

## Research Article

# Friendliness of Preschool Children's Community Public Space Based on Multidimensional Perspectives under the Background of Wireless Communication and Artificial Intelligence

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The development of wireless communication and artificial intelligence has provided great convenience to the people's production and life and has also created many favorable conditions for the development of scientific research. Constructing a multidimensional monitoring system through technical means will help make community public spaces more friendly to preschool children, create a community public space that is friendly to preschool children, and better implement the concept of preschool children's friendliness. The thesis aims to explore the friendliness of preschool children in the public space of the community and focus on the needs of preschool children and their caregivers as the starting point. Based on wireless communication and artificial intelligence technology, it is evaluated from the three dimensions of space, service, and culture. Starting from this, we obtained relevant data on the impact of impact factors on the friendliness of preschool children in community public spaces and quantified the community public spaces based on these scores to provide theoretical support for realizing preschool children's friendliness in community public spaces. Research has proven that safety, inclusion, and diversity are the top concerns for community residents. Therefore, we should prioritize these factors when building community-friendly spaces.

## 1. Introduction

Preschool children can be divided into two stages in terms of age: the infant period from 0 to 3 years old and the preschool period from three to six years old. This is the period when a person's character is initially formed. Preschoolers are lively, active, social, curious, questionable, and imitative [1, 2].

Since the 1950s, children's development rights have gradually been valued, and children's rights have been incorporated into public policies. Pilot cities for child-friendly cities have been launched both at home and abroad. But preschool children are rarely considered as stakeholders. An older child can at least tell us what he wants from the city, while preschool children cannot express their desires and needs [3, 4]. Therefore, it is difficult for child-friendly cities to be truly preschool-friendly. In this context, how to evaluate the friendliness of preschool children in community

public spaces is a problem we need to solve at the moment. The construction of the public space of preschool children's community has always been a topic that the academic circle pays more attention to. In the context of the rapid development of wireless communications and artificial intelligence, this research has made an extremely exciting breakthrough. Ji discussed the importance of wireless network to children's comfortable space and proposed a design method with strong color of information technology [5]. Meng analyzed the characteristics of British design in this field by way of comparative research, interpreted its advantages, and put forward development suggestions based on my country's actual conditions [6].

Public space is the third place for preschool children besides "home" and "school." It has the characteristics of publicity and openness. Community public space is the main place for preschool children to participate in community life

and is an important part of urban public space; community public space focuses more on “communication” and “interaction,” so it has a strong sense of community belonging and cohesion. Based on a multidimensional perspective, this paper uses the analytic hierarchy process to construct a community public space preschool children’s friendliness evaluation system.

## 2. Community Public Space Type System

In the context of wireless communication and artificial intelligence decision-making, the community public space system has added many new contents.

*2.1. Spatial Dimension System.* Public space includes many categories in the community, such as street space, green space, community park, community commercial street, children’s activity space, sports space, and education space, which can provide residents with outdoor activities [7, 8]. And wireless communication and artificial intelligence decision-making technology organically combine these partitions [7, 8]. Among them, the children’s activity space includes both formal children’s activity spaces, such as community playgrounds, and informal children’s activity spaces, such as streets, squares, and greenery. In the early stage of construction, community public space was to meet the needs of other communities, and later, more children gathered to play here, and then, it evolved into an informal children’s activity space (Table 1).

*2.2. Service Dimension System.* The public service system of the community is extremely important to ensure that the public space can serve everyone equally. With the assistance of wireless communication and artificial intelligence technology, the quality of the public service system can achieve leapfrog progress [9–12]. Preschool children spend a lot of time outdoors every day, and their caregivers enter the community’s public spaces every day, either as participants in public space recreational activities or as part of other arrangements. Preschoolers who enter public spaces are always accompanied by caregivers. In our country, they are usually women or the elderly. Therefore, the community’s public service facilities must meet not only the needs of preschool children, but also their caregivers [13], equipped with diversified community service facilities such as medical treatment, hygiene, culture, entertainment, to ensure the healthy growth of preschool children (Table 2).

*2.3. Cultural Dimension System.* Create a good community atmosphere and environment, so that preschool children have the right to participate in their own related community construction.

Encourage children to participate in the planning of safe travel routes [14]. At the community level, it is manifested by asking children to mark their frequent destinations and travel routes, as well as places they think are more dangerous or where they have been injured somewhere; and consult

their parents and community residents to further determine the routes that children often travel through, so as to guide the planning of safe travel routes for children [15, 16].

The play space is combined with public art, and preschool children and their caregivers are involved in the design of street art. The combination of public art and game space is a natural synergy. Artworks can give the public space an identity and make it a destination.

## 3. Evaluation Principles for the Friendliness of Preschool Children in Community Public Spaces

Wireless communication and artificial intelligence decision-making technology have effectively enriched the evaluation system of preschool children’s friendliness in community public spaces.

*3.1. Security Principles.* The personal safety of preschool children and their caregivers go hand in hand. Preschoolers learn whether the things they are exploring are safe by observing the expressions or reactions of their caregivers. The anxiety response of caregivers has a huge impact on preschool children; especially the threat of physical injury has a huge emotional impact on caregivers and preschool children under their care, leading to anxiety in preschool children, reducing immune system responses, and reducing school age.

*3.2. The Principle of Inclusiveness.* Ensure that each preschool child, led by the caregiver, can easily obtain the goods and services they need within 5–10 minutes away from home and give the caregiver a good reason not to use a car to travel. The smaller the “movement chain” distance of each family, the less time it takes to complete travel tasks, which translates into lower stress levels and better physical and mental health.

In the community, it is necessary to provide inclusive play spaces and public areas for preschool children with disabilities, including special activity areas for autistic patients, special swings, various sensory, and tactile game activity areas.

*3.3. The Principle of Naturalness.* People have repeatedly found that exposure to nature is beneficial to reducing the stress on adults and promoting the overall physical and mental health of preschool children. Friedrich Froebel (EriDCrich EroDbDI) was the most influential German scholar in the nineteenth century. He coined the term “kindergarten,” emphasizing the role of gardens and the importance of nature in the development of children [17]. Preschoolers aged 2–5 years old can benefit greatly from exposure to nature, which is a way to improve their understanding of their bodies and build feelings. In the game, they can make full use of their imagination to play with natural materials. They can climb trees, explore the secrets of leaves, and use stones to build imaginary structures [18].

TABLE 1: Types of community public space.

Public space type	Preschooler needs
Children’s activity space	Meet the needs of various activities of preschool children
Street space	Meet the needs of preschool travel safety
Square space	Meet the common needs of preschool children and their caregivers
Green space	Meet the needs of preschool children in deep contact with nature
Sports space	Meet the needs of preschool children’s games, sports, etc.
Educational space	Meet the needs of preschool children to stimulate creativity and imagination

TABLE 2: Community service dimension system.

Types of service facilities	Facility name	Facility function
Children’s activity facilities	Game equipment	Amusement facilities that promote children’s senses and increase adventure opportunities
	Daycare	Provide homework guidance after school
Educational facility	Kindergarten	Provide preschool education
	Primary school	Provide compulsory education
	Educational institution	Conduct all kinds of interest counseling
Medical facilities	Community clinic	Provide protection for children’s daily health
	Vaccination station	Provide vaccinations for young children
	Children’s health station	Child health consultation
Cultural facilities	Library	For children’s daily learning
	Stadium	For children’s daily sports activities
Maternal and child facilities	Milk station	Provide fresh milk for young children
	Breastfeeding facilities	Set up a breastfeeding station to facilitate the caregiver to feed the baby at any time
Health facilities	Drinking water	Ensure the healthy drinking water needs of preschool children during the activity
	Toilet	Convenient for children to urinate at all times
Landscape greening facilities	Seat	Low and spacious benches can be climbed by children
	Logo	Provide guidance for children’s travel
	Fence	Prevent children from accidentally running into the driveway or walking into the entertainment space
Meeting facilities	Accessible channel	Provide inclusive play spaces and public areas for preschool children with disabilities. Including special activity areas for autistic patients, special swings, various sensory and tactile game activity areas
Lighting facilities	Street lighting	Provide a good overview of the situation for preschool children and their caregivers
	Landscape lighting	Emphasize paths, focal points, entrances and exits, and gathering places

This is of great benefit to the growth of brain structure and the establishment of emotions.

3.4. *The Principle of Diversity.* The users of the preschool children’s activity space include not only different preschool children, but also their caregivers, which may be the elderly or other parents. Therefore, the public space must not only meet the needs of interaction between preschool children, but also meet the needs of preschool: the common needs of children and their caregivers and the functional needs between caregivers, including the transition between the dynamic area and the static area; it is suitable for preschool children and caregivers to use them together with rich colors and diverse forms [19]. Set up various temporary venues in multiple areas of the community, and constantly change the types of games, bringing different sense of experience. You can also create a positive atmosphere by temporarily closing a street for small events.

3.5. *Principle of Function Mixing.* A community suitable for preschool children and their caregivers should have multiple service functions. We need to consider the placement of various health centers, nurseries, kindergartens, amusement parks, and other convenient facilities in the community. These facilities should be distributed as evenly as possible within the community. If there is only one convenient facility, it should be located in a place that is easily accessible within the community.

As the range of activities for preschool children and their caregivers is limited, the convenience facilities they need should be placed on the same route as much as possible. For example, if a supermarket is set up near the amusement park, the caregiver can go to the nearby supermarket to purchase while taking the children to play in the amusement park; if it is not convenient to set up a supermarket near the amusement park, then a supermarket should be set up on the route from the amusement park to home. And use special signs to mark the most convenient route or set up a coffee

shop next to the playground, so that caregivers can rest and wait for the children.

#### **4. Evaluation Factors for the Friendliness of Preschool Children in Community Public Spaces**

In the context of wireless communication and artificial intelligence technology, the extension of the influencing factors of the friendliness of preschool children in community public spaces has been greatly expanded. It includes not only physical factors such as spatial form and scale, but also social factors. As the main living environment for preschool children, community public space is closely related to the healthy development of preschool children. This paper studies the exploratory research from the level of community public space, analyzes the factors that affect the friendliness of preschool children in community public space, and classifies them into three categories: space dimension, service dimension, and cultural dimension. The details are as follows.

*4.1. Factors Related to the Spatial Dimension of the Community.* Factors related to the dimension of community space include public space within the sight range of residents, space boundary, ground material, greening and landscape, speed limit, space scale, activity space for caregivers of preschool children, space comfort, space diversity, and space Function mix. Ensure that the street space can be seen by people in the buildings along the street, so that people can act as “street eyes,” and vandalism and crime will be affected and reduced. Set up safety bolts around the children’s activity area to avoid collisions caused by the loss of control of the vehicle and, at the same time, limit the speed of the vehicle. It is forbidden to park near road intersections and plant large tracts of taller green plants to avoid sheltering preschool children and the combination of casinos and supermarkets (See Table 3).

*4.2. Factors Related to the Community Service Dimension.* The community service dimension emphasizes paying attention to the daily needs of community residents. It is intended to enhance the livability and cohesion of the community through the improvement of service quality, to meet the diverse needs of different types of residents in the community as much as possible. Factors related to the community service dimension include game facility safety, facility inspection and maintenance, lighting system, facility scale, indicator signs, seat fences, barrier-free facilities, special child activity areas, breastfeeding stations, stroller lanes, accessibility, the flora and fauna, abundant games, and commercial facilities and street sharing (see Table 3).

*4.3. Factors Related to the Cultural Dimension System.* Factors related to the cultural dimension of the community mainly include holding positive energy publicity in the community, regulating early education centers and

counseling institutions, respecting cultural diversity, holding various community cultural festivals, natural and cultural displays, art sketch exhibitions, and increasing preschool children’s participation in public art (see Table 3)

#### **5. Construction of the Evaluation System**

The influence of wireless communication and artificial intelligence technology on the friendliness of preschool children in community public spaces is gradually expanding, requiring us to fully integrate this background when constructing an evaluation system. Using the analytic hierarchy process, the decision goals, decision criteria, and decision objects are layered according to their mutual relationship, and the target layer-criterion layer-subcriteria layer-detailed evaluation layer is refined, and a hierarchical structure model is established.

*5.1. Standard Layer.* Safety, inclusiveness, naturalness, diversity, and functional mixing are the evaluation criteria for the friendliness of preschool children in community public spaces. Safety requires not only the safety of the street space where preschool children and their caregivers are located, but also the safety of plants, materials, etc.; inclusiveness requires the inclusion of preschool children and their caregivers in community public spaces and the inclusion of children with disabilities; repetitiveness needs to meet the repetitive daily activities of preschool children; naturalness includes the diversity of plants and the combination of play and nature; diversity requires a variety of public spaces to meet the common needs of preschool children and their caregivers, mixed functions The principle needs to consider the combination of different types of spaces; the principle of cultural cohesion pays more attention to making the game full of art and bringing a different cultural and artistic experience.

*5.2. Subcriteria Layer.* The criteria of comprehensive evaluation are divided from the spatial dimension, service dimension, and cultural dimension, which have a directional effect on detailed evaluation. By further subdividing the subcriteria layer, the design of the community public space has a clearer direction. The space planning, service quality, and cultural color of public space are scientifically matched and unified.

*5.3. Detailed Evaluation Layer.* The detailed evaluation includes whether the public space is safe, whether the area is within the sight of residents, whether the paving materials are soft and hard, the protection of waterfront areas, street safety, whether the game facilities are overhauled and maintained in time, whether the lighting system is complete, and the facilities, whether they meet the scale of preschool children, whether they meet the need for children with disabilities to play, the combination of commercial facilities, public facilities and play space, the safety of the green landscape and the degree of integration with the space,

TABLE 3: Evaluation factors of preschool children’s friendliness in community public spaces.

Spatial dimension correlation factor	Service dimension-related factors	Cultural dimension-related factors
The scope of public space is visible	Safety of game facilities	Supervise and strictly investigate nonpositive energy propaganda in the community
Clear boundaries	Regular inspection and maintenance of facilities	Supervise and strictly inspect irregular early education centers and counseling organizations
Combination of soft and hard ground materials	Perfect lighting system	Respect the cultural diversity of the community
Safe plant species	The facilities meet the ergonomics of preschool children	Various community cultural festivals are often held
There are protective facilities in the waterfront area	The signs are perfect	Introduction to plants
Street safety, speed limit	Seats, railings and other facilities shall consider the scales of preschool children and caregivers, respectively	Featured patterns show nature
Scale of activity range	Meeting facilities	Variety of art sketches
Activity space for carers of preschool children	Special activity area for children with autism	Preschool children’s library
Integration of public space and green landscape	Breastfeeding station	Organize various activities
Rich vegetation coverage	The entrances and passages of public spaces allow strollers to pass through	Participation of preschool children
Natural shade	Dedicated passage for strollers	Combination of public art and game space
Sunbathing	Plant accessible plants	Blank walls or trash cans are used as children’s graffiti walls
Comfortable wind speed	Interactive animals	
Meet the common needs of preschool children and caregivers	Artificial pool	
Dynamic area and static area	Environmental maintenance	
A coffee shop where you can rest	Changing game facilities	
The playground is combined with supermarkets, coffee shops, etc.	Rich commercial facilities	
Combined arrangement of kindergartens and childcare institutions	Outdoor heating house	
	Street sharing, prohibiting or temporarily closing the streets as event spaces or weekend markets	

whether the community culture is healthy, positive energy, and whether preschool children are participating in the community.

5.4. *Evaluation Index System Table.* To create a community public space suitable for the healthy growth of preschool children, it is necessary to meet the principles of safety, inclusiveness, naturalness, diversity, and mixed functions. Through field research and literature review, the evaluation

indicators of preschool children’s friendliness in community public spaces were refined, and a multidimensional perspective of community public space preschool children’s friendliness evaluation system was constructed (Table 4).

Based on the cognition of the community public space system, the factors that have an impact on the community public space friendliness of preschool children are summarized from the three dimensions of space, service, and culture, and the safety, tolerance, naturalness, and diversity are summarized, as well as the five principles of sex and function

TABLE 4: Based on the multidimensional perspective of community public space preschool children's friendliness evaluation system.

Target layer	Quasi-measurement layer	Sublayer	Detailed evaluation layer	
Community public space preschooler friendly	Security principle A	Space safety A1	Public spaces are within the sight of residents; A11	
			The boundary of the public space is clear, with fences and other protective facilities; A12	
			Combination of soft and hard ground material; A13	
			Safe plant species; A14	
			There are protective facilities in the waterfront area; A15	
			Street safety, speed limit; A16	
		Service security A2	Safety of game facilities; A21	
			Regular inspection and maintenance of facilities; A22	
			Perfect lighting system; A23	
			The facilities meet the ergonomics of preschool children; A24	
			Perfect indication signs; A25	
			Supervise and strictly investigate nonpositive energy propaganda in the community; A31	
	Cultural security A3	Supervise and strictly inspect informal early education centers and counseling organizations; A32		
		Combination of spatial scale and activity range of preschool children; B11		
		Inclusive principle B	Space tolerance B1	Provide activity space for carers of preschool children; B12
				Integration of public space and green landscape; B13
				Seats, railings and other facilities shall consider the scales of preschool children and caregivers respectively; B21
			Service tolerance B2	Barrier-free facilities; B22
	Special activity area for children with autism; B23			
	Breastfeeding station; B24			
	Cultural tolerance B3	Space and nature C1	The entrances and passages of public spaces allow strollers to pass through; B25	
			Dedicated passage for strollers; B26	
			Respect the cultural diversity of the community; B31	
		Naturality principle C	Service and nature C2	Various community cultural festivals are often held; B32
Abundant plant coverage; C11				
Natural shade; C12				
Culture and nature C3	Sunbathing; C13			
	Comfortable wind speed; C14			
	Growing accessible plants; C21			
Diversity principle D	Spatial diversity D1	Interactive animals; C22		
		Artificial pool; C23		
		Environmental maintenance; C24		
		Introduction to plants; C31		
	Service diversity D2	Featured patterns show nature; C32		
		Meet the common needs of preschool children and caregivers; D11		
		Dynamic area and static area; D12		
		Resting coffee shop; D13		
Cultural diversity D3	Space function hybrid E1	Changing game facilities; D21		
		Rich commercial facilities; D22		
	Service function hybrid E2	Outdoor heating house; D23		
		Diversity of art sketches; D31		
Function mix E	Cultural function mixed E3	Preschool Children's library; D32		
		Organize various activities; D33		
	Participation of preschool children; D34			
Street sharing, prohibiting or temporarily closing the street as an event space or weekend market; E21				
Combination of public art and game space; E31				
Blank wall or trash can as children's graffiti wall; E32				

TABLE 5: Importance assignment rules.

Importance level	Assignment $a_{ij}$
Element $i$ is as important as element $j$	1
Element $i$ and element $j$ are slightly more important	3
Elements $i$ and $j$ are obviously important	5
Element $i$ and element $j$ are strongly important	7
Element $i$ and element $j$ are extremely important	9
The comparison result of element $i$ and element $j$ is in the middle of the above results	2, 4, 6, 8
The comparison result of element $i$ and element $j$ is the inverse of the comparison result of element $j$ and element $i$ , $a_{ij} = 1/a_{ji}$	Reciprocal

TABLE 6: List of friendliness evaluation factors and weights at all levels 1.

Target layer	Quasi-measurement layer	Weights	Sublayer	Weights
Community public space preschooler friendly	Security principle A	0.645	Space safety A1	0.580
			Service security A2	0.387
			Cultural security A3	0.033
	Inclusive principle B	0.303	Space tolerance B1	0.837
			Service tolerance B2	0.139
			Cultural tolerance B3	0.022
	Naturality principle C	0.009	Space and nature C1	0.890
			Service and nature C2	0.098
			Culture and nature C3	0.012
Diversity principle D	0.003	Spatial diversity D1	0.456	
		Service diversity D2	0.425	
		Cultural diversity D3	0.119	
Function mix E	0.037	Space function hybrid E1	0.604	
		Service function hybrid E2	0.083	
		Cultural function mixed E3	0.313	

mixing, and then through the construction of classes, aiming at the friendliness of preschool children in the community public space, taking safety, inclusiveness, naturalness, diversity, and functional mixing as the criteria, from space, service, and culture. It is divided into three dimensions, with 49 items such as plant safety, street sharing, and participation of preschool children as detailed evaluation layers. The Analytic Hierarchy Process is used to construct a multidimensional perspective of preschool children’s community public space friendliness evaluation system.

5.5. Evaluation Method of the Friendliness of Preschool Children’s Community Public Space Based on a Multidimensional Perspective

5.5.1. Determination of Weight. Through the two-by-two comparison of indicators at the criterion level, subcriteria level, and detailed evaluation level, the importance assignment rule (Table 5) is used to determine the degree of importance.

Using the Delphi expert consultation method, multiple experts are invited to score the indicators. Using the analytic hierarchy process, the judgment matrix scored by the experts is calculated. Then, divide the weights of the experts equally to get the weights of all levels of indicators (Tables 6 and 7).

5.6. Evaluation Method of Friendliness. Based on the actual situation, the evaluation set of preschool children’s friendliness in public space is given as:  $M=(M1, M2, M3, M4, M5)=(\text{excellent, good, medium, poor, poor})$ , five points into full marks, and

the community. The evaluation of the friendliness of preschool children in public spaces is divided into 5 levels, using the arithmetic scoring method  $W_j=(i+1-j) * 5/i, j = 1, 2, 3, 4, \dots, I$ , so excellent (4–5), good (3–4), medium (2–3), poor (1–2), bad (0–1), that is,  $W=(5, 4, 3, 2, 1)$ .

Through the questionnaire survey, the indicators of the detailed evaluation layer are scored. The scoring standard is the friendliness  $C_i=(5, 4, 3, 2, 1)=(\text{Excellent, Good, Medium, Poor, Bad}) (i = 1, 2, \dots, n)$ , take the average of the questionnaire results to get the index value.

Determine the evaluation value of indicators at all levels, according to the formula:

The criterion level index score  $A = \sum C_i * B_j (j = 1, 2, \dots, n)$  (where  $C_i$  is the detailed evaluation level index score and  $B_j$  is the corresponding weight value).

The friendliness of preschool children in community public space  $M = \sum A_i * B_i (i = 1, 2, 3, 4, 5)$  (where  $A_i$  is the index value of the criterion level, and  $B_i$  is the corresponding weight value).

Calculate the friendliness of preschool children in community public space: excellent (4–5), good (3–4), medium (2–3), poor (1–2), poor (0–1), and then combined evaluation. As a result, we conducted an in-depth analysis of the different factors with low scores on the spatial dimension, service dimension, and cultural dimension of the community’s public space, perfected the construction of a community with poor friendliness for preschool children, and provided the creation of a public space in a friendly community for preschool children in the future, strategy guidance.

TABLE 7: List of friendliness evaluation factors and weights at all levels 2.

Sublayer	Detailed evaluation layer	Weights
Space safety A1	Public spaces are within the sight of residents; A11	0.102
	The boundary of the public space is clear, with fences and other protective facilities; A12	0.142
	Combination of soft and hard ground material; A13	0.126
	Safe plant species; A14	0.115
	There are protective facilities in the waterfront area; A15	0.234
	Street safety, speed limit; A16	0.281
Service security A2	Safety of game facilities; A21	0.487
	Regular inspection and maintenance of facilities; A22	0.145
	Perfect lighting system; A23	0.136
	The facilities meet the ergonomics of preschool children; A24	0.203
	Perfect indication signs; A25	0.029
Cultural security A3	Supervise and investigate nonpositive energy propaganda in the community; A31	0.324
	Supervise and strictly inspect informal early education centers and counseling organizations; A32	0.676
Space tolerance B1	Combination of spatial scale and activity range of preschool children; B11	0.352
	Provide activity space for carers of preschool children; B12	0.401
	Integration of public space and green landscape; B13	0.247
Service tolerance B2	Seats, railings and other facilities shall consider the scales of preschool children and caregivers respectively; B21	0.251
	Barrier-free facilities; B22	0.214
	Special activity area for children with autism; B23	0.046
	Breastfeeding station; B24	0.125
	The entrances and passages of public spaces allow strollers to pass through; B25	0.133
	Dedicated passage for strollers; B26	0.231
Cultural tolerance B3	Respect the cultural diversity of the community; B31	0.317
	Various community cultural festivals are often held; B32	0.683
Space and nature C1	Abundant plant coverage; C11	0.221
	Natural shade; C12	0.216
	Sunbathing; C13	0.312
	Comfortable wind speed; C14	0.251
Service and nature C2	Growing accessible plants; C21	0.285
	Interactive animals; C22	0.258
	Artificial pool; C23	0.125
	Environmental maintenance; C24	0.332
Culture and nature C3	Introduction to plants; C31	0.426
	Featured patterns show nature; C32	0.574
Spatial diversity D1	Meet the common needs of preschool children and caregivers; D11	0.521
	Dynamic area and static area; D12	0.291
	Resting coffee shop; D13	0.188
Service diversity D2	Changing game facilities; D21	0.371
	Rich commercial facilities; D22	0.358
	Outdoor heating house; D23	0.271
Cultural diversity D3	Variety of art sketches; D31	0.186
	Preschool Children's library; D32	0.201
	Organize various activities; D33	0.327
	Participation of preschool children; D34	0.286
Space function hybrid E1	Combination of playground, supermarket, coffee shop, etc.; E11	0.427
	Combination of kindergarten and kindergarten institutions; E12	0.573
Service function hybrid E2	Street sharing, prohibiting or temporarily closing the street as an event space or weekend market; E21E <sub>21</sub>	1
Cultural function mixed E3	Combination of public art and game space; E31	0.397
	Blank wall or trash can as children's graffiti wall; E32	0.603



## 6. Conclusion

Through in-depth exploration of the background of wireless communication and artificial intelligence technology, this article puts forward the following suggestions for the construction of a child-friendly space.

- (1) Through the classification of the community public space system and the analysis of the needs of preschool children, the factors affecting the friendliness of preschool children in the community public space are obtained.
- (2) Through the inductive analysis of influencing factors, the 5 principles that affect the friendliness of preschool children in community public spaces and 49 detailed evaluation factors based on the dimensions of space, service, and culture are obtained.
- (3) Combining the characteristics of preschool children and the behaviors of their caregivers, the evaluation basis of influencing factors in line with the friendliness of preschool children in community public spaces was developed.
- (4) Starting from the inherent needs of preschool children, and fully considering the needs of three dimensions in the construction of community public spaces, it will definitely increase the friendliness of preschool children in community public spaces. Based on the evaluation of the friendliness of preschool children in the public space of the community, analyze the elements of the lack of friendliness of preschool children in the community and provide suggestions for the construction of a friendly community for preschool children in the future.

Community public space is one of the most important places for children living in cities to play collectively. Using the development of wireless communication and artificial intelligence technology to construct a multidimensional monitoring system will help make the community public space more friendly to preschool children, create a community public space that is friendly to preschool children, and better implement the concept of preschool children. Through the establishment and testing of the multidimensional evaluation system, the scientific weight determination of the indicators of various community public spaces is carried out, so as to construct a friendly space framework that meets the needs of community residents and highlights the importance of safety, comprehensiveness, and diversity. In the future research, we will focus on the arrangement, design, and utilization of specific facilities, so that the research results have better practical reference value.

## Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

## Conflicts of Interest

The authors declare no conflicts of interest.

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