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Re-designing a Small Apartment for Two-child Families in Changchun, China

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Abstract: *In China, many families living in small apartments are facing the problem of insufficient living space, especially since the implementation of the two-child policy. This project is based on this problem, targeting families in northern China to provide them with possibilities for small apartment living with their two children. At the same time, a malleable design was made for this apartment, that is a design that accommodates changes in the patterns of family life over time. This study explores how to increase the capacity of an existing apartment to meet the needs of Chinese family. Through the analysis of the life phase of each of the family members, the final result is a phased design of two modes applicable to the family. The two phases are: 1) the family model before the second child, 2) the family model after the second child. The final design uses movable walls, multi-functional furniture and increased storage space, satisfying the family's changing needs and offering a sense of spaciousness in a relatively small existing apartment.*

Keywords: *small apartment design, Chinese two-child families living space, small living space design*

1. Introduction

1.1 Background

In order to control population growth, China has issued several different population policies over the last fifty years (Fig. 1). Family planning was proposed in China's Constitution in 1978, and it encouraged one family to have one child (National People's Congress, 1978). However, China's one-child policy has also brought some problems such as an aging population (Zhang& Goza, 2006). In response, China implemented the two-child policy in 2015 (Standing Committee of China's National People's Congress, 2015). In this newest policy, one couple is allowed and encouraged to have two children.

Year	Population	Yearly % Change	Yearly Change	Migrants (net)	Median Age	Fertility Rate	Density (P/Km²)	Urban Pop %	Urban Population	Country's Share of World Pop	World Population	China Global Rank
1995	**1,240,920,535**	1.07 %	12,807,372	−155,996	27.4	1.83	132	30.9 %	383,901,711	21.60 %	5,744,212,979	1
1990	**1,176,883,674**	1.82 %	20,258,863	−86,330	24.9	2.73	125	26.3 %	310,022,147	22.09 %	5,327,231,061	1
1985	**1,075,589,361**	1.47 %	15,100,025	−40,000	23.5	2.52	115	22.8 %	244,946,241	22.08 %	4,870,921,740	1
1980	**1,000,089,235**	1.55 %	14,769,670	−9,401	21.9	3.01	107	19.2 %	192,392,094	22.43 %	4,458,003,514	1
1975	**926,240,885**	2.28 %	19,727,898	−221,096	20.3	4.85	99	17.3 %	160,244,444	22.70 %	4,079,480,606	1
1970	**827,601,394**	2.70 %	20,676,485	−32,000	19.3	6.30	88	17.3 %	143,513,192	22.36 %	3,700,437,046	1

Figure 1. Population of China (Worldometers, 2019).

China is a country with a large population. According to the data in Figure 2, the population of China accounts for 18.59% of the world's population. As of September 2019, China has a population of about 1.4 billion. Since China implemented the two-child policy in 2015, population density has increased with the increase of fertility rate.

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Year	Population	Yearly % Change	Yearly Change	Migrants (net)	Median Age	Fertility Rate	Density (P/Km²)	Urban Pop %	Urban Population	Country's Share of World Pop	World Population	China Global Rank
2019	**1,433,783,686**	0.43 %	6,135,900	−348,399	37.0	1.65	153	59.7 %	856,409,297	18.59 %	7,713,468,100	1
2018	**1,427,647,786**	0.47 %	6,625,995	−348,399	37.0	1.65	152	58.6 %	837,022,095	18.71 %	7,631,091,040	1
2017	**1,421,021,791**	0.49 %	6,972,440	−348,399	37.0	1.65	151	57.5 %	816,957,613	18.83 %	7,547,858,925	1
2016	**1,414,049,351**	0.51 %	7,201,481	−348,399	37.0	1.65	151	56.3 %	796,289,491	18.94 %	7,464,022,049	1
2015	**1,406,847,870**	0.55 %	7,607,451	−310,442	36.7	1.64	150	55.1 %	775,352,918	19.06 %	7,379,797,139	1

Figure 2. Population of China (Worldometers, 2019).

As the population continues to grow, there will be an increasing shortage of available housing on limited land. Limited land resources are one reason for the housing shortage, which is widespread in China's cities and causes housing prices to rise yearly (Tian et al., 2020). According to the data in Figure 3, the housing price in Changchun was around 9,600 yuan (approximately NZD $2085) per square meter in 2019, and the per capita salary was 6,700 yuan (approximately NZD $1450) per month (Xinchou, 2019). This typically means that young couples with children have to work for at least three years without any expenses to afford a 50-square-meter house. The availability of affordable housing for couples with two children is limited.

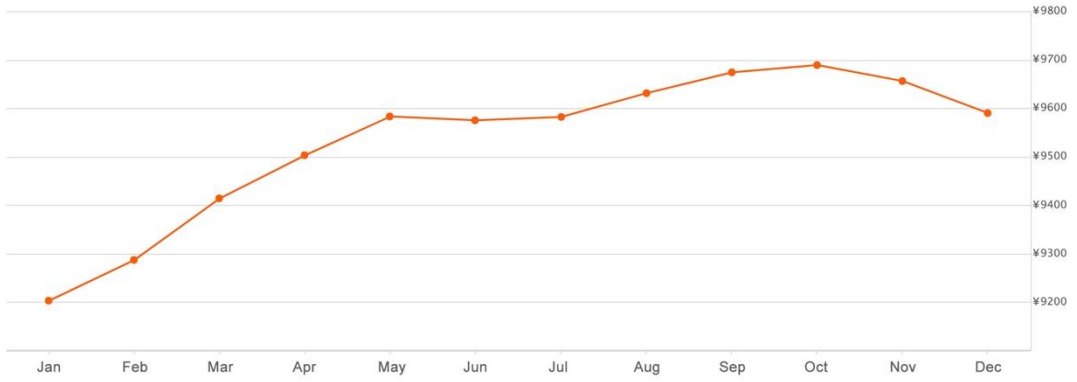

Figure 3. Changchun housing price trend in 2019 (Anjuke, 2019).

1.2 Issues

Low- and middle-income families in Chinese cities can only afford a limited amount of living space. According to the above-mentioned wage level in Changchun, the affordable housing area for such families is about 50 square meters, and the per capita is only about 12-15 square meters. In a house with limited space, one more child can lead to a smaller area per person. Families with two children have different needs for space than families with only one child. As children grow up, they need more storage space, living space frames the need to re-design children's bedroom (Hao & Guan, 2017). This situation sets the phase to redesign the existing housing stock based on one-child per couple to accommodate families with two children. The design challenge is to create a home environment that is flexible to the changing needs of a family in all phases of life, economically feasible of the low-to-middle income family, and spatially small but complete and joyful.

1.3 Research audience and gap

China’s vastness means that the living conditions and living habits of the north and south are different. I am focusing my research on the residential design in Changchun, which I am familiar with (Fig 4). The audience or user group are Changchun low- and middle-income families living in around 50 square meters’ apartment with or wanting to have two children. China's small space design is just emerging in response to the implementation of the two-child policy and reveals that there is a need for further design research on the design of these interior environments. Although there are studies in this field abroad, such as Japan and Korea, there is very little research specific to Chinese people who grow up in different

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environments where parents and children get along in different ways, and with different building construction systems, especially in Northern China (Liu, 2011)

Figure 4. Map of the provinces of China (n.d., 2013).

1.4 Research questions and research objective

1) How to design the living space to meet the low- and midd income families' needs in Changchun in each phase of life?

2) How to transform the existing small living space so it is suitable for the two-child families?

3) How to improve space utilization in small living space to meet the needs of more family members?

1.5 Research objective

Considering the specific situation of low- and middle-income families in Changchun, my research objective is to improve the utilization rate of small living space by designing an existing apartment and rationally allocating space functions. I aim to design and model a concept that will increase usable area and function, giving more contain capacity in a small living space. This will help such families to see more life possibilities in a small space through some changes, and help them meet their different needs through different phases of design, whether living as a couple, having one child or two children. This will not only help many families facing the problem of having a second child, it will also guide more people to pay attention to the value of small living spaces. To some extent, it may also help the resale of such small apartments.

2. Methodology

This project used literature review as the theory methods. At the same time, I have used the persona method in the design process, and used 3D max software to draw 3d space renderings as a design test.

The literature review laid a series of theoretical foundations for my design. Hart (2018) proposes that literature review is a comprehensive analysis of related issues of the research project. In this part, I conducted some research on China's building system, some problems faced by Chinese two-child families, and the design methods of small apartment space, etc.

My design process used the persona and digital test as methods. According to Mulder and Yaar (2006), the persona method helps designers pinpoint the target group and think from the user's perspective. They also propose that the persona method makes designers think about reality all the time. I used this method to set up the occupations and personalities of each character, which helped me imagine and analyse their daily activities at home or outside. It helped me to know the usage time and frequency of each space in this apartment as well as the key points of the design and the problems that need to be solved. Meanwhile, I designed and tested the apartment interior space in 3D Max. It helped me consider the interior atmosphere, texture, materials and colour. Interior design is a complex and practical subject, so designers need to simulate and test the space adequately (Brooker & Stone, 2010). With the intent to renovate and refurbish an existing apartment, I drew a space of equal proportions and added objects such as furniture and users to simulate the use of the space in order to test the design effect and rationality. At the same time, I also set out to increase the joyful atmosphere of the room by changing the brightness and colour

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of the light and the colour and material of the furniture in the software. Brooker and Stone (2010) also put forward that using technology to show the space can better convey the appearance and atmosphere of the space.

3. Literature review

3.1 Chinese building system

There is a great difference between China and foreign countries in the concept and content of the standard of residence. According to Li et al. (2014), foreign living space standards focus on the relationship between population, number of rooms or type of residence and living standards, while the standard system in China is to consider the person's identity rather than the number of people. The authors also make recommendations on the compactness of living space (Fig 5). In China, the type and size of residence is usually planned by the government, and each type usually has a uniform area. According to Zhang (2018), at present there are four main residence types in China: single apartment type, economic type, comfortable type and luxury type, with respective surface areas of 30 square meters, 40-80 square meters, 80-120 square meters and 120-300 square meters. However, the actual area used is relatively smaller. According to Liu Xiaozhong Studio's study on small and medium-sized apartment buildings in large and medium-sized cities in China (2008), the usable floor area of Chinese apartments accounts for about 75% of the total floor area. For instance, living in a 90 square meter apartment, the usable area is only 67.5 square meters. Within the limited usable area, the apartment also needs to include all the space people need for daily living, sleeping space, storage space, cleaning space and kitchen. As a result, each space in a small apartment is small in size, which may make people feel cramped.

recommedation on the compactness of living space						
	1 person	2 people	3 people	4 people	5 people	6 people
smallest type (m^2)	30	40	50	70	80	90
general type (m^2)	37	52	70	87	100	110
comfort type (m^2)	45	60	80	95	110	125

Figure 5. Recommendations on the compactness of living space (Li et al., 2014).

3.2 Chinese demand for living space

People in different countries and regions may have different needs for space due to differences in growth environment, living habits and depending on their age or family members (Lu, 1999). According to Minggao (2008), people are the core of interior design, the design should meet people's physiological, psychological, material and spiritual needs, and pay attention to the function of space. He also proposes that design involves thoughts, emotions, artistic conception as well as ethnic, regional, and cultural elements. Regardless of the size of the living space, it should provide the basic functions that people need every day. According to Sima's (2015) study about apartments in China, the house needs to provide people with rest space, storage space, kitchen space, clean space, work and study space, communication and entertainment space. Especially for parents of two-child families, every space in the room needs to be considered for their children. Through surveys and interviews with Chinese people, Sima (2015) reports that people who live in small apartments are concerned about the size of personal areas, and young people prefer the roomy and bright bedroom space. This may be due to the fact that young people see the home as a place to relax and the comfortable and bright environment can enable them to enjoy life better. Sima (2015) also proposes that people of different ages and genders and occupations have different needs. Sima (2015) reports that in China, non-open kitchens and south-facing living rooms are preferred. Acceptance of non-open kitchen forms may be related to traditional cooking methods, such as decoct and fry. The southern direction of the living room is probably because it receives the most sunlight. Moreover, with the development of economy and technology, people seem to pay more and more attention to the sense of design. People are more likely to remember creative designs (Sima, 2015).

3.3 Problems faced by two-child families

After the birth of their second child, families living in small apartments will face new difficulties. The two-child policy was promulgated at the fifth plenary session of the 18th CPC Central Committee

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in 2015 and has since been implemented; it satisfies the desire of many parents for two children to accompany each other in the future (Hao & Guan, 2017). Therefore, the space problems of two-child families need attention. Through the research of Sima (2015) and Li et al. (2014) based on the traditional Chinese family pattern, changes in time and policy would lead to more design details to be considered. According to Yang (2019), in 2018, 24.3% of Chinese home buyers had an average living area of less than 20 square meters, equivalent to less than 60 square meters for a family of three, while only 9.3% had an average living area of more than 50 square meters. Before the second child, the space is reasonably designed and big enough. However, after the birth of the second child, the space does not work as well for them. For example, most people add an extra bed to a child's room or give a second child space in a parent's bedroom. In this way, both children and parents will feel the house is very crowded. For this type of family, on an economic basis, the best practice of apartment living should be to minimize the addition of new furniture, reuse, and extend the use of furniture (Nelson, 2018).

3.4 Problems of two-children space and sharing system for two-child families

The one-child policy caused parents to devote themselves fully to their child, which resulted in certain psychological and behavioural problems. For example, many children are accustomed to having their own bedroom. According to Blake (1981), the only-child in America is more self-centred and does not like to share, they do not accept their parents' allocation of attention to others and they do not like to cooperate with others. In terms of space allocation, more attention should be paid to the shared space, such as the living room. In addition, children and adults have different priorities, therefore they have different spatial needs. For children, they need more space to play and study. Young children often rely on their parents. Thus, sharing family space is important for them. According to the data in Figure 6, most Chinese parents spend less than 4 hours per day with their children, which is also reduced as the child gets older. This means that their time to spend together is very limited. Having the living room as the main design part of the home may help family members share time and space. In this way, children can easily accept each other and create a harmonious atmosphere in the family. In addition, according to Collins (2009), play is an important way for children's intellectual and physical development. She also proposes that this activity usually requires parents to supervise and care, and the living room is the most functional space in the home. Thus, children can get more care and discovery when they play in the living room.

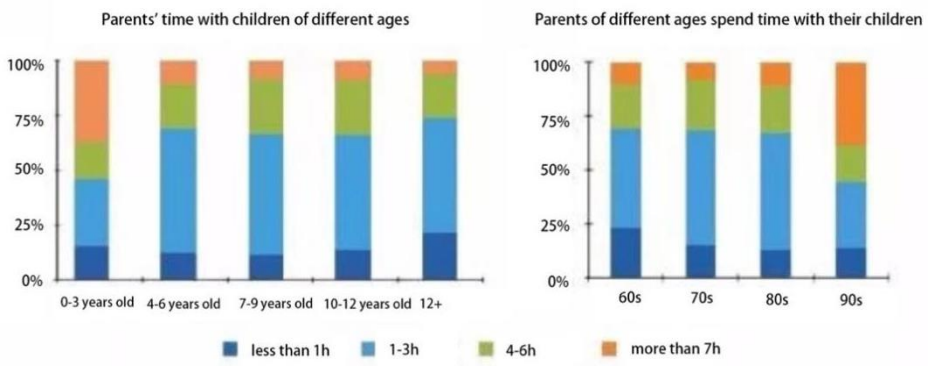

Figure 6. [Chinese parents spending time with children of different ages] (Jiazhangbang & Mamabang, 2017).

3.5 Small apartment design method

Due to the limited space of small apartments, space-saving design methods need to be used as much as possible. According to Zhang and Liu (2010), the internal elements and operation links of small apartments have the relationship of mutual influence and restriction, and the contradiction between the reduction of living space and the increasingly diversified living behaviour pattern of modern people needs to be solved. Therefore, it is necessary to use various design methods to increase usable area in small space. Removing the walls allows the space to be spacious and open, as well as creating interconnected interior spaces (Brooker & Stone, 2010). According to Zhang and Liu (2010), the space can be divided by furniture instead of walls, for example, by tall furniture, sliding doors or curtains. They also propose that this method allows the spaces to intersect each other so as to reduce the sense of constraint. Furthermore, Zhang and Liu (2010) suggest that small apartments should use decorative and transitional materials to divide the space, such as plants and colours. They also propose that combining space with

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similar functions, separating space with opposite or different properties, and increasing the versatility of a space can save space effectively. A survey by Pitts and Gao (2014) of Chinese people living in small apartment showed that people prefer multiple uses in one space. For example, they may use the bedroom as a temporary living room, or the kitchen as a dining room. It also showed that people generally have storage space in the kitchen or on the stairs outside. Dividing small spaces is also a design strategy. According to Collins' (2009) research, Australians prefer to separate quiet spaces such as bedrooms from service spaces such as recreation rooms. Therefore, space can be divided not only by function, but also by properties, such as dynamic and static areas. On the other hand, the choice of furniture can also achieve the purpose of saving space. According to Bian (2010), there are several types of furniture that can save space, such as pieced-together furniture, hidden type furniture and foldable furniture.

4. Design project

4.1 Current status of the apartment

The apartment I redesigned is an existing apartment for sale in Changchun Yuanda Community. The area of this apartment is 55 square meters, the usable area is only 37.6 square meters. The price is 510,000 yuan (NZD $110,870). Both size and price are suitable for the target group I studied. Apartments of this size and type are common in China and the interior decoration is simple, so its cost is low. The following pictures show the current interior of this apartment.

Figure 7. [The corridor combined with dining and living room function] (Beike, 2020).

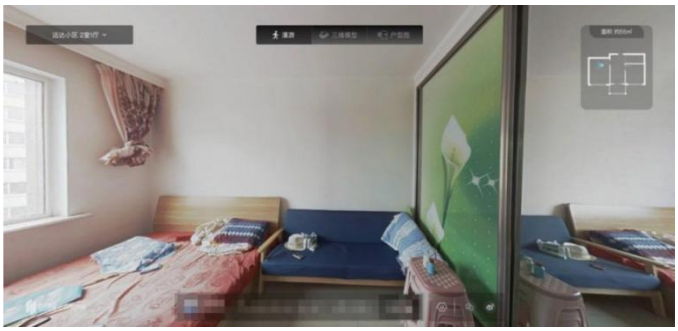

Figure 8. [Main bedroom with simple double bed, sofa and closet] (Beike, 2020).

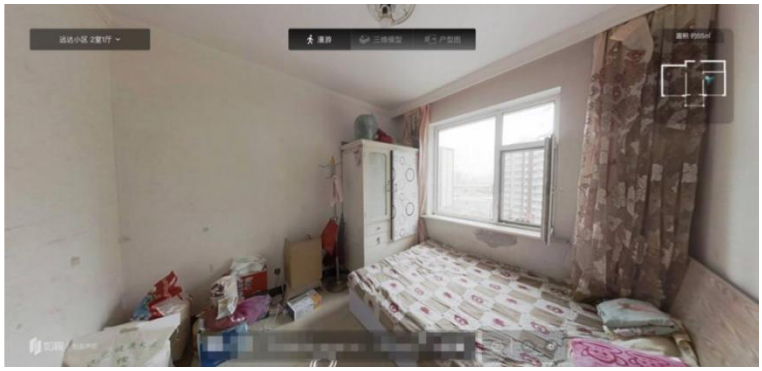

Figure 9. [Second bedroom with simple bed and closet] (Beike, 2020).

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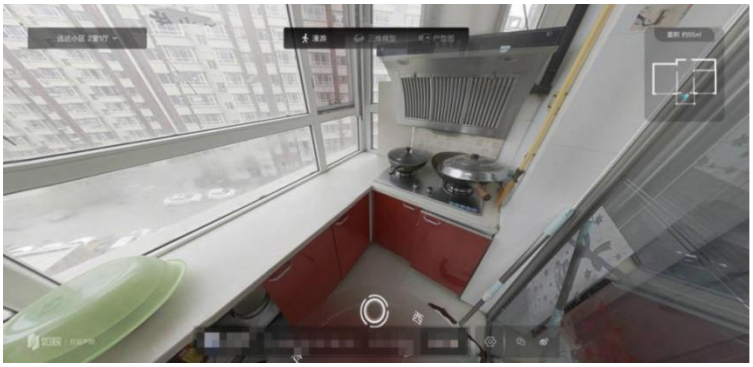

Figure 10. [Kitchen] (Beike, 2020).

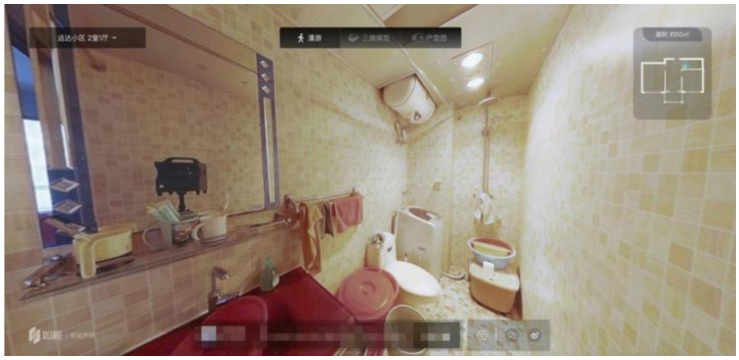

Figure 11. [Bathroom with various functional items] (Beike, 2020).

The current status of this apartment can only meet people's basic accommodation needs. Its decoration and layout are too simple to lack the warmth and joy of family. These two points are particularly important for families, especially those with children. Therefore, it is not suitable for today's two-child families.

When a family has children, the living condition of the family will have these changes:

1) The area of the apartment is limited but more furniture needs to be added, such as bed and desk.

2) Children have more belongings than before, such as clothes, toys or books.

3) The frequency of use of each space will increase, such as living room and bathroom.

4) Another child in the family will increase the sound levels in the apartment such as crying and playing.

5) Children will also run and jump in the apartment, so the passage of the apartment needs to be clearer and more spacious.

Figure 12. [Floor plan of the whole apartment] (Beike, 2020).

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4.2 Redesign apartment

Over time, the number of people in the apartment will change, so I redesigned the apartment in two phases. In the first phase, young couples with their first child live here. In the second phase, they have their second child. According to the needs of different characters in different phases, I proposed a renovation plan for this small apartment with the aim to enhance the living experience for all family members, implement small space use strategies, and keep renovation to a minimum in order to reduce costs over the entire period of time. These factors: two child family, an existing 50 square meter apartment, two phases of change in the family dynamics, flexibility and moveability of design elements and implementation of colour and surface treatments set the parameters for this design research project.

4.3 Phase 1 (A couple and a child)

In this phase, the design is suitable for married couple life and extends to after the couple has had a child. In the design, I explored how to improve the utilization of small spaces. I set the occupations and hobbies of the family members (Fig 13). At the same time, I set up a schedule of daily activities according to their lifestyle (Fig 15-17). This helped me design from the user's perspective.

Characters	 李华 John	 林月 Lisa	 李霖毅 Jimmy
Occupation	Office worker	University teacher	Kindergarten student
Hobby	Hiking Play basketball Skiing Swimming Play poker	Cooking Play badminton Skiing Swimming Yoga Flower arrangement	Play Legos Play remote control car Play basketball Skiing Swimming Painting Hip-hop Violin Taekwondo

Figure 13. The persona of phase 1

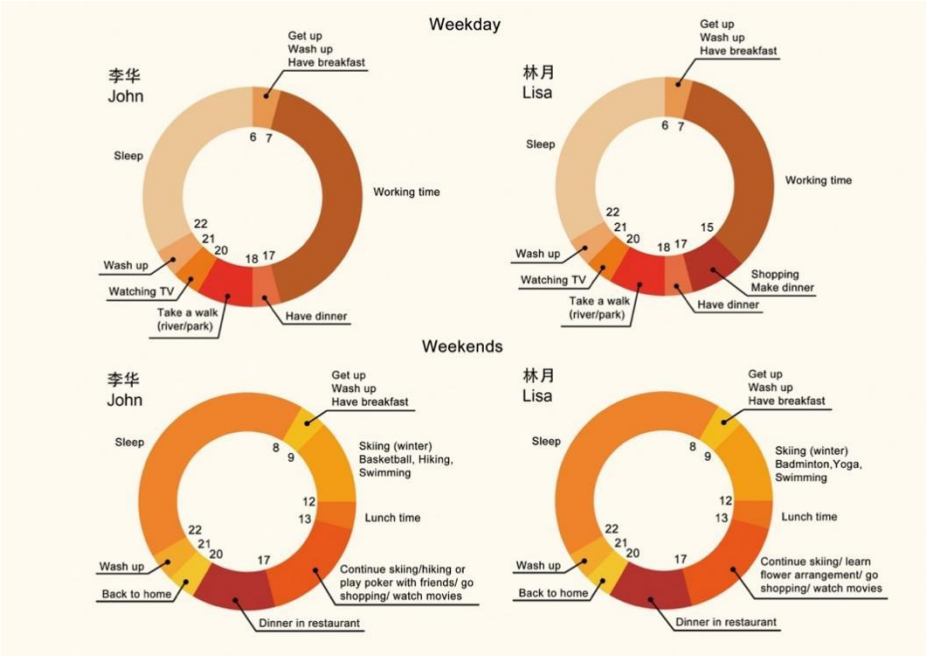

Figure 15. John and Lisa's daily schedule before having a child

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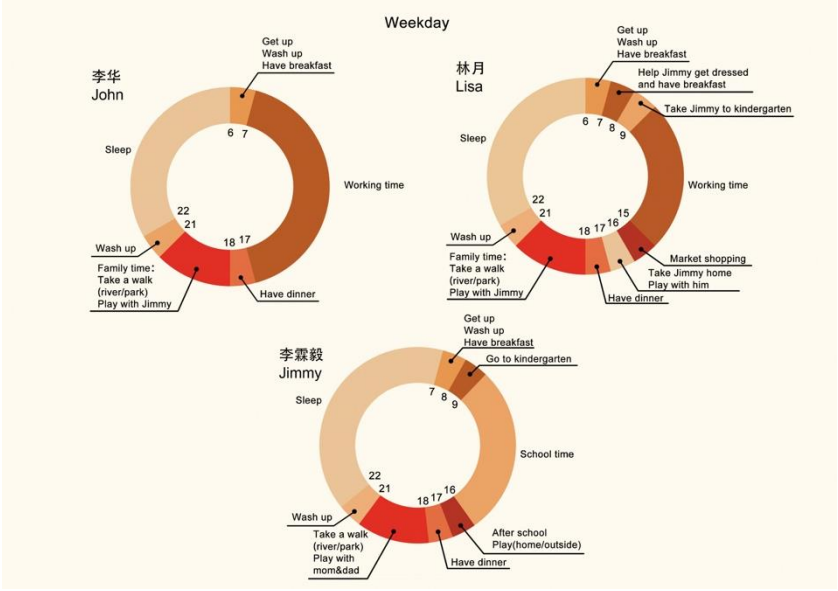

Figure 16. Weekdays schedule for family members of one-child phase

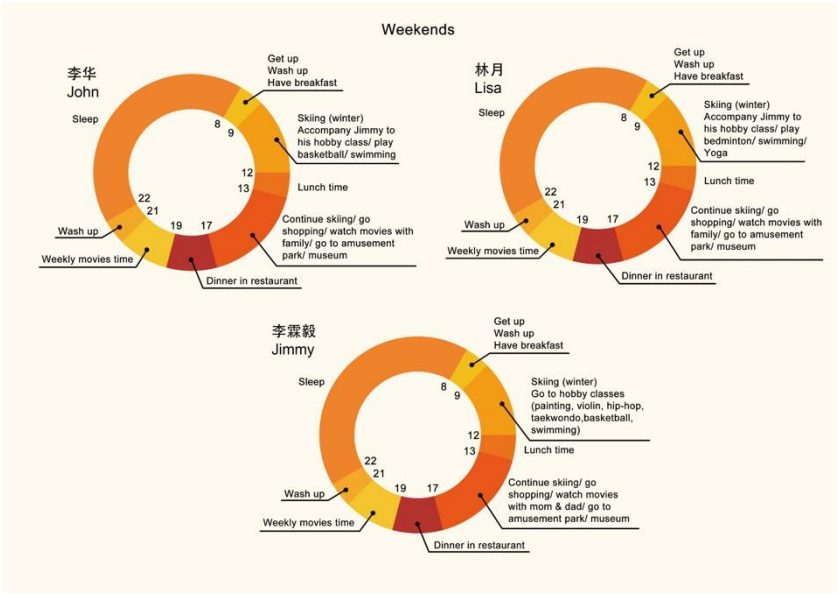

Figure 17. Weekends schedule for family members of one-child phase

Design process

In the design phase, I mainly considered the spaciousness of the space, increaseing the functionality of the space within the limited area. I chose multifunctional furniture, so that it can increase the functionality of the space by changing its shape and avoid the waste of space. At the same time, I used the movable wall to create an activity space for the apartment that can be used as a living room.

In order to make the apartment more spacious, I replaced fixed walls with movable cabinets to form a "movable wall" with storage function (Fig 18). The feature of this movable wall is that it can change the state of opening and closing according to people's needs, and it also replaces the bedroom door. When it is closed, it blocks the corridor and the bedroom to form two completely enclosed and independent spaces, and when it is opened, the bedroom and corridor are combined into the living room of the apartment (Fig 19). In addition, I put the dining table and TV in the "moving wall", which can be pulled out and retracted as needed to save space (Fig 20). Besides, this wall is also a display cabinet. The owner's collection or children's favourite toys can be placed on this wall, which gives the apartment a sense of joy.

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Figure 18. The movable wall

Figure 19. The corridor when open the movable wall

Figure 20. Dining table

Multifunctional beds are used in two bedrooms to save space. The bed can be transformed into a sofa to provide a place for reading, watching TV or chatting during the day. In this way, the main bedroom can be used as a living room . When the bed is opened at night and the moving wall is closed, it becomes

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a completely enclosed bedroom to provide sleeping function (Fig 21). The children's bedroom also uses the same functional bed, which can be used as a bedroom at night and a recreation room during the day (Fig 22).

Figure 21. Living room change to bedroom

Figure 22. Child's bedroom & change to entertainment room

In the design of the kitchen, in order to solve the problem of insufficient storage space in the original kitchen, I set up height-adjustable cabinets on both sides of the range hood. It provides space for tableware, seasonings and microwave oven, and the cabinet below is used to store pots, foods and kitchen cleaning supplies. The height of the cabinet above can be adjusted so that people can easily take items that are at a higher position, and also so as not to block sunlight (Fig 23).

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Figure 23. Kitchen

Figure 24. Bathroom

4.4 Phase 2 (A couple and two children)

In the design at this phase, I explored how to transform this apartment into one suitable for a family with two children. An increase in the number of people in a limited space will lead to a decrease in the area used per capita. In this apartment, I tried to increase personal privacy while preserving the existing functions. In the design process.

Characters	 李华 John	 林月 Lisa	 李霖毅 Jimmy	 李霖希 Doris
Occupation	Office worker	University teacher	Primary school students	Kindergarten student
Hobby	Hiking Play basketball Skiing Swimming Play poker	Cooking Play badminton Skiing Swimming Yoga Flower arrangement	Play Legos Play remote control car Play basketball Skiing Swimming Painting Hip-hop Violin Taekwondo	Play with dolls Painting Dancing Piano Skiing Swimming

Figure 25. The persona of phase 2

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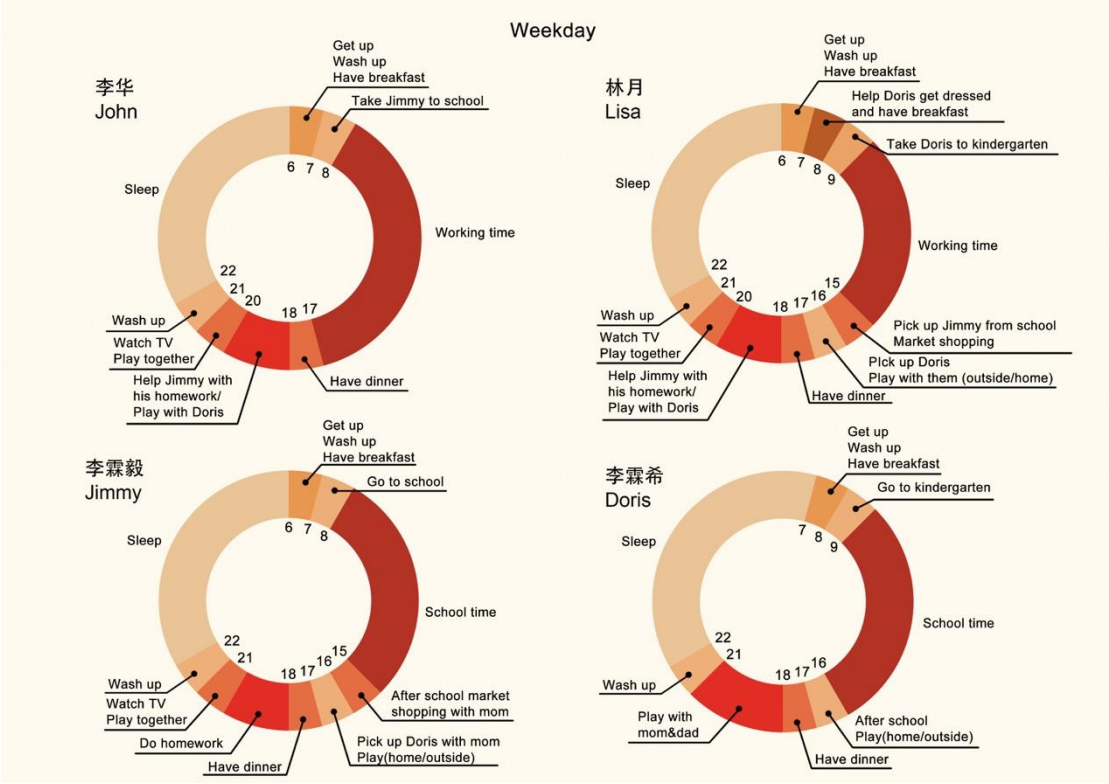

Figure 26. Weekday schedule for family members of the two-child phase

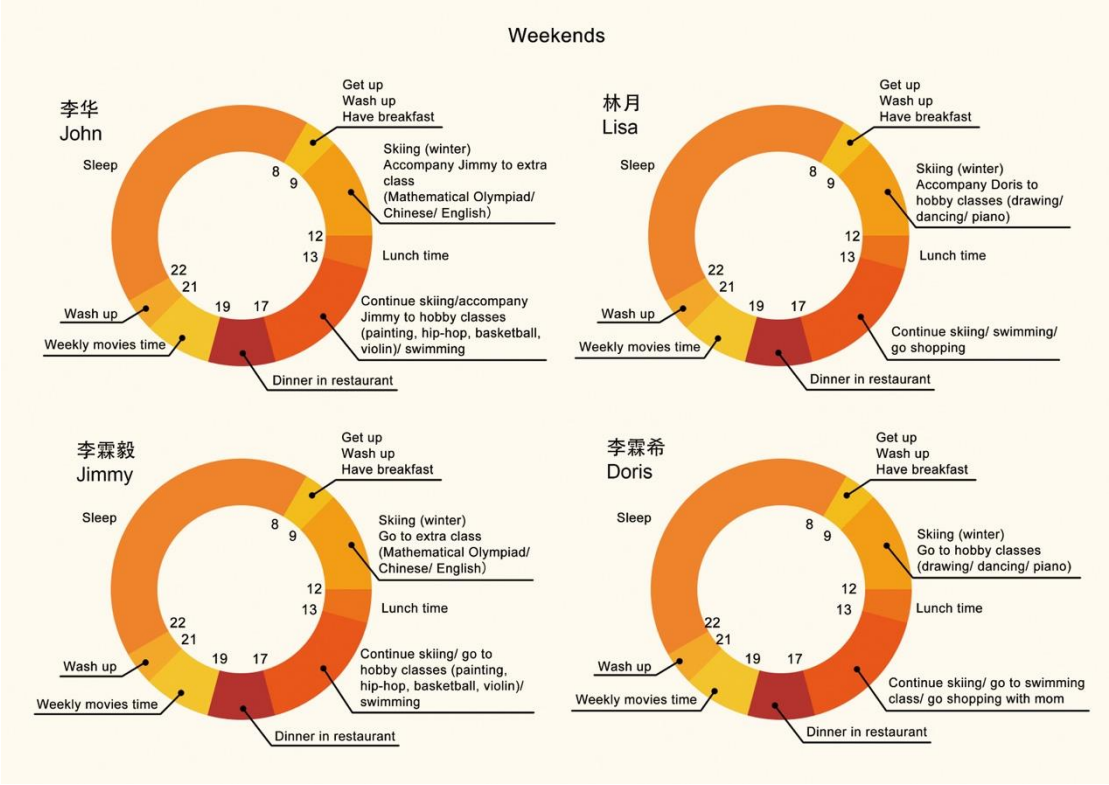

Figure 27. Weekend schedule for family members of the two-child phase

Changes

The gender difference of the two children leads to their different personalities and preferences. Due to the size of the apartment, it is inevitable for them to share one bedroom. Considering the influence of private space on children's psychology, I tried to increase privacy in the design to meet their

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psychological needs. In addition, as children grow up, their homework increases, so I also considered the learning space in the design.

Design process

In this phase of the design, I kept the kitchen, bathroom and movable wall in the previous design, and only changed the design of two bedrooms to save costs. Considering that the gender and age of the two children are different, the children's room needs a larger area to realize that they have independent space and reserve more space for activities, so I changed the larger bedroom into the children's room. In addition, as in the first phase, the moving wall effectively saves the space of the apartment and makes the apartment spacious.

In the design of the children's room, in order to increase the utilization rate of the space, I used movable wall and a multifunctional sofa bed to divide the space into three parts. At night, when the moving wall is closed, the room is a bedroom for children, when the wall is opened, the room is divided into the study area, entertainment area and storage area (Fig 28). At the same time, I staggered the two beds, separated by plasterboard inlaid with stained glass (Fig 29). This method limits children's sight in the non-enclosed space so as to increase the privacy of each child. When the sunlight passes through the stained glass, there will be projections of different colours, which adds to the fun of the room. The lower part of the raised bed is used as a storage space, and the steps used to go to the bed are also drawers for storage. This increases the utilization of space in the vertical space. In addition, Lego was used as the background wall of the children's room to increase the fun of the room and also enrich the colours (Fig 30). The night is also considered in the design of the children's room. Some small night lights in the shape of clouds and stars on the wall are used to increase the warm atmosphere of the night (Fig 33). This design is intended to allow children to study and play in the room during the day, and to fall asleep in a warm environment at night.

Figure 28. Children's room with movable wall opened

Figure 29. Children's room's plasterboard inlaid with stained glass

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Figure 30. Children's room

Figure 31. Children's room

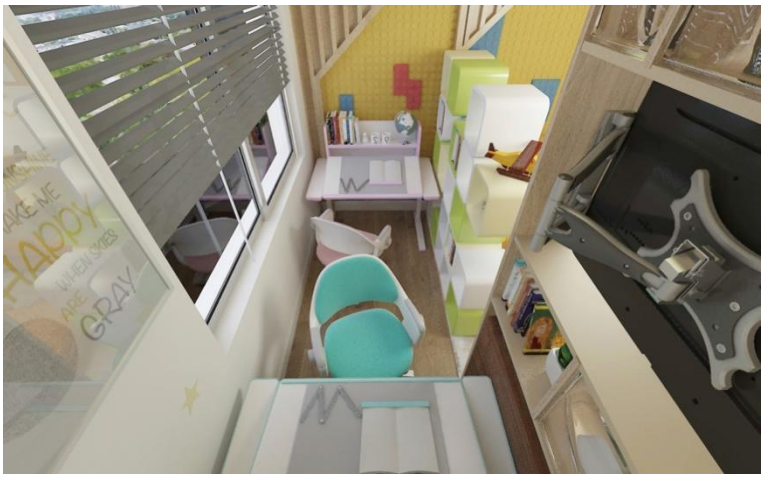

Figure 32. Children's room study area

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Figure 33. Night view of children's room

The parents' bedroom sleeping space above and storage space below. I use this way of overlapping space to increase space utilization to achieve the effect of large use of small space (Fig 34). The steps used to go to bed are used for storage drawers to store some small objects. They can be pulled open to become a bed step, or can be retracted without affecting the closing of the room. It can also be used as a seat, family members can sit on different steps to watch TV or play games..

Figure 34. Parent's bedroom raised bed

Figure 35. Storage space

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5. Conclusion

The aim of this study was to provide Chinese two-child families living in small apartments design comfortable living spaces that meet their needs. In order to achieve this goal, I redesigned an existing small apartment, and used the method of persona to simulate the user's indoor and outdoor activities. That let me to design from the user's perspective, which allows me to avoid making a subjective design that is not generally accepted by people.

I designed two phases living plan for people living in this apartment, which are applicable to different family patterns for different ages of users. In these two phases, I tried to keep the furniture and design of the previous phase, add furniture and change the design appropriately through the analysis of the needs of the family at each phase on the original basis. The continued use of furniture can complete the change of space without much expense. This was used to answer a question I was exploring, how to design the small apartment to meet the low- and middle-income families' needs in Changchun in each phase of life?

Through the design, I found that the use of multifunctional furniture and raising the level of the bed can achieve the purpose of increasing space utilization. The variability of multifunctional furniture allows the same space to have multiple functions. I used movable wall to transform the space between the living room, corridor, bedroom, and dining room; and use the transformable bed to transform the space between the living room and the bedroom. In addition, I raised the height of the bed, and the space below is used for storage. This method also uses the overlapping area in the vertical direction of the space to increase the functionality of the space. Therefore, the use of multifunctional furniture and vertical space in the space can improve the space utilization rate of small living spaces to meet the needs of more family members. This led me to the conclusion that a small area does not mean less functions.

Through research, I attempted to help families who live in small apartments facing insufficient living space or families who will face such problems in the future. This continuous design can not only save the cost of decoration, but also avoid the waste of resources. Let people see the possibility of renovation of small apartments and increase the acceptance of small apartments.

In the future, the problem of insufficient housing space will be a serious problem faced by society and more and more two-child families. According to Ning (the Director of the Chinese Bureau of Statistics, 2020), the number of births in China in 2019 was 14.65 million, of which the proportion of children with two or more children reached 59.5%. The birth of the second child affects society in many ways, such as economy, wellbeing, and resources. This project provides a solution to this significant social problem in terms of housing, which can be used as a reference for similar family models and apartment types. This continuous design can not only save decoration costs and relieve family pressure economically, but also avoid waste of resources. Let people see the possibility of renovation of small apartments and increase the acceptance of small apartments.

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