



A Review of Domestic Research on Renewal of Public Space in Child-Friendly Community

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Abstract. Renewing the public space of child-friendly communities is not only the foundation and premise of the construction of child-friendly communities, but also an opportunity to develop community systems and services for children, and an important measure to promote children's development and the realization of children's rights. Based on the combing of relevant domestic researches, this study summarizes the current research status of domestic research from four aspects: the correlation between children's behavior activities and community public space, the evaluation of child-friendliness of community public space, the renewal strategy research and practical projects, and puts forward the prospect from the aspects of local research and excavation of community culture, in order to provide reference for the subsequent research and practice of community public space renewal.

Keywords: Child-friendly; community; public space; renewal.

1 Introduction

In 2016, representatives of the National People's Congress and the Chinese People's Political Consultative Conference submitted a report on incorporating 'child-friendly communities' into community development planning at all levels of government. In 2020, the 14th Five-Year Plan proposes accelerating urban renewal and transforming the functions of stock areas; and promoting the construction of child-friendly cities, focusing on 'one old and one small', and strengthening the transformation of community public spaces. The Guiding Opinions on Promoting the Construction of Child-Friendly Cities and the Guidelines for the Construction of Child-Friendly Spaces in Cities (for Trial Implementation) further set out the relevant construction requirements.

As the most basic constituent element of a city, introducing the concept of 'child-friendly' into the community and renewing and creating child-friendly community public spaces can not only stimulate children's outdoor activities, promote the improvement of children's comprehensive development level, and enhance social recognition and respect for children's rights, but also help to improve the community's living environment, which will ultimately benefit all community residents.

2 A Review of the Current State of Research

With the national emphasis on the construction of child-friendly cities and communities and the continuous promotion of urban renewal, in recent years there has been a gradual increase in the number of studies related to the renewal of public space in child-friendly communities in the academic community, which mainly includes the relationship between children's behavioral activities and the community space environment, the evaluation of the degree of child friendliness of the community space, and the renewal strategy of child-friendly communities, and the object of the study involves the street space, community parks and squares, outdoor play space, etc..

2.1 Research Related to the Relationship between Children's Behavioral Activities and Community Public Space

In terms of community spatial site factors, good sidewalks, bicycle infrastructure, and safe neighborhoods and friendly neighbors can promote physical activity among children in the community, which is significantly and positively correlated with accessibility to community parks and negatively correlated with distance from home to school^[1]. The size of plazas, the size of green spaces, the density of the road network, the density of open space facilities, and the density of buildings also affect the level of physical activity of children in the community^[2]. A place to stay, a variety of environmental elements to touch, a child-friendly design, and a spatial interface that extends and blends can induce children to move^[3]. The variety of spatial features and facilities for children's activities can also influence the number and type of behaviors that occur in children^[4]. Children's independent activities are an important component of children's physical activities, and there have been empirical studies in China on the built environment in the community that affects children's independent activities^[5].

In terms of research on the mechanism of interaction between children and the spatial environment, some scholars, based on domestic and international literature, have summarized the mechanism of action of the built environment in the community on the level of children's health^[6]. There are also Huang Ling and Zhu Wei who developed a model of children's interaction with the environment in an aging community in a mountainous city^[7] as well as a framework for a three-stage decision analysis model of children's outdoor activities^[8].

2.2 Evaluation Study of Public Space in Child-Friendly Community

At the overall community level, some scholars have constructed a child-friendly evaluation system for the spatial environment of urban settlements^[9]. Some scholars have also constructed a child-friendly community public space evaluation system either by summarizing and combing the relevant evaluation studies of domestic scholars at different spatial levels or by relying on established evaluation standard documents^[10,11]. Jia Hong xu^[12] also constructed an evaluation system for the child-friendliness of community outdoor public spaces from multiple dimensions such as safety, accessibility, and multifunctionality.

From the aspect of community travel streets, some scholars have constructed a framework of evaluation indicators for children's travel safety in community environments based on the systematic collation of foreign literature and travel safety-related indicators within the evaluation tool^[13]; Zeng Peng constructed an evaluation system for children's travel friendliness in the physical environment of old residential areas by combining the hierarchical analysis method and the fixed-order selection model in their research methodology^[14]; Guo Di established an evaluation system for street availability in child-friendly neighborhoods^[15]. In addition, there are also studies on evaluation indicators of children's playability in community public spaces^[16] and translation of the International Assessment Tool for the Evaluation of Children's Rights (IATECR)^[17].

2.3 A Study of Public Space Renewal Strategies in Child-Friendly Community

In terms of child-friendly community planning, the planning study of community living circles is one of the relevant research paths. Huang Ling^[18] and others have proposed the planning strategy of community life circle from different perspectives. Some scholars have also introduced the concept of 'children's infrastructure' and highlighted the importance of children's participation^[19]. Chen Xiaotong^[20] also proposed the establishment of a hierarchical system of children's open space. In addition, there are studies on the main planning indicators of other types of parks and green spaces, such as community parks^[21], and the configuration of community service facilities^[22]. Other scholars in their studies have also proposed multiple models for building child-friendly communities^[23].

In terms of research on the design of various spatial levels of child-friendly communities, there are studies from combining domestic and international practices as a way to summarize the creation strategies of child-friendly healthy communities^[24]; there are also studies on local children's spatial needs and their characteristics based on the construction of a child-friendly oriented eco-community public space optimization system^[25]. Liu Liyun^[26] and Shan Xinyu^[27] explored the construction strategies of community outdoor activity spaces and natural educational landscapes in community gardens; Zou Tian shu^[28] and Zhang Xiaojing^[29] researched the renewal strategies of community intergenerational spaces or facilities around the concept of intergenerational integration. Shen Yao proposed a 'two-piece' design strategy for community street environments^[30].

3 Interpreting Public Space Renewal Practices in Child-Friendly Community

3.1 Case collation

With the keywords of 'child-friendly' and 'community', the author sifted through the CNKI and Baidu search engines and organized the 12 cases in terms of city, renewal time and renewal content (Table 1).

Table 1. Case Studies on Renewal of Outdoor Public Space in Child-Friendly Communities in China (Self-drawing based on information)

Numble	Case	City	Time	Content
1	Hongli community	Shenzhen	2018	Child-friendly community parks; child-friendly trails
2	Tongji community	Wuhan	2023	Community plaza center; elevated semi-outdoor event space
3	Qiyuan community	Jiaxing	2021	Transforming neighborhood overheads and outdoor promenades into children's micro-homes
4	Furun community	Beijing	2020	Creating a <i>Garden of Gleanings</i>
5	Xiaonanzhuang community	Beijing	2020	Children's slide park with limited opening hours
6	Mingduhuayuan community	Wuhan	2023	<i>The most beautiful way to school</i>
7	Xili community	Beijing	2020	<i>Zongxianghui Garden</i>
8	Southwest University south community	Chongqing	2022	Adding community sports and cultural parks; renovating community gardens; improving the walking space in front of kindergartens; updating unused green spaces
9	Jingcheng community	Chengdu	2019	Lincoln County Plaza, Safe Neighborhood Spaces
10	Longxi community	Nanjing	2021	Upgrading of soccer fields, basketball courts and other sports fields
11	Baziqiang community ^[31]	Changsha	2018	Construction of <i>Nongshim Garden</i>
12	Fengquan ancient well community ^[30-32]	Changsha	2017	Two corner views
			2018	Increase the overall greening of the street; create a continuous clear pathway; optimize the technology park and add pocket gardens
			2020	Rooftop Garden

3.2 Case Interpretation

In terms of the location and time of renewal, most of the child-friendly communities have been renewed in major provincial capitals and municipalities, and most of the

cities are in the plains, with very few projects practiced in mountainous cities, and the time of renewal is mostly concentrated in the year 2020.

In terms of the renewal content of outdoor public space, the renewal and transformation objects include community gardens, roof gardens, walls, community parks and squares, community street space, etc. The transformation content includes the construction of vegetable gardens close to nature, the creation of themed gardens/paradise, and the addition of children's play facilities and colorful paintings, etc. The transformation strategies are, firstly, the development of unused open space and green space, and, secondly, the design of the original site in an interesting way.

In the cases listed above, 29% of the child-friendly communities have established a child participation system, and 50% of the community children participated in the pre-project design decision-making stage and put forward their ideas, while in the rest of the projects, children only symbolically participated in the creation stage. It is worth noting that community parent-child activities are held in all child-friendly community renewal projects, and some of the activities are resolved by children.

4 Conclusions and Outlook

Renewal practices and related research on public space in child-friendly communities in China have only gradually increased after 2016, and although the relevant results in recent years have been quite fruitful, there are still the following problems: The majority of practice and research has been conducted in formal outdoor public spaces such as community gardens, and there has been little targeted research on informal children's spaces such as streets and front-of-house open spaces within neighborhoods; Community types are also mainly studied as new and old communities, with fewer studies on more detailed types of communities; most of the cities studied and practiced are plains cities, with a lack of studies on mountainous cities such as Chongqing; A reliable and relevant evaluation system has not yet been established; mechanisms for children's participation and models for building child-friendly communities are still at the exploratory stage, and there is a lack of research on follow-up evaluation and regulatory systems.

By summarizing the domestic theoretical research and practical experience, the focus of future research on outdoor public space in child-friendly communities in China should be on the following four aspects:

(1) Different cities will have different topographical features, and there will also be differences in spatial distribution patterns, physical environments, and cultural connotations among various neighborhoods and communities. Therefore, it is necessary to strengthen the research on the localization and on-site nature of child-friendly communities.

(2) Improve the design strategy system for community activity space and street traffic safety (Figure 1). According to children's needs and the actual situation of the community, optimize and upgrade the landscape and greening of public activity spaces, facility sketches and the physical environment. Set up intergenerational spaces

and establish a "safe, continuous and symbiotic" network of child-friendly community public spaces.

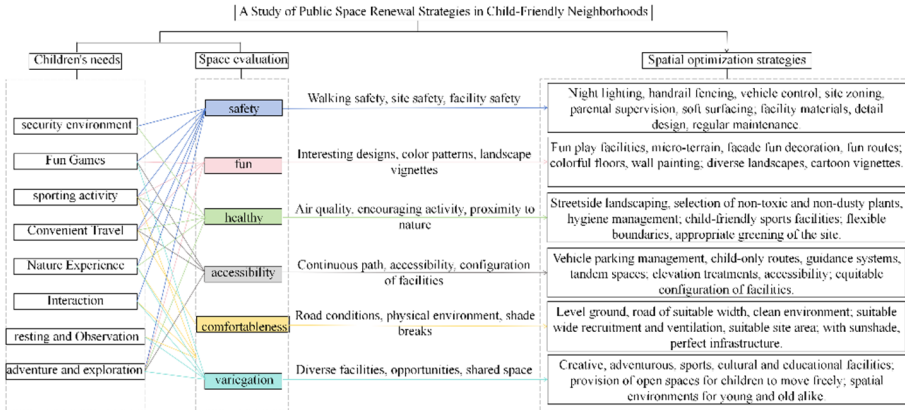


Fig. 1. Strategies for optimizing community public space based on children's needs (Self-drawing based on information)

(3) Preserve and restore the material cultural assets of the community, explore the spiritual culture formed through neighborhood interaction, and explore ways to enhance the sense of belonging of community residents, the atmosphere of the neighborhood, and the vitality of the community and the culture and spirit of the spatial arena.

(4) Explore diversified models for the construction of public spaces in child-friendly communities, create opportunities for children's participation, ensure the effectiveness of children's participation, and thus develop children's initiative and capacity for participation.

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