> PI	-.021	.001	0.425	.671	Reject
H6	WA -> PD	.298	.145	5.993	.000	Support
H7	IM -> PI	.384	.175	6.736	.000	Support
H8	IM -> PD	.065	.006	1.539	.124	Reject

Note: SA=safety, CO=comfort, WA=walkability, IM=imageability, PD=place dependence, PI=place identity

Source: Author's Calculation

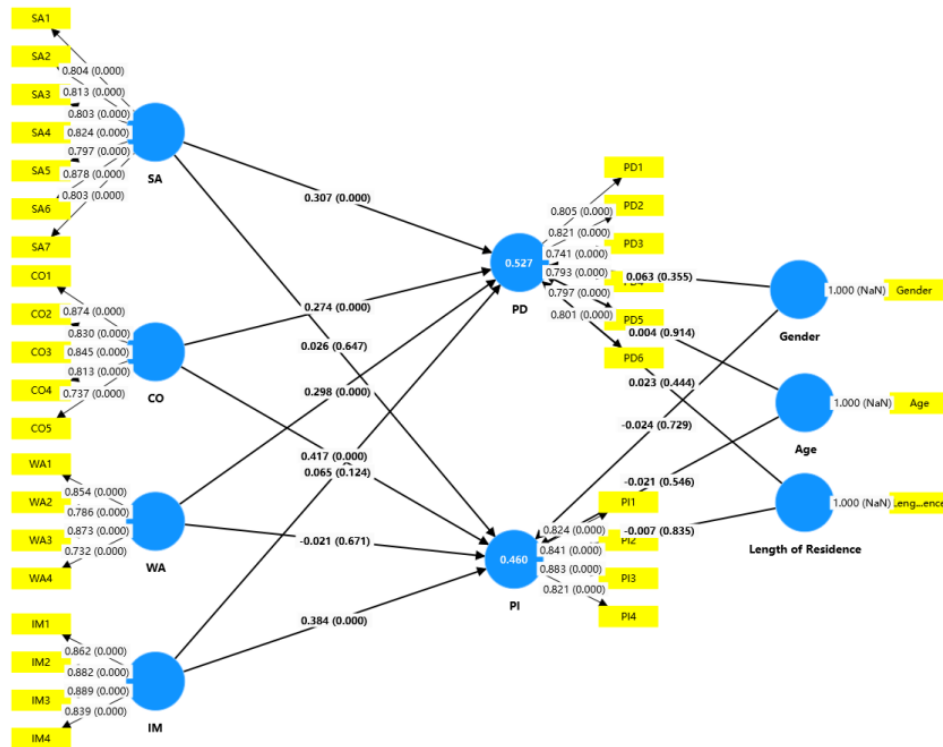


Figure 8: Structural Model Results
Source: Author

DISCUSSION

The research explores the influence of various dimensions of SQ on residents' PI and PD, drawing on place attachment theory. These findings show that different streetscape attributes affect the two components of PA in distinct ways.

The results show no significant relationship between safety and PI. A possible reason is that safety is often seen as a basic condition for using public space. When a place is considered safe enough, residents may take it for granted and pay less attention to safety as they form PI. Previous studies suggest that basic environmental conditions are less important for PI than symbolic and experiential factors (Lewicka, 2011; Hernández et al., 2007). Place attachment theory further suggests that PI is more closely related to emotional meaning and personal experience (Kyle et al., 2004). Therefore, while safety supports daily use, it may not directly contribute to residents' PI. In contrast, safety significantly influences PD. This suggests that when residents perceive a street as safe, they are more willing to use it for daily activities, thereby increasing their functional

dependence on the street. This finding supports previous studies (Eng & McCormack, 2025).

Comfort has significant positive effects on both PI and PD. This finding supports the conclusions of Alsadun (2019). Comfortable street environments may improve residents' experiences of the space and encourage them to spend more time there. As a result, residents may develop stronger emotional connections to the street environment and greater dependence on it.

Walkability is not significantly related to PI. It mainly reflects the ease of pedestrian movement along a street. PI develops through repeated experiences and meaningful activities (Korpela, 1989). Therefore, although walkability improves movement, it may not directly strengthen residents' PI.

The relationship between imageability and PI was supported. The finding supports previous studies (Zhang et al., 2024). Streets with distinctive visual elements and memorable features can create clear mental images for residents, strengthening their emotional ties to the place. However, imageability did not show a significant relationship with PD. Imageability mainly reflects the visual and symbolic qualities of a place (Ewing & Handy, 2009). These qualities can make a street memorable, but do not necessarily support everyday use. Previous studies suggest that PD is more closely related to practical functions and activity needs (Khaidzir & Kamal, 2023). Therefore, a visually distinctive street may attract attention but not increase residents' functional reliance on the space.

In this study, gender, age, and length of residence showed no significant effects on PI or PD after being included as control variables. This differs from previous studies suggesting that demographic characteristics, particularly age and length of residence, may influence PA (Pacheco, 2025). One possible explanation is that this study focused on residents with long residence duration who were already familiar with the local street environment, resulting in relatively little variation in these characteristics. This finding suggests that the relationships between perceived SQ and PA remained stable after controlling for demographic characteristics.

This research has valuable theoretical and practical implications. The results show that the influence of different SQ dimensions on PA varies. Functional attributes, such as safety and walkability, primarily influence residents' PD, whereas experiential attributes, such as comfort and imageability, are more closely related to residents' emotional attachment to place. These findings help explain how different aspects of streetscape contribute to the development of PA.

The findings provide practical guidance for street regeneration in historic tourist cities. As comfort was the only streetscape dimension associated with both PI and PD, it should be prioritised by improving microclimate conditions, reducing noise, and providing adequate public seating when resources

are limited. Measures to improve safety and walkability, such as better street lighting and reducing pedestrian-vehicle conflicts, can help support residents' everyday use of the street. In addition, preserving distinctive landmarks, historic character, and cultural features can strengthen residents' PI.

This research has limitations. The study was conducted in Zhengding Ancient City. The results may not fully apply to other types of spaces. Future research could examine streetscapes in other types of urban spaces, such as parks or educational districts. This survey used self-reported measures, which may have introduced potential bias. Future studies could adopt multiple research methods to provide a more comprehensive understanding of the relationship between SQ and PA. Moreover, other resident characteristics, such as homeownership and tourism exposure, were not measured in the present study and therefore could not be included as control variables. Future research could incorporate these characteristics to further examine their influence on residents' PA.

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