

# Research Status and Development of Related Theories of Outdoor Activity Space Design for Urban Children in China

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**Abstract**—The city is a masterpiece of human wisdom. The outdoor activity space is the favorite and most desirable place for children in the city. This paper mainly summarizes the research status and development direction of the theory of urban children's outdoor activities in China. By grouping and analyzing children at different ages, the characteristics of outdoor activities of children at different ages are summarized. The behavioral characteristics of children are analyzed from the perspective of environmental psychology, the practical significance of outdoor activity space for children's growth is considered, and the current status and future trend of relevant theoretical research are discussed. It is expected to provide beneficial theoretical support for the construction of outdoor activity space that meets the needs of children, meets the requirements of parents and integrates with the environment.

**Keywords**—outdoor activity space; children; city

## I. INTRODUCTION

### A. Definition of Children's Outdoor Activity Space

Children's outdoor activity space refers to a public open space specially designed for children. It is the most convenient place for children to get involved. It has the

functions of gathering, playing, science, rest, etc. It is also a place for parents to communicate with each other.

### B. The Relationship Between Children's Outdoor Activity Space and the City

For the children living in the city, there are a considerable number of outdoor activities like squares in the city which they love deeply, because of the children first thinking and feeling all contact with the surrounding environment in a tangible [1], these children outdoor activity space has become an important part of their intelligence and physical development.

With the renewal of the city, the traditional outdoor children's outdoor activity space model will also be innovated and developed. The city should not only satisfy people's most basic living needs, but should also pay attention to diversified development. As part of the outdoor space of the city, the children's outdoor activity space will also lead to the overall improvement of the outdoor environment, and then to the overall development of the city.

### C. *The Theoretical Significance of Urban Children's Outdoor Activity Space*

The research progress of children's outdoor space in China is slow. Although scholars have studied it from different perspectives, there has been no great breakthrough in how to build an outdoor activity space that children really need. The author sorts out the overall results of current theoretical research and analyzes the gap and contradiction between them and children's needs, which is conducive to enriching the connotation of relevant research theories, strengthening the innovation and systematic construction of theoretical research, and promoting the design of children's outdoor activity space to be more targeted and scientific.

## II. CURRENT STATUS OF THEORETICAL RESEARCH ON URBAN OUTDOOR ACTIVITIES IN URBAN AREAS

### A. *Child Age Group Analysis*

1) *Infancy (1-3 years old)*: Infants refer to children between the ages of 1 and 3. In infancy, children are just learning to walk. They are so curious about things around that they can touch things with their hands.

It is because of this period that children have the ability to move independently that they can walk at will. Driven by curiosity, children explore their surroundings, thus expanding their range of activities. With the development of the motor ability of the limbs to a certain extent, the baby will be able to accurately manipulate the things he can reach, such as the toys, meanwhile the child appears the initial play activities. At the same time of playing, designers need to consider the safety of children's outdoor activity space.

After the first year of life, children develop simple communication skills. There will be some positive or negative relationships between children, which can be regarded as the initial form of moral behavior. The negative correlation was mainly due to the "self-centered" activities of children, which mainly included: aggressive actions, such as fighting for toys; Defensive actions, such as crying. These characteristics of infancy require adults to assume a large part of the care responsibilities in children's activities. There is a lot of mutual interference in children's activities, and designers have to think about how to minimize it.

2) *Early childhood (4-6 years old)*: Preschool period refers to the period from the age of 4 to 6, when children just enter the primary learning state, which can also be called pre-school period. This period was developed on the basis of the development of the previous period and the influence of new living conditions and educational conditions. Preschool children have the following characteristics.

- Desire for independence but limited ability

In the early stage of a strong individual consciousness, children are eager to engage in independent activities. This behavior has a great relationship with the level of experience and ability to engage in independent activities. The results are often contradictory. Therefore, the game activity has

become the main form of activity to resolve this contradiction;

- Psychological process is concrete and involuntary

Various psychological processes have obvious specific image, and abstract generalization and randomness are just beginning to develop;

- Personality tendency

From this period, children will develop stronger personality tendencies, so children's activities in this period show a greater complexity and randomness. However, due to their limited physical abilities, children's activities may be accompanied by certain risks.

Preschool children are not only less likely to feel tired in terms of motor ability, but also can carry out a variety of types of sports, in addition to a long walk, but also can run, jump and climb. They also developed better upper limbs and were able to use smaller tools such as scissors and pencils. During this period, children's games presented diversification, and it was difficult for us to make a more accurate classification of them, mainly in the following forms: role-playing games, which reflected children's creative ability, and were often the product of the collision between children's imagination and various things in reality; Construction games, also known as creative games, are games in which children use different natural and unnatural materials (such as wood, sand, soil, etc.) to build various buildings. Teaching games, its purpose is to teach children to develop children's intelligence of a game; Active games, the type of games that aim to exercise children's motor abilities. In addition to the above several games, there are many rich game forms. Therefore, when designing outdoor space for children in this period, designers should be full of creativity and imagination. From the perspective of children, designers should design and make use of different site features to create rich games on the premise of ensuring safety.

3) *Childhood (7-12 years old)*: Childhood refers to the period from the age of 7 to the age of 12, when learning turns into the dominant activity of this period, namely the early school age. The beginning of school age is a turning point in children's growth and development. Their dominant activities will change, no longer focusing on games, but on systematic learning in school.

- Game characteristics of children in early school age

One of the characteristics of school is that children spend more time studying than playing. Second, games played by school-age children have different purposes and meanings than those played before school. At the beginning of school age, games are mainly about perceiving things and transforming curiosity into interest. The purpose is to lay a good foundation for systematic learning. Third, in addition to different purposes and meanings, the form and content of games are also different. This is mainly because with the physical and mental development and changes of children's growth, the purpose and organization of games have been improved. With the injection of the sense of solidarity, cooperation and competition, the content of games has

become more and more rich, and some games can even reflect complex social events.

- Development of children's games in the early school age

The games for children in early school age are mainly: teaching games and active games. Community children's games are dominated by active games such as running, jumping, climbing, skipping, and so on. In addition to the regular sports characteristics, a new theme mode has been incorporated. First, the collective nature is more developed; second, the use of more forms of competition, children are often divided into groups to play; third, children above the middle level are more interested in ball games, such as football, table tennis and so on. Children in childhood are the most important users of community activity fields. Children

in childhood are the most important users of community activity fields. At the same time, children in this age group cannot always be protected by their parents due to the existence of psychological and other objective factors. Therefore, it can be seen that the safety of children's outdoor activity space is of great importance.

*B. Characteristics of Outdoor Activities of Children of Different Ages*

Due to the different growth and development conditions, children of different ages have different behavioral characteristics, and the types and modes of activities are as follows.

TABLE I. SUMMARY TABLE OF OUTDOOR ACTIVITY CHARACTERISTICS OF CHILDREN OF DIFFERENT AGE GROUPS

Generation	Activity form	Companion activity	Activity range	Self-Reliance	Climbing
<1.5years old	Chair, bunker, lawn, square play	Play alone, play with your parents near the home	Must be accompanied by parental protection	Can't stand on its own, no companions	Can not
1.5-3years old	Chairs, sand pits, lawns, squares, etc. are quietly played, and there are more fixed instruments;	Play alone, occasionally play with other children, and familiar playmates at home nearby	Parents can take care of the neighborhood when necessary	Half of the scattered event venues can stand on their own, and the concentrated activity areas can stand on their own.	Partial energy
4-6years old	I often play swings and like a variety of toys. Most of them like to play sand after four years old.	Participation in companion games, the number of playmates increased, mostly among children in the neighborhood;	Parents can take care of the house when necessary	The scattered event venues can stand on their own, and the concentrated activity areas are completely self-reliant.	Partial energy
7-12years old	There are gender differences, girls use more tools to play, rubber bands, hopscotch, etc. Boys like sports activities;	The number of peers has increased, and there are neighbors, classmates, and friends who are gradually diversifying and their activities are gradually increasing.	Event venues that are not close to the home or outside the home's line of sight	Fully independent, with a certain degree of self-reliance	can

*C. Urban Children's Environmental Psychology and Behavior Characteristics*

1) *Urban children's environmental psychological characteristics:* The main characteristics of children's environmental psychology are strong thirst for knowledge and curiosity. When they are curious about things, it drives them to question the characteristics of things. In addition, children also engage in simulated sexual behaviors. When their individual concept develops to a certain extent, they tend to show distinct personality tendency, which is commonly referred to as reverse psychology, that is to say, they will try things they are interested in against their parents' will. On the other hand, the psychology of children in this period is very sensitive and fragile. Correct guidance, care and support from parents will help children get rid of inferiority complex, so as to build self-confidence and develop an independent character. Furthermore, the environment plays a role in children's development. As an important place with high utilization rate of children, outdoor activity space for children in cities not only plays

games, but also releases their emotions through games. Good outdoor space can also improve their social skills, satisfy their instinct to learn, let them forget their troubles and integrate into it, and then maintain a positive attitude. From this point of view, the design of children's outdoor activity space has a close relationship with children's psychological development, which can be divided into several aspects.

- Cognition

Children famous Swiss psychologist Piaget's research shows that children's cognitive ability is limited, children's knowledge acquisition is the process of the subject ACTS on the object, and participate in the games is a major means of promoting children's cognitive, beneficial to the development of children's psychology, children can exercise all aspects of the ability, the ability to include language, intuition, memory, thinking ability, to cultivate the basic sports skills of children, children and it is also the first way to know society [2].

- Emotions

Outdoor activities are an important part of children's physical and mental development. It carries children's

emotional needs and enriches and perfects children's personality. Austrian psychologist Sigmund Freud believes that children can resolve their emotional conflicts in outdoor activities. Children can enjoy themselves and vent their inner world emotions during recreation. Through the game, children can combine their own emotional world and real life organically, which will benefit children's emotional and psychological health development, and children can fully release their own nature in outdoor activities.

- Intelligence

Maslow's hierarchy of needs theory [3] points out that children's early life is the foundation of intellectual development. The process of outdoor activities is also a part of children's growth and development. Some intellectual activities effectively stimulate children's curiosity and thirst for knowledge, guiding them to study the characteristics and functions of things and the existing relationship with another thing. Their language skills are improved in this process, with the ultimate goal of helping them solve practical problems. The prominent role of games in children's intellectual development is to promote the development of "symbolic function", which is one of the important signs of children's thinking.

- Curious

Freud believed that outdoor activities were a potentially self-reinforcing process, and every behavior of children could affect or inspire other people and things. Simply put, when two children play games together and are seen by other children, they may participate in the game driven by curiosity, thus gradually expanding the group of children playing games. This just reflects the significance of outdoor activity space construction.

- Independence

In addition to group games, children will also have a desire for independent activities. They will actively seek free and independent space to meet their spiritual needs to communicate with themselves and be recognized and valued. Therefore, it is necessary to cultivate children's independent consciousness during outdoor games

- Interest

Children's participation in outdoor activities is purposeless, purely interested in the activity itself, and with certain challenges and trials. Therefore, the outdoor activity space is a better way to cultivate interest.

- Initiative

Children's outdoor activities are driven by their own happiness, which is a kind of spontaneous activity with initiative. Children's satisfaction comes from the new discovery, sense of freedom and sense of achievement of surrounding things during the game, which encourages children to explore, discover, practice and perform in the game continuously, and to be released by expressing their own will.

## 2) Characteristics of urban children's environmental behavior

- Sensory and motor stimulation

Sensory stimulation is the basis for understanding children's development. Therefore, a good space for children's outdoor activities is of great significance to children's sensory stimulation. Sports stimulation refers to the stimulation caused by the muscles of the human body and the coordinated movement of the body. A large number of studies have shown that children who are active in outdoor activities will be more active and happy, and their motor neurons will develop better. And through outdoor activities, children can learn more about their abilities and limitations and discover their potential.

- Hands-on ability

Driven by interest, the design of spatial and environmental characteristics of the residential area can cultivate children's practical ability, such as drawing, playing with water, growing vegetables and DIY games. The combination of children's imagination and practical ability reveals an unexpected childlike world. When constructing their ideal picture of the world, children will surely experience the conceptual sense of body in it, which is also a process of strengthening their practical ability.

- Communication and cooperation

In the course of outdoor activities, children form a companionship. The so-called peer relationship refers to a kind of interpersonal relationship formed between children of similar age or the same age and cooperating with each other [4]. In the interaction, we can also cultivate the awareness of cooperation and unity. Children's needs for communication behaviors are issues that designers need to consider. It is important to note that if children only participate in group activities, they will develop a habit of dependence and cannot solve problems independently. However, if it is only for independent activities and the ability to develop cooperation between children and children, it is necessary to take care of both. In short, the advantage of social communication is to cultivate the healthy development of children's emotions and personality.

- Exploration

Thirst for knowledge and curiosity are the fundamental power to promote children's desire to explore. Children are the simplest subjects, and they often find things that adults do not pay much attention to, such as flying petals, yellowing leaves and bees gathering honey. They also like to play with things that are more malleable, like a combination of water and sand or dirt. They have a strong spirit of exploration of the environment, so designers should pay attention to meet the exploration behavior of children when designing the site. No matter from site features to space construction, it is necessary to arouse children's desire to explore, so as to accurately and effectively develop children's thirst for knowledge and satisfy their curiosity [5].



#### *D. The Practical Significance of Urban Children's Activity Space to Children's Growth*

*1) Significance for children's environmental education:* Wushenski once said: "Nature is one of the most powerful and beneficial means of education. Even if it is the most careful education, it is boring, one-sided and not fascinating. "The outdoor activity space enables children to have the maximum contact with nature in the place where they often move, so that they can experience the beauty of nature without going out, and gradually they can realize how to perceive and recognize things. In the early stage of children's growth, let them contact with plants and animals in nature and observe the development of natural creatures, so that everything in nature will gradually become familiar to them. When they have feelings for nature, they will start to take the initiative to protect the environment, which has a positive guiding effect on their physical and mental health.

*2) Significance of aesthetic education for children:* The famous esthetician Teng Shouqi believes that the important way to cultivate children's aesthetic perception ability is to actively guide them to experience and feel the real world, finally forming a keen ability to choose and sympathize. Forms, colors, sounds, aromas, etc. in the natural environment are all actual. These things have a mysterious power and are easily attracted to children. Through the landscape design in children's outdoor activity space, children are consciously guided to experience and feel the natural change and the original state of life, and gradually internalize these external things into children's own perceptual knowledge, which is the key to cultivate their keen aesthetic perception ability.

*3) The meaning of emotional education for children:* Related research shows that a good outdoor activity space for children will bring children a wealth of experience, while children's curiosity, creativity and other impulses will be well protected. In addition to designing simple and fun Spaces that give children a sense of accomplishment, it is also necessary to create challenging or imaginative Spaces. These Spaces lead children to experience the joy of competition, the sense of success or failure, and the spirit of mutual help. On the contrary, if children are excessively protected in the activity space, it may cause them to form bad mentality, such as cowardice. In a word, the natural environment educates children differently from other ways. In addition to allowing children to develop intuitive experience in the process of experience, it is more important to let children have different emotions in the experience, thus touching the emotional world, so that children form a good moral character.

*4) Significance for children's intellectual development:* Educators of the last century began to have a new view that human intelligence is changeable and that experience plays a crucial role. Compared with adults, children's response to the environment is more direct and active. They can often feel the concepts of height, thickness, distance, soft and hard,

and light and dark in the process of experience, which can stimulate their imagination and enhance their learning pleasure. Designers diversify the experience of outdoor activity space to create opportunities for children to get in touch with different things, so that children's intelligence will be further developed in different environments.

#### *E. Preliminary Summary*

At the present stage, the theoretical research on urban children's outdoor activity space basically divides children's growth into different periods according to different ages, and analyzes their needs for children's space according to the changes of children's psychology and behavior in different periods. The subjective initiative of children's outdoor space designers largely determines the function and form of space, and the meaning of these outdoor Spaces for children is one-way, the lack of interaction and dialogue between outdoor space and children. Children's outdoor activity space to a greater extent meets the expectations and requirements of adults for children, reflecting the wishes of "adults". Before the design of these Spaces, the designers seldom think about whether children like them or not. After the construction, they seldom evaluate whether children are compatible with the environment they build. In addition, the public's attention to children's outdoor activity space also needs to be improved. Some design theories are monotonous and stagnant, lacking practicality and innovation.

### III. URBAN CHILDREN'S OUTDOOR ACTIVITIES SPACE RELATED THEORY RESEARCH DEVELOPMENT DIRECTION

#### *A. Strengthening the System Construction, Urban Planning to Reserve Space for Children*

Compared with foreign countries, there is still a certain gap in the planning of children's outdoor space in China. From the basic feelings of children's outdoor experience, it can be seen that domestic design is mostly based on adult subjective consciousness, while foreign design is more focused on the child's own needs and development. Even though the development of urban children's outdoor space has made some progress in recent years, the government and developers taking this into consideration. However, it is still not comprehensive as a whole, such as the insufficient area of the activity site, single spatial form and poor innovation. In foreign countries, almost every community has space for children's activities. Because it is often limited by land use, designers can embed more imagination in space design. However, inquiring about relevant materials, there are still many designers who can use the limited plots to design better outdoor activities for children. In general, no matter from the macro urban planning and development, or the planning and development direction from small to residential areas, children's outdoor space should be reserved from the institutional level, and the importance of reserving space for children should be raised to higher requirements with the development of society.

### *B. Ecological Theory Plays a More Important Role in Urban Children's Outdoor Activity Space Design*

As the economy continues to develop and the city continues to renew, the natural environment is covered by traces of industrial development. According to the data, most of the rapid growth of urban population occurs in developing countries. However, such a situation leads to a sudden drop in direct contact between children and the natural environment, thereby reducing children's experience in natural activities [6]. People are the products of nature. The design of children's outdoor activity space will be more closely integrated with the ecological theory, not only to create a safe, green, and recyclable habitat, but also to subtly cultivate children's awareness of nature and closeness to nature. The design should also be organically combined with nature to make full use of the ecological benefits of plants, which plays a practical role in humidification, cooling, noise reduction and other aspects to create a kind and lovely natural environment.

### *C. Making More Research on Design Psychology of Children's Psychology*

Children need to communicate and cooperate with others as they grow up, which is conducive to good psychological development, otherwise it will lead to a series of problems such as autism. A well-known environmental psychologist abroad said that children's outdoor spaces are emphasized as a link to positive emotions, and that play a role of self-identification in children's development to provide children with a sense of stability and security<sup>[7]</sup>. The design psychology has many contents and covers a wide range. The design of children's outdoor activity space is targeted to the part of children's psychology, and promotes the development of children's design psychology in practice.

## IV. CONCLUSION

This paper summarizes the theoretical research on urban children's outdoor activity space in China, which analyzes the psychological and behavioral characteristics of children of different ages and discusses the significance of children's outdoor activity space to children. From the perspectives of children's needs, adult requirements and integration with the environment, the shortcomings of the current theoretical research are summarized, and the development direction of relevant theoretical research in the future is summarized. The ultimate goal of theoretical research is to combine with practical design practice and put forward the problems and design methods that need to be paid attention to in design. The result of theoretical research is to transform the concrete construction techniques into better design results and create an atmosphere of activity space that children really love. Finally, according to the example design, the updated design method is summarized to further guide the next children's outdoor activity space design. This spiral-like conscience cycle truly combines theory with practice to promote the organic development of children's outdoor activity space to improve the style and quality of outdoor living space in the city.

The construction of children's daily outdoor activities needs the support and recognition from all aspects of society. It is not a matter that can be achieved overnight, but also depends on many factors, including social concepts, cultural environment, education mode, professional theoretical research status, institutional mechanism of design institute, implementation strategy, etc. In view of the current development of children's outdoor activity space, further research on children's outdoor activity space can be considered from the following aspects.

### *A. Referencing From Foreign Countries and Learning from Each Other*

In view of the current development of children's outdoor activity space in China, the research needs to learn from foreign excellent design, so as to propose a better and more innovative development model for the construction of children's outdoor activity space in China;

### *B. Breaking Through the Concept and Getting Out of the Outdoors*

Due to the conservative education system and concept, many children will be urged to develop the so-called interest and hobby at a very young age, which leads to the children have less time to contact with the natural world, and thus the use frequency of outdoor activity space in residential areas is not high.

### *C. Working Together and Designing Synthetically*

The construction of children's outdoor activity space in residential areas is the result of a comprehensive design, which requires the joint efforts of architects, landscape architects, environmental designers, early childhood educators and other scholars of different natures;

### *D. System Construction and Implementation Promotion*

In terms of hardware provisions, it is common that China's standard content is insufficient and the implementation is not in place. Therefore, we should study the standard content as soon as possible and learn from the advanced copy of foreign countries. According to the domestic situation, relevant laws and regulations should be formulated as soon as possible, and revised after implementation to finally promote nationwide at last.

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