Article

Community Life Circle, Neighbourly Interaction, and Social Cohesion: Does Community Space Use Foster Stronger Communities?

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Abstract: Neighbourhood social cohesion has emerged as a prominent concern in urban governance worldwide. As the primary domain of residents' daily activities, the community life circle contributes to neighbourly interaction and social cohesion. This study investigates the role of space use within the community life circle in promoting social cohesion in Chongqing, China. Through an in-depth activity diary survey and structural equation model analysis, we empirically examine the interplay between community space use, neighbourly interaction, and social cohesion. Our findings suggest that the 15 min community life circle plays a crucial role in residents' daily lives, particularly among senior residents. However, the contribution of community space use to social cohesion is fully mediated by neighbourly interaction. Furthermore, not all patterns of community space use contribute to social cohesion equally; space use engaged with diverse companions on workdays significantly enhances neighbourly interaction and social cohesion. The study enriches the existing literature by deepening our understanding of the role of the community life circle in fostering socially cohesive and sustainable neighbourhoods.

Keywords: community life circle; community space use; social cohesion; neighbourly interaction; China

1. Introduction

Neighbourhood social cohesion has emerged as a prominent agenda in urban governance globally. Enhancing residents' sense of belonging and fostering neighbourly interaction are now focal points for policymakers, experts, and scholars [1]. The New Urban Agenda has advocated for promoting the quality of the built environment for social interaction and inclusion to achieve the vision of cities for all [2]. In China, as the urbanisation process has entered the middle and late stages, the focus of urban development has shifted from place-oriented high-speed growth to people-oriented quality improvement. Promoting social cohesion and creating sustainable neighbourhoods have become important goals of city building.

As the most important arena for residents' daily lives, the community life circle (CLC) provides residents with the basic physical environment for encounters, acquaintances, and interaction. The concept of the 15 min city proposed by Moreno in 2016 envisions dense and connected socially and functionally mixed neighbourhoods based on a human-scale design to encourage walking and cycling [3]. Similarly, the 15 min CLC aims to establish self-sufficient neighbourhoods with essential living, working, commercial, healthcare, educational, and entertainment functions [4]. While the existing literature has focused on measuring the accessibility of public service facilities within the CLC from the perspectives of equity and efficiency, few studies have explored how the spatial scope enhances neighbourly interaction and social cohesion. Urban planners and practitioners have long celebrated the effects of certain physical aspects of the built environment for fostering social

interactions and social cohesion within diverse communities [5,6]. However, a growing body of research suggests that a high level of actual space use and meaningful neighbourly engagement, rather than just the provision of physical space, can significantly enhance social cohesion [7,8].

In our study, we conduct an empirical investigation of the role of space use within the 15 min CLC in promoting social cohesion in Chongqing, China. Using data from an in-depth activity diary survey, we employ structural equation model (SEM) analysis to address the following research questions: (1) How is community space use linked to neighbourly interaction? (2) What is the relationship between community space use and social cohesion? (3) What is the role of neighbourly interaction in the link between community space use and social cohesion? By doing so, this study contributes to the existing literature in two ways. First, it provides empirical evidence from Chinese cities and enhances our understanding of the relationship between the actual use of community space, neighbourly interaction, and social cohesion. Second, the study expands on ongoing research on CLCs by investigating their impacts on fostering socially cohesive and sustainable neighbourhoods.

The following paper is organised into five sections. We begin with a review of the literature on CLCs, neighbourly interaction, and social cohesion. We then introduce our conceptual model, data sources, and variable measurements. The descriptive findings from the diary survey and the results from the SEM analysis are presented in the Results section. Following this, we discuss the significance and limitations of our study. The final section provides a conclusion of the theoretical contributions and policy implications.

2. Literature Review

2.1. Neighbourhood Social Interaction and Social Cohesion

Social cohesion, as defined by Kawachi and Berkman [9], pertains to the degree of interconnectedness and solidarity among societal groups, focusing on individuals' attitudes and behaviours [10]. It is integral to fostering inclusive cities by facilitating the interpenetration and integration of diverse individuals and groups [11]. Communities play a crucial role in nurturing social cohesion [12], and communal space both facilitates the building of networks and strengthens solidarity, cohesion, and mutual trust among residents [13]. As such, social cohesion is often measured and examined at the neighbourhood level [14]. Previous researchers have measured social cohesion through five dimensions: neighbourhood familiarity, trust, support, harmony, and shared values [15–18].

The existing literature extensively explores the factors influencing social cohesion, encompassing individual characteristics, the geographic environment, and neighbourly interaction. Research has indicated that gender, age, duration of residence, educational attainment, economic status, and citizenship are associated with social cohesion [19,20]. Additionally, factors such as community type, location, population density, and accessibility [21–24] have been found to have a substantial impact on social cohesion. Other research further revealed that, after controlling for the socio-demographic context of the neighbourhood and a range of individual and household control variables, residents' reported social cohesion is significantly associated with the types of social conduits, the diversity of land use, and the degree of neighbourhood fragmentation [25].

It has long been understood that social cohesion develops through repeated human interaction and joint participation in shared projects, not merely from a principled commitment to abstract values and beliefs [26]. Particularly, neighbourly interaction is often highlighted as fundamental to social cohesion for allowing residents to strengthen social bonds, deepen their sense of belonging, and reinforce their identity by sharing emotions and experiences [27–30]. However, there are also several debates on the effectiveness of neighbourly interaction in promoting social cohesion. For instance, Mouratidis and Poortinga [21] suggest that frequent neighbourly interactions do not always lead to the establishment of the trusting neighbourly relations necessary for community integration. Wang found that intergroup interactions may contribute more to residents' overall par-

ticipation in community activities than intragroup interactions [31]. Therefore, further research is needed to fully understand the neighbourhood's influence on social cohesion.

2.2. Community Spaces and Neighbourhood Social Interaction

In neighbourhoods, people have long depended on public space for functional, social, and leisure activities—for travel, shopping, play, meeting and interaction with others, and relaxation [32]. Therefore, the academic literature has long emphasised the significance of community spaces and amenities promoting mutual understanding among different social groups and reducing prejudice in fostering neighbourly interaction [6,33–35] and contributing to social integration [36]. Recent studies have further highlighted that, while community spaces offer opportunities for residents to meet each other [37,38], not all types of community spaces can effectively encourage meaningful social interaction and enhance social cohesion [39]. For example, some researchers have found that social contact among residents in typical public spaces such as parks and streets can be transient and superficial, limiting their role in promoting neighbourly interaction. In contrast, social interactions in quasi-public spaces such as at bus stops and commercial facilities are more sustainable and play a greater role in fostering social cohesion [11,39,40]. Meanwhile, other studies have noted that a high presence of commercial uses may attract too many external visitors, inhibiting the formation of local social connections [21,41].

Some researchers have argued that community spaces promote social integration through the actual use of space and the frequency of neighbourly interactions [42,43]. Others have further proposed that, essentially, effective reinforcement of neighbourly interaction occurs only when community spaces are used for meaningful and sustainable social interactions [8]. Additionally, stationary activities and the time spent in community spaces can effectively reflect the state of neighbourly interaction and influence residents' perceived social cohesion [7]. These findings have further confirmed that the actual use of space is more important than its physical presence in predicting how community space contributes to social cohesion. However, the existing research on residents' stationary activities was primarily conducted within gated residential communities rather than the 15 min CLC, which undermines the precision of space use measurement [44]. Furthermore, there are insufficient studies that identify the relationship between time spent in community spaces, neighbourly interaction, and social cohesion due to challenges in data collection.

2.3. 15 min Community Life Circle

The concept of the life circle was originally proposed by Ishikawa in 1941, based on central place theory. It refers to the space range centred on residents' homes where urban residents carry out their daily activities [45]. This concept encompasses multiple levels, including the region, city, and community [29]. The CLC provides the most relevant spatio-temporal resources for daily life [45,46] and serves as the spatial carrier of residents' perceived neighbourhood boundaries and social networks [47]. The 15 min CLC focuses on an affordable walking distance for the majority of residents, within which basic service facilities and public spaces are available. Shanghai, China, took the lead in 2016 and released Shanghai action guidance for the 15 min community life circle [48]. In recent years, particularly after the COVID-19 pandemic, cities around the world have adopted similar concepts to improve living areas where people can fulfil their daily needs within proximity to their homes. Examples include the 20 min neighbourhoods in Portland and Melbourne [49], the 15 min city in Paris [50], and the 20 min town and 45 min city in Singapore [51].

In China, the CLC exhibits distinct characteristics in resident composition, travel behaviour, and social networks under different socio-economic contexts. During the planned-economy era (1949–1976), the predominant living form was the work unit, which integrated work, housing, and a variety of social facilities such as nurseries, canteens, clinics, and shops in close proximity within its walled compounds [52]. Therefore, neighbourhoods were characterised by a stable population structure, similar behaviour patterns, proximity

of jobs and residences, and frequent social interaction [53]. However, with the advent of the market economy reform, the self-sufficient work unit gradually declined and gave way to gated high-rise communities. This shift resulted in the jobs–housing mismatch and unequal access to public facilities, along with increased neighbourhood heterogeneity and decreased social interaction [54]. Hence, the issue of social cohesion has continuously attracted growing attention in academia [55,56]. Since the existing research on the CLC has primarily focused on service facilities and pedestrian networks [11,46,57,58], there remains a need for further exploration of neighbourly interaction and social cohesion.

3. Materials and Methods

3.1. Conceptual Framework

Based on previous discussions, we propose a conceptual model (Figure 1) to investigate the relationship between community space use within the 15 min CLC, neighbourly interaction, and social cohesion in the context of urban regeneration in Chinese cities. Our primary research objective is to explore how different aspects of space use, such as time, activity contents, and companionship, influence neighbourly interaction and social cohesion.
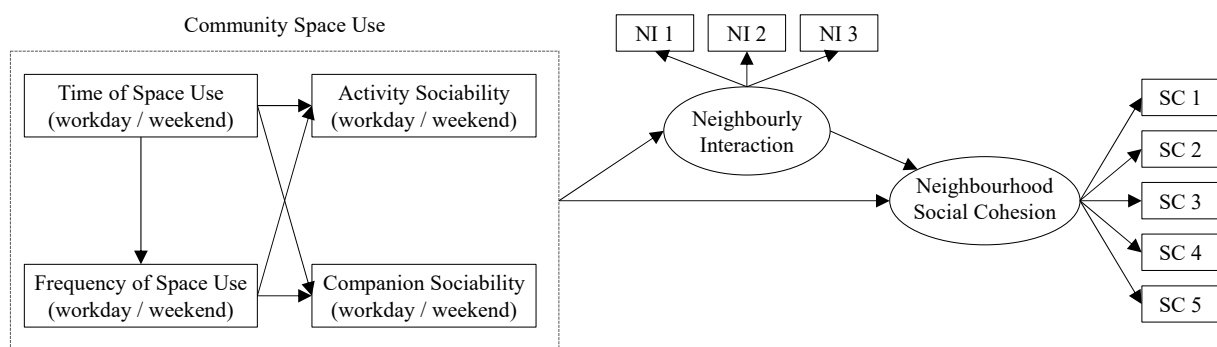
Figure 1. Structural equation model.

A substantial body of literature has advocated for the positive effects of community spaces, especially those close to residential areas, on social cohesion [13,21,37]. However, recent research has highlighted the crucial role of meaningful and sustainable neighbourly interaction [8]. Therefore, we propose the hypothesis that the use of community space must promote social cohesion through neighbourly interaction, with neighbourly interaction acting as the mediating variable. Additionally, considering the influence of weak ties, which underscores the value of nodding acquaintanceships in neighbourhoods [59,60], we also assume a direct impact path from space use to social cohesion in our conceptual model.

Moreover, we hypothesise that the use of space differs in its contribution to neighbourly interaction and social cohesion between workdays and weekends. During workdays, when a significant proportion of residents are engaged in work or educational activities, their time spent in community spaces is limited and can easily lead to transient and superficial social interactions. In contrast, weekends offer more leisure time, providing residents with greater opportunities for meaningful socialisation. We posit that the varying nature of activities and social companionship during these periods results in differing levels of sociability, which, in turn, affects neighbourly interaction and social cohesion.

Considering that residents with varying socio-economic statuses may hold different preferences regarding neighbourhood social interaction [31,37], we have incorporated individual characteristics into the model as covariates associated with the three primary elements of our study. Therefore, our conceptual model contains three sets of endogenous variables—space use, neighbourly interaction, and social cohesion—and one set of exogenous variables, the individual characteristics.

3.2. Case Study and Data Collection

Yuzhong District in Chongqing is selected as our case study area. Chongqing, situated in southwest China, is one of the four municipalities. Yuzhong District, being a significant historical area in Chongqing, remains densely populated and contains numerous old communities. In 2021, the 20 km² peninsula was inhabited by 491,000 permanent residents [61]. The area of residential buildings built before 2000 in this district covers an area of 10.76 million square meters, accounting for more than 46% of the total residential area.

Since the actual use of community space is the key point of this research, we conducted an in-depth activity diary survey to accurately capture individual-level space use patterns. Different from big data, the diary survey can provide detailed, micro-level insights into individual behaviours and processes. Respondents recorded the content, location, duration, and companions of all their outdoor activities on two days, including one typical weekday and one day off. Additionally, they provided demographic information, details on neighbourhood social interactions, and their perceptions of neighbourhood social cohesion.

We initially selected 6 representative residential communities in Yuzhong District based on the following criteria: First, these communities were established before 2001, ensuring a stable historical and social background. Second, the selected communities are situated in well-developed residential areas with adequate and convenient living service facilities, ensuring a comparable living standard. Third, we intentionally chose communities located away from tourist attractions to avoid disruptions to residents' daily lives caused by tourism activities. Given the complexity and time-consuming nature of diary surveys, we began with the on-site interview. To ensure that each respondent understood the survey's purpose well and could provide accurate records of their daily activities, the researcher carefully explained how the data would be used and assured them of their privacy protection. After establishing trust and understanding with these respondents, we adopted a snowball sampling strategy to expand our sample and provided online instructions to guide new respondents. The survey achieved a response rate of 55.8%. All diary surveys were completed on paper, member-checked by the researchers, and compiled into Excel data. The survey took half a year, from March to November 2023, and yielded a total of 203 valid samples (Table 1).

Table 1. Demographic characteristics of the sample.

Variables		Frequency	Percentage
Gender	male	98	40.39
	female	125	59.61
Age	1–18 years old	29	12.81
	19–34 years old	75	33.00
	35–60 years old	89	40.89
	above 60 years old	30	13.30
Time living in the dwelling	less than 3 years	8	3.94
	3–6 years	54	26.60
	above 6 years	141	69.46
Citizenship status	local	178	87.68
	non-local	25	12.30
Economic status	below 50 thousand	15	7.39
	50–100 thousand	49	24.14
	100–150 thousand	93	45.81
	150–200 thousand	44	21.67
	above 200 thousand	2	0.99
Living companions (children: <7 years old; seniors: >70 years old)	child(ren) and senior(s)	11	5.42
	child(ren) only	46	22.66
	senior(s) only	49	24.14
	no child or seniors	97	47.78

3.3. Model Specification and Variable Description

We estimated the structural equation models through the Mplus 8.0 programme with bootstrapping techniques. Bootstrapping is a process that resamples the data many times with replacement to generate an empirical representation of the entire sampling distribution, which can afford higher power for testing indirect effects [62]. In this study, we set it to generate 5000 samples, and the bias-corrected bootstrap confidence intervals were used to detect mediation effects. Bootstrapping estimates the sampling distribution of the indirect effect (neighbourly interaction) and then generates bias-corrected 95% confidence intervals (CIs) [63]. If the CIs of the index exclude zero, this leads to the inference that the effect of space use on social cohesion is mediated by neighbourly interaction. The structural paths between demographic covariates as well as the variances of all exogenous latent factors were automatically fixed at 1 by Mplus.

3.3.1. Community Space Use

We used four variables, derived from diary survey data, to reflect individual-level community space use on workdays and weekends. These variables were the time spent in community spaces, the degree of sociability in terms of companions, the degree of sociability in terms of activity content, and the frequency of visits to community spaces. In line with previous studies [7,8], our study focused on the duration of space use within the walkable 15 min CLC. To achieve this, we first obtained the latitude and longitude coordinates of all community spaces recorded in the activity diary through geocoding. We then calculated the distance between each community space and the respondent's neighbourhood. Given the complex terrain of Chongqing, which is not conducive to walking, community spaces located within 800 m, instead of the buffer of 1000 m used in previous research [11], were identified as being within the 15 min CLC. Based on this, we calculated the total duration of activities occurring within the 15 min CLC according to the start and end times of each activity on workdays and weekends. The degree of sociability mainly considered two dimensions: companions and activity contents. For the companion dimension, scores of one to three were assigned for being alone, being with family, and being with non-family. The activity dimension focuses on the activities' degree of social interaction. Scores of five were assigned for social interaction, four for entertainment, three for exercise, shopping, and taking care of others, two for work and running errands, and one for other activities (Table 2). Frequency was determined by counting the number of times that respondents visited community places on the recorded weekday and weekend.

Table 2. Formulas for calculation of space use variables.

Variable	Formula	Explanation
Companion Sociability	$D_{cs} = \sum_{i=1}^{5} d_{csi} \times \frac{t_i}{24}$	d_{csi}: companion sociability degree of the activity (being alone = 1, being with family = 2, being with non-family = 3); t_i: hours of the activity;
Activity Sociability	$D_{as} = \sum_{i=1}^{5} d_{asi} \times \frac{t_i}{24}$	d_{asi}: sociability degree of the activity (social interaction = 5, entertainment = 4, exercise, shopping, and taking care of others = 3, work and running errands = 2, other activities = 1); t_i: hours of the activity

3.3.2. Neighbourhood Social Cohesion

We employ three variables to characterise neighbourly interaction. The first variable gauges the breadth of neighbourly interaction by asking, "How many people in your neighbourhood have you interacted with in the last 6 months?" The second variable, intended to delineate respondents' socialising tendencies, is derived by dividing the number

of people the respondent interacted with in the community in the last 6 months by the number of people the respondent interacted with outside the community during the same period. A result greater than 1 indicates a tendency to socialise within the neighbourhood, while a result less than 1 suggests a tendency to socialise outside the neighbourhood. The third variable aims to reveal the depth of neighbourly interaction through a five-point Likert scale. Scores ranging from one to five correspond to the extent to which respondents interacted with their neighbours, including greeting each other, helping each other (including answering questions on online platforms), visiting neighbours' homes, dining together, and going out together (such as exercising and shopping).

3.3.3. Neighbourly Interaction

Neighbourhood social cohesion was assessed as the primary outcome using a five-point Likert scale. Respondents were asked to rate their perceptions on five aspects: the familiarity among neighbours, the level of trust among neighbours, the willingness of neighbours to help others, the perception of the neighbourhood as a harmonious community, and the shared values among neighbours. Responses ranged from "not at all" (1) to "a great deal" (5). A social cohesion scale was formed based on these five items. The social cohesion scale has a Cronbach's alpha of 0.869, indicating excellent internal reliability.

### 3.3.4. Individual Characteristics

The study considered seven individual characteristics as potentially affecting all the endogenous variables. These characteristics were gender (coded as male = 1), age group (1–18 years old = 1, 19–34 years old = 2, 35–60 years old = 3, and above 60 years old = 4), citizenship status (local = 1), yearly household income (below 50 thousand = 1, 50–100 thousand = 2, 100–150 thousand = 3, 150–200 thousand = 4, above 200 thousand = 5), time living in dwelling (less than 3 years = 1, 3–6 years = 2, above 6 years = 3), presence of children (<7 years old) at home, and presence of seniors (>70 years old) at home. These variables were included in the model as exogenous variables.

4. Results

4.1. Descriptive Analysis

Figure 2 illustrates the space use patterns of different age groups within the 15 min CLC on both workdays and weekends. The data indicate that children, teenagers, and senior residents are the primary users of community spaces within the space scope. Children and teenagers, in particular, spend the most time within the 15 min CLC on workdays, averaging 11 h, while senior residents spend the longest time on weekends, with an average of 9 h. In terms of frequency, senior residents visit these spaces more frequently than all other age groups, averaging 5 times on workdays and 3.9 times on weekends. Given that most children and teenagers spend much of their time in schools rather than other community spaces on workdays, senior residents make the most active users of the spaces within the 15 min CLC.

Table 3 presents the findings on neighbourly interaction and neighbourhood social cohesion across different age groups. The results show that senior residents are the most engaged with their neighbours, with an average interaction depth exceeding 4, indicating that most senior residents often eat and go out with their neighbours. They also demonstrate the strongest inclination to associate within the residential community, with nearly half of their daily social interactions involving neighbours. Children and teenagers also exhibit a high level of neighbourly interaction and internal socialisation. Additionally, both senior residents and children and teenagers perceive a high level of social cohesion across all five dimensions.
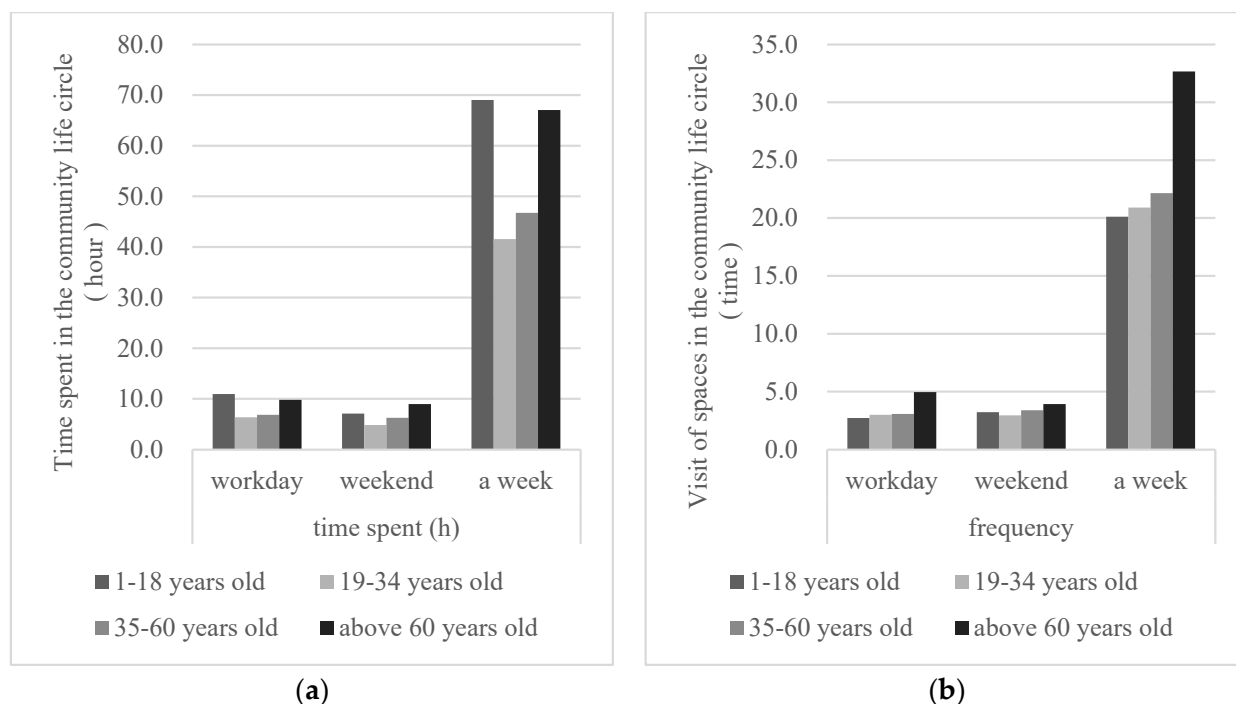
Figure 2. Different age groups' space use within the 15 min CLC: (**a**) time spent in the community life circle of different age groups; (**b**) visits to spaces in the community life circle of different age groups.

Table 3. Different age groups' neighbourly interaction and perceived social cohesion.

Age Group	Inside Socialising Tendency		Neighbourly Interaction Depth		Familiarity		Trust		Willing to Help		Harmony		Shared Values	
	avg.	s.d.	avg.	s.d.	avg.	s.d.	avg.	s.d.	avg.	s.d.	avg.	s.d.	avg.	s.d.
1–18	0.40	0.17	3.81	1.72	4.46	0.51	4.04	0.66	3.96	0.45	4.19	0.49	3.69	0.62
19–34	0.18	0.16	2.66	1.75	3.34	0.90	3.25	0.84	3.31	0.86	3.51	0.73	2.91	0.75
35–60	0.25	0.17	3.39	1.78	3.70	0.74	3.53	0.69	3.57	0.75	3.76	0.64	3.18	0.63
above 60	0.49	0.12	4.07	1.64	4.07	0.68	4.11	0.75	4.04	0.65	4.11	0.58	3.44	0.58

4.2. Structural Equation Model Analysis

Table A1 reports the standardised coefficients for the two latent variables. All five standardised coefficients for social cohesion are >0.6, indicating reliable estimates. Regarding neighbourly interaction, the standardised coefficients for socialising tendency and depth of neighbourly interaction are both >0.6. Although the standardised coefficient for the breadth of neighbourly interaction is below 0.3, we chose to retain the measurement component of the indicator.

Tables 4 and 5 present the direct, indirect, and total statistical effects from the path analysis of the model depicted in Figure 2. The values of the fit indices are CFI = 0.942, RMSEA = 0.069, and SRMR = 0.050, indicating a good model fit. The results will be explained in two parts: the effects among endogenous variables and the effects of exogenous variables on endogenous variables.

Table 4. Direct effects between endogenous variables.

	Workday			Weekend			Neighbourly Interaction	Social Cohesion
	F_w	D_{as_w}	D_{cs_w}	F_e	D_{as_e}	D_{cs_e}		
Workday								
T_w	0.581 ***	0.672 ***	0.861 ***					
F_w		0.004	0.075					
D_{as_w}							−0.485 ***	−0.054
D_{cs_w}							0.514 ***	−0.0147
Weekend								
T_e				0.706 ***	0.892 ***	0.838 ***		
F_e					−0.092	0.098 *		
D_{as_e}							−0.149	0.013
D_{cs_e}							0.081	0.169
Neighbourly Interaction								0.655 ***

Notes: 1. $p < 0.05$ *; $p < 0.001$ ***. 2. $\chi^2 = 256.169$, df = 131, p value < 0.05; Root Mean Squared Error of Approximation (RMSEA) = 0.069 < 0.07; Comparative Fit Index (CFI) = 0.942 > 0.90; Tucker–Lewis index (TLI) = 0.898; Standardised Root Mean Squared Residual (SRMR) = 0.05 < 0.08.

Table 5. Total and indirect effects between endogenous variables.

	Indirect				Total				
	Workday		Weekend		Workday		Weekend		
	D_{as_w}	D_{cs_w}	D_{as_e}	D_{cs_e}	D_{as_w}	D_{cs_w}	D_{as_e}	D_{cs_e}	Neighbourly Interaction
Social Cohesion	−0.318 **	0.337 **	−0.098	0.053	−0.371 **	0.190 +	−0.085	0.222 +	0.655 ***

Notes: $p < 0.1$ +; $p < 0.01$ **; $p < 0.001$ ***.

4.2.1. Effects between Endogenous Variables

According to the result, the use of community spaces enhances social cohesion through the full mediation of neighbourly interactions. This suggests that space use alone does not directly enhance social cohesion; instead, its impact is mediated by neighbourly interaction.

Generally speaking, neighbourly interaction is mainly impacted by community space use on workdays, and residents who engage more frequently in neighbourly interactions tend to have greater perceived social cohesion (0.655, $p < 0.001$). Moreover, on both workdays and weekends, time spent within the 15 min CLC positively correlates with higher degrees of activity sociability (workday: 0.672, $p < 0.001$; weekend: 0.861, $p < 0.001$) and companion sociability (workday: 0.892, $p < 0.001$; weekend: 0.838, $p < 0.001$). However, a higher frequency of space use does not contribute as significantly to the sociability of activities or companions as the time spent in the 15 min CLC.

Different space use patterns influence neighbourly interaction and social cohesion differently. Specifically, only space use with higher levels of companion sociability on workdays significantly enhances neighbourly interaction (0.514, $p < 0.001$) and, consequently, contributes to social cohesion. The bootstrapped mediated effect of companion sociability on social cohesion via neighbourly interaction is 0.337 ($p < 0.01$, CI, of 0.091 to 0.784, excluding zero). Conversely, community space use characterised by higher levels of activity sociability on work days inhibits neighbourly interaction (−0.485, $p < 0.001$) and, subsequently, social cohesion. The bootstrapped mediated effect of activity sociability on social cohesion via neighbourly interaction is −0.318 ($p < 0.01$, CI, of −0.710 to −0.067, excluding zero). Further analysis using Spearman's correlation analysis reveals that residents engaging in higher-level socialising activities on workdays tend to socialise outside their residential community (−0.189, $p < 0.01$). Also, they usually spend less time on their daily commute (−0.225, $p < 0.01$).

4.2.2. Effects of Exogenous Variables on Endogenous Variables

Through the SEM approach, we examined the extent to which socio-demographic characteristics predict different neighbourly interaction patterns. Table 6 reports the direct effects of the exogenous variables on endogenous variables. Overall, senior residents (0.248, $p < 0.01$) and those who have lived a longer time in their dwellings are more likely to have a higher level of neighbourly interaction. Conversely, residents' economic status is significantly negatively associated with neighbourly interaction (-0.286, $p < 0.001$).

Table 6. Direct effects from socio-economic characteristics on space use, neighbourly interaction, and social cohesion.

| | Workday | | | | Weekend | | | | Neighbourly Interaction | Social Cohesion |
	T_w	F_w	D_{as_w}	D_{cs_w}	T_e	F_e	D_{as_e}	D_{cs_e}		
Gender	-0.059	-0.106 *	-0.081	-0.010	0.029	-0.069	-0.013	0.005	0.113	-0.076
Age	-0.070	0.360 ***	0.257 ***	0.0370	0.231 **	0.052	-0.060	0.021	0.248 **	-0.135
Citizenship	0.038	-0.067	0.101 +	0.060	-0.044	-0.039	-0.015	-0.004	-0.110	-0.037
Time living in the dwelling	0.105	-0.007	0.021	-0.016	0.025	0.033	-0.022	0.042	0.190 *	0.003
Economy status	-0.155 *	-0.082	0.116 *	0.056	0.017	0.004	0.140 **	0.045	-0.286 **	-0.048
Living with children	0.057	0.005	-0.055	0.003	-0.005	-0.058	0.013	0.008	0.028	-0.047
Living with seniors	-0.083	0.073	-0.037	0.032	-0.119	0.007	0.018	0.053 *	0.074	-0.031

Notes: $p < 0.1$ +; $p < 0.05$ *; $p < 0.01$ **; $p < 0.001$ ***.

Regarding community space use, the result reveals that residents with higher economic status are more likely to have a higher degree of activity and sociability on both workdays (0.116, $p < 0.0$) and weekends (0.140, $p < 0.001$), and spend less time within the 15 min CLC on workdays (-0.155, $p < 0.05$). Weekend community space use results further indicate that residents living with senior residents are more likely to associate with more diverse companions, a trend not observed among residents living with children.

5. Discussion

5.1. Discussion of the Results

Our study provides new evidence on the correlation between social cohesion and space use within the 15 min CLC. A structural equation model with neighbourly interaction as a mediator between community space use and social cohesion has been developed, applied, and assessed.

Findings suggest that neighbourly interaction mediates the relationship between community space use and social cohesion. While neighbourly interaction can significantly enhance social cohesion, community space use alone cannot contribute to social cohesion significantly without meaningful and sustainable neighbourly interaction. This is in line with previous research that has emphasised the pivotal role of actual neighbourly interaction in fostering social cohesion [8,28,30]. The results also show that not all forms of community space use can contribute to neighbourly interaction and social cohesion. Using community space with a greater degree of companion sociability can effectively enhance social cohesion through the mediation of neighbourly interaction.

The present study also indicates that senior residents tend to visit spaces more frequently in the CLC on workdays and spend more time within the space scope on weekends. This pattern may be attributed to the fact that elderly residents typically have limited mobility and thus confine much of their daily activities to within the 15 min CLC. This finding aligns with previous research indicating that senior residents visit public service facilities within the CLC more frequently than other age groups [57]. It underscores the importance of ensuring adequate public service facilities within walking distance and good accessibility for vulnerable groups such as senior residents and people with mobility impairment [64].

Contrary to expectations, our findings uncover a negative relationship between activity sociability and social cohesion. Given the correlation analysis result that residents who conduct more intense socialising activities on workdays usually spend less time on their daily commute and tend to socialise outside the community, it probably implies that they work within the 15 min CLC. In other words, a large part of their social interaction within the CLC could be based on working rather than neighbourhood socialisation. The significant negative correlation between economic status and neighbourly interaction identified in this study is, to some degree, mirrored by prior studies. These studies have identified negative intergroup experiences and attitudes resulting from public encounters in public spaces [39,40,65,66]. Together, all these findings suggest that, to promote social cohesion, it is insufficient to increase residents' activity time within the 15 min CLC; active promotion of meaningful interaction and communication among neighbours is imperative. This may be challenging to achieve solely through physical planning of public spaces and amenities, and should be supported by corresponding policy measures, such as conducting periodic collective activities or establishing mutual aid groups.

5.2. Limitations and Future Research

A number of limitations of this study need to be considered. First, the study does not evaluate the relationship between the diversity of residents' activities within the 15 min CLC and neighbourly interaction. Since greater diversity of activity content is expected to contribute to space vitality and encourage casual social interaction, future research could address this issue by collecting relevant data and including them in the SEM analysis. Second, the study does not control for the ownership status of the residents' dwellings, which could influence their neighbourly interaction preference and perceived social cohesion. Residents living in rented accommodation probably have stronger mobility and a lower level of sense of belonging compared to homeowners. Therefore, future research could include dwelling ownership as one control variable in statistical analyses. Third, the study does not account for residential self-selection. Residents with different socio-economic statuses may have particular preferences for neighbourhoods; therefore, the statistical results may be biased if the bias problem is not accounted for. While we have included various socio-economic variables to mitigate such biases, it would be beneficial for future studies to include targeted self-selection variables.

6. Conclusions

This study has provided new insights into the relationship between community space use and social cohesion. It is one of the first empirical investigations to explore how space use relates to both neighbourly interaction and social cohesion. It sheds light on how space use contributes to the development of socially cohesive neighbourhoods. Although there is a growing body of literature claiming that community space provision alone may not contribute to social cohesion, empirical research on this topic has been limited. By addressing the actual use of community spaces, our study contributes to the ongoing exploration of how community space can promote social cohesion with empirical evidence within the context of urban regeneration in China. The study also contributes to the emerging literature on CLCs, which mainly focuses on the availability and accessibility of service facilities, by exploring the effect of community space use within the certain space scope in fostering socially cohesive and sustainable neighbourhoods.

Findings of this study reveal that neighbourly interaction fully mediates the relationship between community space use and social cohesion, indicating an indirect-only effect. In other words, the contribution of community space use to social cohesion cannot be divorced from the authentic and meaningful neighbourly interaction. Additionally, we found that not all patterns of space use contribute equally to social cohesion. Specifically, only space use with higher companion sociability on workdays significantly improves neighbourly interaction and contributes to social cohesion.

Our empirical findings have several implications for planning and management. First, the 15 min CLC plays a crucial role in facilitating encounters, acquaintances, and interactions among residents. However, providing high-quality public spaces alone is insufficient, as meaningful and sustainable neighbourly interaction is essential for promoting social cohesion. This could be difficult to achieve with merely physical planning; intervention through social programmes and policies may be necessary to ensure equal access and utilisation of these spaces among different social groups. Second, given that senior residents are the primary user group of CLC spaces, future physical planning should accommodate their needs. This includes careful consideration of public service facility allocation within the CLC, such as allocation of health centres, pharmacies, parks, and green spaces. Additionally, improving the accessibility, safety, and comfort of these spaces is essential to adapt to the relatively weak mobility of seniors. Finally, achieving a cohesive neighbourhood requires an inclusive social welfare policy regime. Researchers, practitioners, and policymakers should collaborate to explore urban planning and policy measures that promote the societal benefits of stronger social cohesion.

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Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Table A1. Standardised coefficients for each path in Figure 1.

Variables	Standardised Coefficient
Neighbourly Interaction	
NI 1: Socialising tendency	0.734 ***
NI 2: Depth of neighbourly interaction	0.669 ***
NI 3: Breadth of neighbourly interaction	0.272 ***
Social Cohesion	
SC 1: Familiar with each other	0.796 ***
SC 2: Trust each other	0.812 ***
SC 3: Help each other	0.767 ***
SC 4: Get along with each other	0.738 ***
SC 5: Agree with each other	0.665 ***

Notes: $p < 0.001$ ***.

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