Research on the well-being experience of rural China's post-relocation settlement communities in the public realm

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Abstract: With economic development and changes in the industrial structure of cities in China, the transformation of industries from agricultural to non-agricultural has brought about significant changes in the living spaces, economic growth, ideology, and cultural attitudes of rural people. Placing people first and responding to rural residents' wishes in the process of rapid development could become an important issue. This study focuses on the relationship between the well-being experience of relocated residents in rural areas and the public realm of new communities, and constructs a framework for understanding the relationship between the two. By doing so, it aims to resolve the conflict between the design of new settlements and the residents' needs, thus providing a reference for similar designs in the future.
Keywords: Well-being experience; New settlement communities; Public realm; Residents' needs

1. Introduction

There is a significant disparity in living conditions between rural and urban areas in many parts of China in the 1950s. However, driven by the country's 70 years of rapid development, these rural areas are rapidly transforming into urbanized areas to bridge the gap. Consequently, because of economic development and land use needs, villages located in rural areas are being relocated to new communities with new residences. In general, this benefits the residents of the villages; after all, new dwellings will generally be in better condition than previous ones.

Globally, there is a rapidly growing trend to focus on the relationship between people and the environment, cultural traditions, a sense of access and happiness, and other aspects of "well-being" when dealing with the transition from rural to urban reorganized communities. With China's industrialization, both non-agricultural industries and the rural population are migrating to cities and towns, leading to gradual transformation of the rural areas into urban areas. In response to China's large rural population, relative shortage of resources, fragile ecological environment, and uneven regional development, the Chinese government has been promoting the planning and development of a new type of urbanization across the country since 2013. This new type of urbanization prioritizes people's well-being, balances local economic development with ecological protection, and aims to provide a better living atmosphere for people (Cui et al. 2021). With the advancement of new urbanization and the rapid improvement of the living standards of rural residents, rural relocated residents have put forward higher requirements for the well-being experience of their living space, and the original mode of intensive resettlement of "courtyards to buildings" can no longer meet the well-being needs of residents (Ma et al. 2019). The well-being experience of relocated residents is not only related to their own sense of access and security but also to whether they can be motivated to participate in new community construction, which in turn affects the sustainable development of the new community.

The "Easterlin paradox" of 1974 triggered a shift in the academic debate from economic to non-economic factors influencing happiness (Easterlin and O'Connor 2022). Well-being is a positive psychological experience of personal survival and development, resulting from a combination of the objective conditions people possess and the value of their needs (Lu and Gilmour 2004). Some scholars have explored the development of rural residents' well-being after moving to urban areas from the perspective of their social resilience, highlighting the importance of social situations, spatial comfort, and the transmission and integration of cultural practices in the lives of residents (Tan and Xu 2019). Some have also studied the livelihood issues and the later development of people before and after moving (from rural to urban communities), showing the positive impact of the proper use of social capital such as relatives, neighborhoods, and government and organizations on residents' well-being after moving (Zhang and Zhou 2022). New community residents commonly suffer from integration dilemmas in terms of livelihood and expenditure difficulties, blurred identities, and fractured interpersonal relationships (McAreavey and Argent 2018). Different degrees of depression and feelings of incompetence are often experienced after moving from a rural to an urban lifestyle, which seriously restricts the development of well-being in reorganized urban communities (Feng 2006; Huang et al. 2022). Residents' happiness plays a decisive role in the stability and sustainable development of a community, and cannot be ignored. Therefore,

the lack of well-being among relocated residents has become a major obstacle to a stable life, normal production, and sustainable development of relocated residents in their new communities.

In 1970, the Danish architect Jan Gehl's ideas on urban public spaces and public life had a profound impact on subsequent urban design and development (Gehl 2013). Research generally supports the idea that the well-being of residents can be improved through the expansion of community spaces and the building of cultural infrastructure (e.g., public squares, healing environments, and ecological landscape design) (Gehl 2007; Souter-Brown 2014; Shu and Yin 2020). Currently, most of the studies focus on China's major cities, such as Beijing, Shanghai, and Xian (Li et al. 2023; Hua 2022; Gao 2018), while very few have focused on the newly reorganized communities in China's rural cities and towns. However, these newly reorganized communities involve a large number of relocated people and their diverse needs and habits. Due to the differences in regional environment, culture, and customs, it is difficult to apply the theories of public realm in major cities directly to the new communities in rural areas; thus, it is necessary to start from the actual needs of local residents to design a public environment suitable for local residents.

The south-western plains of China's Shandong province are densely populated with villages, and a large number of villages will be relocated and reorganized in the future as new towns are developed. This study selected reorganized communities in rural areas of China's Shandong province as the main research object; analyzed research data and information related to the current situation of the public realm, residents' living patterns, surrounding industrial development, and satisfaction with the configuration of public spaces. It established a database on the current situation of public spaces in reorganized communities and the well-being needs of relocated residents. Based on studying the relationship between the characteristics of public realm use in reorganized communities and the realization of residents' happiness, the connection between the acquisition of residents' well-being and the material elements of public space use characteristics, such as public activity space, green environment, and interpersonal interaction space, was studied. As a result, a framework was constructed for the happiness experience of public spaces in new communities formed by the relocation of villages. The study's focus on the well-being experience of relocated residents and its exploration of the relationship between public spaces and residents' needs make it potentially valuable for both the academic community and practitioners involved in urban planning and design in Asia.

2. The well-being experience of the public realm in reorganized communities

Human well-being is a complex, multidimensional concept with sophisticated links to the status of human life, perceptions, emotions, and so on (Shin and Johnson 1978; Delsignore 2021). Modern psychological science has refined happiness into subjective well-being (pleasure experiences), psychological well-being (self-actualization), and social well-being (social values) (Kahneman 2000). In terms of quantitative expressions of well-being, both objective and subjective well-being are primarily used for quantitative descriptions. Some scholars have conducted extensive research on the impact of objective well-being on the economic well-being of specific regions (Hossain et al. 2017), such as the Human Development Index (HDI) (Liu et al. 2018) and the Human Well-being Index (HWI) (Shaker 2015). However, from the perspective of well-being perception, happiness most directly reflects an individual's satisfaction with past, present, and future life conditions, as well as with all aspects of life (Diener 2000). Some scholars have developed subjective well-being evaluation indicators and used questionnaires to determine the level of subjective well-being of residents (Seaford 2013; Vezzoli et al. 2023). The subjective well-being differs from objective well-being and can vary considerably among stakeholders even within the same study group. Zoderer et al. (2019) have pointed out that there are differences in public realm use preferences between urban and rural residents in the same area. Rural residents tend to be more focused on supplying services, leading to differences in the well-being of different stakeholders (Zoderer et al. 2019). Therefore, stakeholder perceptions and preferences are prerequisites for an effective assessment of the use of the public realm and human well-being in settlements. This study focuses on the well-being experience of relocated residents.

Well-being experience is defined as the subjective perception of individuals' satisfaction with their state of life and the extent to which various aspects of their existing lives are consistent with their expectations.

As the most direct spatial carrier of residents' lives, the public realm of a community significantly and most directly impacts human well-being. The public realm relates to all parts of the built environment which is freely accessible to the public, including all streets, squares, and other rights of way, whether predominantly in residential, commercial, or civic uses (Carmona 2021). Research on the public realm can be traced back to the early stages of urban exploration. In the late 19th century, British scholar Ebenezer Howard's theory of garden cities aimed to address the problem of smoke pollution through constructing green parks in the public realm for communities to meet residents' quest for life and well-being (Howard 1946). The 1933 Athens Charter included provisions for new residential areas to set aside open spaces for public activities and use the spaces between high-rise buildings as public spaces to respond to the needs of residents' well-being (Corbusier 1973). Community public realms are closely related to residents' well-being. Currently, most research in the public realm is aimed at improving the efficiency of spatial resources utilization. It also reexamines the adaptive relationship between function and space (Carmona 2021; Kamalipour 2023). The public community realm needs to be responsive to how residents use it, their level of perception, and the process of psychological identification (Klein et al. 2021; Zhou 2021). Evidently, the construction of a quality public realm has become indispensable as one of the key factors in improving the quality of life in human settlements.

Evaluation studies on the public realm in settlements have proposed strategies to optimize the community public realm by increasing the number of green areas, improving infrastructure, and organizing various health activities (Wolch et al. 2014). Other scholars have proposed optimizing the design of the public realm in settlements from the perspective of resident participation in the co-creation and expansion of new spatial functions (Seo 2022). Scholars have used GIS technology combined with the scale and space layout of public service facilities to reveal the match between resource supply and demand within a service space (Kawabata 2011; Qin and Duan 2016). Some scholars have conducted quantitative research on the well-being needs of rural migrants from the perspective of differences in nonfarm employment after relocation through hierarchical analysis (Easterlin et al. 2011).

In summary, research on the relationship between public spaces and residents' needs in settlements is relatively mature, but research on the experiences of new urban residents, mainly those who were subjected to rural relocation, in the public realm of reorganized communities remains scant. This is an important reason why relocated residents miss their previous homes and find it difficult to adapt to life in reorganized communities. Therefore, this study focuses on the evaluation of the public realm in towns and the city reorganization of communities under the new type of urbanization in China.

3. Research methodology

Gehl proposed a Public Space & Public Life Survey (PSPL) method for the systematic evaluation and analysis of the environment and quality of life in public spaces (Gehl et al. 2013). This method is based on qualitative and quantitative aspects and provides a comprehensive evaluation of the environment and activities in public spaces, thus laying the foundation for their optimization (Gehl 2007; Lv and Ding 2021). The PSPL method understands and grasps the characteristics of people's activities and behaviors in public space to provide a basis for the design and renovation of public space, so as to achieve the creation of high-quality public space and satisfy the needs of residents in carrying out public life. There are two main stages (Table 1): Stage 1 investigated the environmental quality of public spaces in the reorganizing community (e.g., architectural style, ground pavement, degree of greenery) and marked the main public spaces in the community to explore them with potential value. In the second stage, random interviews were conducted with residents during a free chat to collect information on word frequencies, which was utilized to obtain basic data on people's life patterns and behavioral activity in the target public space. The research covered textual data on how people

conduct public life in public spaces, such as "where people engaged in activities," "how many people were involved in activities," "what activities were carried out," the state of public life in public spaces, and the factors that influence people's use of public spaces. During the survey, it was found that in response to rural relocation, many young people in the community had left to settle in the city in search of better working conditions and opportunities. The community's resident population is dominated by older people beyond the retirement age (the legal age for retirement in China is 60) and pre-school children. Therefore, to improve the accuracy of the study, the respondents were divided into two age groups considering the differences in the need for the public realm depending on the age of the population: young and middle-aged (under 60 years of age) and elderly (60 years of age or older). Investigations were generally conducted at specific times and seasons to record the state of people's lives and activities in the selected locations.

Table 1. Reorganizing community public space research plan

Research Date	Stage 1	Stage 2
Research Methods	Map markers, field photographs	Questionnaires, interviews, path tracking
Research Contents	Research and analysis of the spatial quality of public space	Questionnaires and interviews on living conditions in public spaces
Target areas	Public realm in the community	Residents in the community

Using the content analysis method, we quickly identified central ideas and high-frequency word lists from the massive and unstructured textual data comprising comments on the public realm in settlements. This process delimited the themes of residents' textual discussions and converted perceptual textual expressions into quantitative expressions that could be used for statistical operations to identify influential elements of the public realm that are of high concern to residents. The collected data were separately analyzed for differences in sentiment and word frequency.

● Sentiment difference analysis: Sentiment analysis was used to categorize the data on residents' comments on the public realm in their settlements (young, middle-aged, and older groups) into three types of attitudes: positive, neutral, and negative. A chi-squared analysis was then conducted on the data from the two groups to examine the sentiment differences between them toward the reorganized community public realm.

● Word frequency analysis: Python was used to analyze the text, and after eliminating high-frequency words that were not relevant to the study, the frequency of each word in the text of the respondents was counted using the word frequency statistics tool. This was used to determine whether there were significant aspects of the respondents' perceptions of the public realm. The differences in the frequency of specific words were then analyzed to investigate the differences in the cognitive characteristics and commentary patterns of the respondents. The final analysis identified the influential elements of the public realm that were of great concern to residents.

Owing to historical development and farming traditions, the southwestern plains of China's Shandong Province have a high density of villages and rich mineral resources. In recent years, with the continuous exploitation of coal and the promotion of new types of urban construction, an increasing number of villages have relocated to towns. In this study, reorganized communities in southwest Shandong Province, where the problem of relocation is more prominent, were selected as the main object of the study. A typical study sample (mainly reorganized communities relocated between 2015-2022) with high occupancy rates (≥70%) and more mature settlement characteristics were selected through a stratified sampling method. The sample communities comprised six natural villages with a total relocated population of approximately 6,200.

4. Data analysis

The broad definition of the public realm in settlements includes public service facilities, outdoor public spaces, and human activities (Sennett 2011; Zhao et al. 2023). Whether people want to stay in this realm for a long time depends on their sense of identity. Place identity is formed through the integration of personal and social identities, serving as an integrated reflection of the meaning of place in personal identity (Butina-Watson 2007; Cheshmehzangi 2012). It also indirectly encompasses the relationship between place and an individual's perception of themselves. Residents in the reorganized community are relocated from different villages almost simultaneously. Faced with the same new living environment, residents show different senses of place depending on their age and personality. Young and middle-aged people in settlements are not the main users of public space due to the limitation of working hours. They are very concerned about the aesthetics and cleanliness of the public environment in their community and less concerned about the physical elements that need to be perceived after participation, such as public services and the activity space in the public space. The findings for the elderly group differed from those for the younger group in terms of their emotions toward public spaces.

4.1. Sentiment difference analysis

The sentiment analysis of the residents' comment data, and thus the chi-square test calculation, revealed that the minimum expected count was 7.29. All cells of the expected count were more than five, which is evidence of a sufficient sample size. The Pearson chi-square (p) value is 0.386, which satisfies the condition that $p > 0.05$, indicating that there is no significant difference in the attitude toward community public spaces between the young and middle-aged groups and the older group. Overall, the older group had more negative emotional attitudes (48.93%), whereas the young and middle-aged groups showed a polarizing trend toward more positive emotional attitudes (49.17%) (Table 2). This shows that residents' age affects their perception of satisfaction with public spaces, with young and middle-aged people being more in line with older people in their concerns, usage, and content of the public realm. Therefore, subsequent analytical studies should uniformly discuss respondents, and not separately by age group.

Table 2. Non-parametric chi-square test of residents' emotional attitudes

Satisfaction level	Statistical quantity	Positive attitudes	Neutral attitudes	Negative attitudes	Total
Young and middle-aged group	Number	59	8	53	120
	Proportion	49.17%	6.67%	44.16%	100%
Older group	Number	67	9	84	160
	Proportion	41.88%	5.62%	52.5%	100%
Total	Number	126	17	137	280
	Proportion	45%	6.07%	48.93%	100%
X^2	1.906	-	-	-	-
Progressive salience	0.386	-	-	-	-

4.2. Word frequency analysis

The interview contents of the respondents were divided into words and screened by filtering out high-frequency words in the language and words that were not related to the event. These words were categorized according to "space experience" and "function use." Then, the top five high-frequency words allowed for an analysis of the perception of the "restructuring of the public realm" in the community. For example, the five top high-frequency words were safety, comfort, social activities, views, and cultural experience in the catalog of "space experience," and parking, landscape, facilities, pedestrians, and shopping in the catalog of "function use." Through the processing of semantic analysis and

textual simplification, these high-frequency words can be categorized according to "safety," "comfort," "usability," and "aesthetics" (Figure 1).

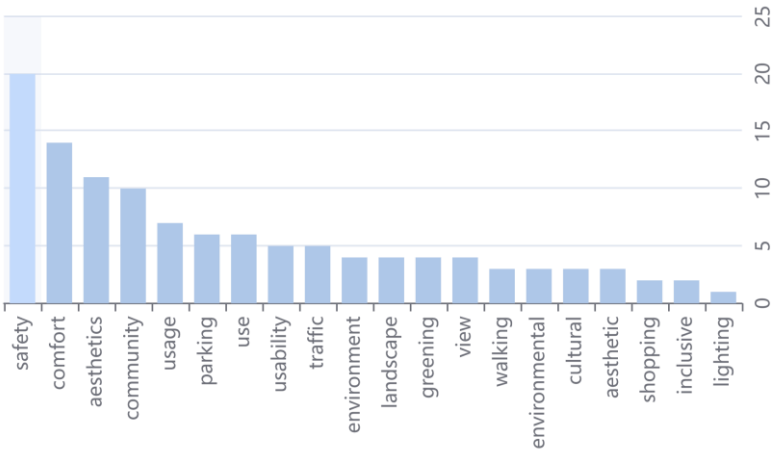

Figure 1. Frequency ranking of keywords.

5. Well-being needs framework

In response to the quality of life of involuntary migrants and the development of the region, it has been argued that migrants' resettlement must consider their personal, economic, environmental, political, and cultural security (Bogumil 2012). Maslow's hierarchy of needs theory emphasizes that after satisfying physical, secure, and social needs, higher-level needs should also be met with respect to self-actualization (McLeod 2007). Public spaces in reorganized communities should also meet safety, health, convenience, and comfort needs (Carmona 2021). This is consistent with the data analysis from previous studies. Research has found that many elderly people are concerned about the aesthetics of the public environment in their community, especially the quality of green landscapes. Many residents feel that the lack of green space management in their communities has resulted in many public green spaces being exposed to dirt because of dead vegetation, which greatly affects their mood.

Based on the above theories and residents' needs, safety, comfort, space usage, and aesthetics, which affect the quality of public spaces, were selected as the evaluation criteria for public spaces in relocated and restructured communities in coal mining areas. Primary and secondary factors and their evaluation rules were identified to evaluate each public space in the community (Table 3).

Table 3. Public space evaluation system

Items	Primary factors	Secondary factors
Safety	Prevention of crime and violence	Daytime and evening public spaces with activities taking place, people moving around and high-quality lighting
	Prevention of traffic accidents	Safety for pedestrians, freedom from noise and air pollution, avoidance of traffic accidents, elimination of fear from traffic conditions
	Socializing with strangers	Door-to-door sales by strangers, impact of incoming tenants on existing residents in the community
Comfort	Pedestrian street	Space for walking, attractive interfaces and facades, good street scale and accessibility
	Event space for gatherings	Places to sit, landscapes, and spaces that can contain multiple activities at once, promote social interaction
	Sensory experience	Rich views, good sounds, impact of temperature on the site, good detailing, comfortable materials, activities are limited by time and season
	Parking space	Indiscriminate non-motorized parking, shortage of parking spaces
Usage	Space occupancy	Occupancy by debris and parking

	Frequency of use by people	Number of times people use the space
	Usage intensity	Use of space at different times of day, number of social interactions occurring
Aesthetics	Visual aesthetics	Aesthetically pleasing building façade and floor coverings, harmonious architectural colors
	Regional characteristics	Featured events, cultural communication

Considering the difficulty in comparing and selecting multiple indicators, experts were consulted via e-mail and face-to-face interviews based on the preliminary list of evaluation indicators. Institutions of higher education consulted 15 experts who had been working in the field of architecture for more than five years. The consultation form consisted of instructions for completing the questionnaire and a rating scale for the indicators, which were scored on a 5-point scoring system with suggestions and recommendations for revision. The results of the consultation showed that the scores for the four basic items and 12 evaluation factors were all 3.8 and above, indicating the importance of the indicators. Based on the judgments and selections of the existing indicators by experts in the field, the final system of indicators of happiness of the residents of the relocated and reorganized communities was obtained (Table 4).

Table 4. Resident happiness index system

Primary factors	**Secondary factors**	**Specific questions**
Safety U_1	Prevention of crime and violence u_{11}	Do you think the space has active popularity?
		Do you think the space has good lighting in the evening?
	Prevention of traffic accidents u_{12}	Can you walk freely in the space without worrying about the impact of vehicles on you?
		Do you think the traffic noise and pollution here will affect your health?
	Socializing with strangers u_{13}	Do you feel uneasy when a stranger comes to your door?
Comfort U_2	Pedestrian street u_{21}	Are you satisfied with the scale, paving, and scenery of the pedestrian street?
		Do you think the pedestrian street is easy to reach and cross?
	Event space for gatherings u_{22}	Do you think this space can promote your social interaction?
	Sensory experience u_{23}	Does this space make you feel comfortable and relaxed and want to stay here?
	Parking space u_{24}	Is there enough parking space here?
Usage U_3	Space occupancy u_{31}	Is there a situation where public space is privately occupied?
	Frequency of use by people u_{32}	Do you often use this space?
	Usage intensity u_{33}	Do you think this space can have multiple activities or uses during the day and night?
Aesthetics U_4	Visual aesthetics u_{41}	Do you find this space aesthetically pleasing?
	Regional characteristics u_{42}	Do you think this space has characteristics compared to other community spaces?

People's experiences of well-being in public spaces are influenced by a combination of factors. This study investigates and evaluates the central square of a community based on the residents' happiness measurement system to propose an optimal design strategy that can enhance their happiness.

Based on the construction of the above index system and the determination of weights, a fuzzy evaluation of the central square of the residents' experience of well-being was carried out. The factor set of the evaluation objects was

established according to the resident happiness index system of public space quality shown in Table 4, the factor set U is established as follows:

$$U_1 = \{u_{11}, \cdots, u_{13}\}; \cdots; U_4 = \{u_{41}, u_{42}\} \tag{1}$$

Setting the evaluation set and the corresponding score, the text divides evaluation set B into three levels.

$$B = \{\text{perfect, good, unsatisfactory}\} \tag{2}$$

The corresponding rating grade is:

$$V = \{100, 60, 30\} \tag{2}$$

Determine the affiliation relationship and obtain the fuzzy evaluation matrix: the standardized transformation of data through questionnaire results, and establishing the factor degree matrix $R_1, \cdots, R_4$:

$$R_1 = Matrix\ U_1 \times V_1; \cdots; R_4 = Matrix\ U_4 \times V_4 \tag{3}$$

By combining the previously determined weight set A and the factor matrix, a comprehensive evaluation was performed to obtain the corresponding evaluation set $B_i(i = 1,2,\cdots,4)$ as follows:

$$\left.\begin{array}{l} B_1 = A_1 * R_1 \\ B_2 = A_2 * R_2 \\ \quad\vdots \\ B_4 = A_4 * R_4 \end{array}\right\} \tag{4}$$

Based on the subjective evaluation summary of the residents' experiences using the central square, the set of factor comments of evaluation indexes R1 to R4 was calculated based on the principle of maximum affiliation, and a single-factor fuzzy matrix was established. The membership of the evaluation index refers to the number of respondents in the questionnaire in each option. Taking the "safety" part of it as an example:

Table 5. Membership in the evaluation index

R_1		Perfect	Good	Unsatisfactory
Safety U_1	Prevention of crime and violence u_{11}	14	91	2
	Prevention of traffic accidents u_{12}	12	46	49
	Socializing with strangers u_{13}	28	57	22

The final weight of each factor was determined by averaging the weights given by the previous ten experts; the results are listed in Table 6.

Table 6 The weight of section R_1

R_1		Weight
Safety U_1	Prevention of crime and violence u_{11}	35.7%
	Prevention of traffic accidents u_{12}	34.3%
	Socializing with strangers u_{13}	30%

According to the formula in Section 3.3, the matrix and weights were multiplied, resulting in a fuzzy comprehensive evaluation result for each section B_1.

$$B_1 = A_1 * R_1$$
$$= (35.7\%\ \ 34.3\%\ \ 30\%\ ) * \begin{bmatrix} 14 & 91 & 2 \\ 12 & 46 & 49 \\ 28 & 57 & 22 \end{bmatrix}$$
$$= (17.514\ \ 65.365\ \ 24.121)$$

In the same way, fuzzy comprehensive evaluation results of each aspect were:

$$B_2 = A_2 * R_2 = (31.044\ \ 38.264\ \ 37.692)$$
$$B_3 = A_3 * R_3 = (25.933\ \ 34.225\ \ 46.842)$$
$$B_4 = A_4 * R_4 = (15.100\ \ 45.310\ \ 46.590)$$

6. Strategies for optimizing the public realm in reorganized communities

Residents had varying levels of agreement with the four indicators of the central square's evaluation of the reorganized community. This study selected the largest affiliation evaluations based on the evaluation of the item. "Safety" was rated as "good" (65.365), "comfort" as "good" (38.264), "usage" as "unsatisfactory" (46.842), and "aesthetics" as "unsatisfactory" (46.590).

However, it should be noted that although "safety" was evaluated as "good," the score for "unsatisfactory" (24.121) was higher than the score for "perfect" (17.514). It is clear that most residents have opinions about traffic safety and community management, and that safety is unsatisfactory for more than half of the residents. The lack of safety increases residents' sensitivity toward daily activities in the space, reduces the quality of their relaxation, and affects their happiness. In the "comfort" category, the scores of "dissatisfaction" (37.692) and "good" (38.264) were similar, with a difference of only 0.572. Only one-third of the respondents indicated the comfort level of the central square. More people felt negatively about paving, noise, parking, and lack of activity on pedestrian walkways. Although the final rating of "comfort" was "good," there are still potential contributing factors that reduce residents' happiness, such as public spaces that are too open and limited by season and weather, unstable walking paths, and drainage problems. Because of the lack of public facilities such as seats and fitness equipment in the square and the low frequency of public events, "unsatisfactory" (46.842) in the "usage" category was consistent with the results of research observations and interviews. This score was higher than the that for "perfect" (34.225) and "good" (25.933).

Although most respondents were satisfied with the plastic pavement and surrounding environment of the square, the empty square lacked vitality and made it difficult for residents to stay there for a long time. It can be seen that stimulating the vitality of the square and encouraging residents to socialize are key improvement issues for subsequent design. The residents interviewed had more opinions regarding the "aesthetic" option, which may be influenced by the bias of personal understanding and aesthetic perception. It was found that relocated residents generally missed village life and the environment before relocation and were reluctant to live in a centralized building. Moreover, greenery in the square is limited, there is no private courtyard, the property banned private planting in public green spaces, and most are occupied by parking spaces, which makes it difficult for residents who have lived in the village environment for a long time to adapt.

Based on the evaluation results of the resident happiness measurement system, it was found that Central Square was deficient in terms of safety, comfort, usability, and aesthetics. The main problems are as follows.

● The use of public spaces is strongly influenced by time of day and weather. The usage rate was low at night and during rainy weather conditions. The majority of active people are elderly people, but the space lacks public facilities, such as seating and leisure facilities that are suitable for the activities of elderly people, and the space is not inclusive.

● The lack of small businesses in the neighborhood and the need for residents to go out of the community to shop are challenges for the physical strength of the elderly. In addition, most residents were dissatisfied with their lifestyles of buying and selling food. Residents generally missed the courtyard dwellings they had before moving and missed self-sufficient vegetable gardens after moving.

● Residents occupy public spaces to dry their clothes, which affects the beauty of their environment. Walking routes were combined with car routes, with higher safety risks. Public spaces are easily occupied by vehicles and private clutter. There is a lack of barrier-free design. The site is rich in paving materials, lacks maintenance and cleaning, and has drainage issues.

In summary, the results of the study show that the studied reorganized communities fail to provide a high-quality public space that matches the needs of the residents and fails to meet the needs of their public life in terms of safety, comfort, usability, and aesthetics. Although the results of this study were limited by the study sample size, and the expert selection process can be biased, the study focused on the relationship between public spaces in reorganized

communities and the lives of relocated residents. The data summarizes the strategies for optimizing public spaces in reorganized new communities represented by such spaces: designing public spaces appropriate to public life, building safe and pleasing public living spaces, stimulating residents' social vitality, and being inclusive. The quality of public spaces in reorganized communities can be improved by considering residents' actual needs.

6.1 Safety and comfort needs

The physiological and safety needs in Maslow's hierarchy of needs theory are low-level needs, which are directly related to the survival and development of individuals. Therefore, safety in public spaces is the first thing that needs to be ensured, and it is the primary entry point for optimal design. This includes improving the safety and environmental hygiene of the streets, cleaning up the occupied public space, and strengthening the setting and artistic design of the public guidance system to ensure the tidiness and accessibility of the activity space; increasing small commercial spaces to improve the shopping environment and expanding its service circle to a certain extent; enhancing the vitality of the street interface to reflect the culture and native culture of the community; choosing reasonable paving materials according to the functional needs of sports, leisure, and parking areas; diverting the routes of vehicles and pedestrians through the paving materials; increasing the utilization rate of space; maximizing the use of space; and creating a fun-living public space.

6.2 Usage and aesthetic needs

During the study, it was found that the public realm of the research sites was underutilized, and although residents generally missed the social scene of gatherings in front of their homes to chat before they moved, it was difficult to realize this in the square of the new community. According to Jan Gehl (2007), potential human needs are only stimulated when they are supported by the right physical conditions, and Say's Law has highlighted that "supply creates demand," which means that a new high-quality space creates new advocates and stimulates new habits (Baumol, 1999). Therefore, it is necessary to enrich the functionality of the space and enhance its social role by conducting community activities, such as floor stalls and cultural and food festivals, to establish meaningful interactional opportunities for community residents. Increase the physical infrastructure that conforms to human-scale perception, emphasizing detailed elements such as the arrangement of environmental landscape decorations, related facilities that are compatible with the activities of the people, and suitable scale and color of site paving. Improve furniture and facilities in public spaces to create a pleasant living environment for residents. Respondents were generally dissatisfied with the green landscape in public spaces, and some even suggested cultivating edible vegetables in public green spaces, which they would manage and look after to achieve the win-win objective of aesthetics and practicality. In the long term, these factors would positively impact residents' physical and mental health.

7. Conclusion

Based on research data on public life in public spaces, this study uses keyword analysis methods and a fuzzy comprehensive evaluation method. Taking dense rural areas in east-central China as an example, this study reveals the main factors influencing the public's improved sense of well-being in restructured communities through sentiment analysis. Additionally, it analytically mines high-frequency words and co-occurrence relationships related to the construction of public areas in restructured communities, gradually analyzing and reasoning how the creation of public areas affects residents' emotional attitudes, highlighting the importance of creating public areas in reorganized communities.

● Ensure that living facilities and spiritual civilization are pushed together. Continuously optimizing the community's physical environment and enhancing emotional care for resettled residents will help them adapt quickly to the new community. Considering the characteristics of the resident composition, such reorganized communities are heavily

aging, and older residents have a higher degree of use and dependence on the public realm of the community, especially for accessibility facilities, public toilets, and activity and fitness areas. Large public service facilities, such as community health service centers, supermarkets, and markets, should be planned within walking distance of the community. In addition, the community should be encouraged to form cultural clubs such as square dances, Yangtze teams, and Chinese chess clubs. Cultural activities should be organized to enhance resettled residents' sense of belonging and identity in a reorganized community.

- Active creation of social opportunities in the public sphere. The resettlement of residents has led to the disintegration of neighborhoods and a reduction in community participation. The construction of social networks has led to a certain degree of exclusion and closure. Therefore, there is a need to use the public realm to create more social possibilities for residents, such as by organizing festive fairs, ensuring the frequency of public events, and developing self-selling areas. Through the organization of various events, the economic behavior of residents of the community is stimulated, helping them become familiar with the spatial layout and neighbors of the reorganized community in a short period of time to better integrate into their new environment.
- Increasing productive space for reemployment and promoting sustainable development in restructured communities. Most of the residents were engaged in agriculture before they were relocated, and the reorganized communities were often far away from farmland, resulting in most residents facing the problem of transitioning their mode of production. Since the relocated communities have an aging population, the issue of reemployment is significant; in fact, the bills for water, electricity, and gas are higher in the reorganized communities than those in the villages, which puts greater economic pressure on the relocated villagers. Therefore, in addition to financial compensation from the government, it is necessary to use the public realm to create additional productive spaces for reemployment, such as creating areas for free stalls and dividing small vegetable gardens to ensure that residents can achieve sustainable community development through reemployment.

This study constructs an evaluation framework for residents' well-being by quantitatively analyzing their well-being experiences in the public realm of a reorganized community and proposes considerations for optimizing the design of public spaces to meet the needs of resettled residents. It enriches the design theory of resettled and restructured communities and provides references for evaluating the planning and construction of new urban communities. This topic is relevant in today's scenario, particularly considering the rapid urbanization and economic development in China and other Asian countries. The focus on the relationship between the well-being experience of relocated residents in rural areas and the public realm of new communities is significant, as it addresses the challenges posed by the transformation of rural areas into urbanized spaces. The study's findings have strong implications, especially for the design and planning of new settlements in reorganized communities. By analyzing factors such as safety, comfort, usability, and aesthetics in public spaces, the study offers valuable insights into improving the quality of life and well-being for relocated residents. The consideration of social opportunities and the creation of productive spaces for reemployment are particularly relevant to address the needs and concerns of the relocated villagers.

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