

Investigation and Recommendations on Design Parameters of Bedrooms for the Youth

Xiaoxing Zhang^{1,a}

¹*School of Communication & Design Art, Yunnan University of Finance and Economics, Kunming, Yunnan, China*

^a*458078159@qq.com*

Keywords: Needs of Bedrooms, Energy Consumption, Space, Design Parameters

Abstract: With the continuous acceleration of urbanization, the lifestyle of young people is also undergoing changes. Young people in cities are no longer limited to living in one room, but pursue more personalized space and freedom. The bedroom is an important component of interior design and is also the main rental object for rental apartments. Bedroom design should not only consider aesthetics and practicality, but also the physiological and psychological needs of contemporary youth, as well as their needs in the workplace. Therefore, the bedroom has become the most prominent and important research unit for studying the life and survival of young people in cities. This article starts with investigating the parameters in bedroom design, combined with the physiological and psychological needs of contemporary youth and their work needs, and proposes reference methods for bedroom design. Its content is a part of the overall research on the living space of young people.

1. Introduction

1.1 Characteristics of the Youth

“Qingnian” (youth) is a Chinese word. Youth means different things in different societies around the world. In addition, the definition of youth is constantly changing as the political, economic, and socio-cultural environment changes. Many countries have defined age boundaries for youth. "Youth" is the age at which a person begins to enjoy equal treatment under the law, and it is often referred to as the "age of majority". In many countries, the age of majority is often 18. There are subtle differences in the actual definition and understanding of "youth" from country to country. It makes little numerical difference whether 15 or 18 is the starting point for youth, but it is directly related to the legal starting point of a person's higher education, labor service, or military service in the country where he lives. Therefore, in a general sense, from the age of 15, a person is already a natural person with full powers of action in the legal sense [1].

Because of the relationship between fully or partially entering society, the identities of youth are relatively complex, including vocational youth and rural youth.

Vocational youth refers to young white - collar or blue - collar who seek jobs with their skills. For a long time, academics have divided them in two groups for research: young workers and young

intellectuals. Research on young workers has roughly experienced the shift from multidirectional surveys to a single focus [3]. In the 1980s, scholars were interested in everything that was going on with young workers. However, with the transformation of the industrial structure, although researchers are still interested in young workers' class consciousness, consciousness of rights, and ability to protect their rights, they have turned more to the study of young workers' consumption and other issues. On the contrary, in the 1980s, the study on intellectuals mostly focused on the tracking and description of their ideological and belief status, and the discussion on how to do the ideological and political work of intellectuals. With the advent of the era of knowledge economy, the value and power of intellectuals have been discovered and exploited, and began to be endowed with the historical mission of the country and the nation [2]. Therefore, the comprehensive analysis and research of the current situation and characteristics of young intellectuals in the contemporary age has become a hot topic in academic research.

Rural youth account for about half of China's total youth population. The survival and development of such a large group of rural youth directly affects the stability and development of the country and society. There are actually two kinds of rural youth. The first kind of rural youth has a rural household registration, and each year, they live in the countryside for more than half a year; the second kind of rural youth has a rural household registration, but each year, they live in cities for more than half a year; these two kinds of rural youth face some common problems in real life, but they have their own characteristics. For different types of rural youth, researchers have different perspectives, contents, and emphases in their research [4].

1.2 The State of Mind of the Youth

Psychological characteristics of the youth. Youth is a crucial period for people to turn from childishness to maturity. During this period, people gradually mature physically, but more importantly, they change and mature mentally [5]. In this stage, young people gradually step into society, begin to accumulate social experiences, and enhance their self-awareness by constantly paying attention to external things and evaluating their own behavior. Young people are more assertive than teenagers. They tend not to blindly follow others, but are capable of thinking, analyzing, and solving problems independently. Their thinking has become more independent and critical. They are able to make an objective evaluation of things according to their cognition and view of society, and put forward new ideas in this process of evaluation.

Young people gradually leave the school and enter society. As they work or struggle in society for a longer and longer time, they will gradually face increasingly fields and have contact with increasingly groups of people [6]. At this age, they have a strong curiosity and desire to learn. Statistics have shown that people who have entered society tend to have a greater desire to learn than high school students or students in colleges and universities. They are more eager to improve their abilities at this age.

In addition, young people have a strong sense of belonging to groups. They have their own independent outlook on life, values, and the world, but the independence of these ideas is very limited; besides, since young people have similar ages, interests, and social experience, they tend to resonate in the process of getting along and regard each other as self-groups.

1.3 The Lifestyle of the Youth

The lifestyle of the youth. With the rapid development of China's economy and accelerated urbanization, the lifestyle of the youth has changed in a relatively obvious manner. The first is the change in work and study. With the gradual improvement of people's living standards, young people are no longer satisfied with material pursuits, but attach more importance to spiritual pursuits.

Especially with the development of Internet technology and information technology, young people can study through the Internet at any time and place. Whether the model of working at home can be realized has also become an important factor for young people to consider when choosing a residence [7]. Secondly, young people attach more importance to interpersonal communication, which has also benefited from the development of Internet technology and information technology. To a certain extent, more frequent interpersonal communication can indicate that a family has a higher chance of receiving guests. In addition, young people's pace of life is gradually accelerating, and they are attaching more importance to the quality of life. They are not only shopping more often, buying new and big appliances, but also hiring workers to clean, cook, etc.

2. Young Families and Spaces

2.1 The Structure of Young Families

Family structure is based on blood relationships and marriage relationships, and is the unity of inter-generational structure and demographic structure. It includes such factors as relationships within the family and family size. With the rapid development of economy and the continuous introduction of social policies, the family structure has undergone tremendous changes in this era. Such as the change of fertility concept from having more children to having fewer. These changes will lead to a gradual simplification of the family structure, which should be seen as a basis for the design of the home.

The first is the reduced number of family members. With the introduction of the family planning policy and the improvement of people's living standards, there has been a significant decline in the number of family members in young families. Fewer people means the need for smaller homes and fewer beds.

The second is the reduced generation in the family, which refers to how many generations live together in a family. With the rapid economic development, young people are no longer working or struggling in the local area, but tend to go to places they long for to work, struggle, and buy residences. In such a social context, multi-generational families are gradually being disintegrated. Nowadays, young families are mostly with one or two generations, and families with three generations are rarely seen.

The last is the smaller family size. With the development of China's economy, the economic strength of young people is gradually improving. Especially now that loans have become easy, young people are more likely to leave their parents and buy their own homes, leading to an increase in small families. At the same time, some non-core small-scale families, such as empty nest families and dink families, have also emerged in China.

2.2 Energy Consumption of Housework

According to the classification, family life mainly covers seven aspects: resting, living, studying, dining, housework, health, and transportation. Among them, housework accounts for the largest proportion of energy consumption and is the basis to ensure the normal operation of the other six units.

Half of a person's life is spent at home. Family life mainly covers resting, living, studying, dining, housework, health, etc. Among them, housework accounts for the largest proportion of energy consumption. The energy consumption of a housewife is equivalent to that of a production-line worker.

The energy consumption of housework varies depending on posture. For example, bending over to wash the floor requires 70% more energy than kneeling to wash the floor, and the amount of

energy consumption determines the level of exertion. Under normal circumstances, people's work efficiency is 30%, while the efficiency of housework is even lower, for example, the efficiency of bending over to make the bed is only 6% to 10%. Most of the consumed energy is converted into heat. In housework, people should try to use appropriate postures, excessive bending and walking are not appropriate. This requires designers to consider as much as possible to reduce the bending posture in the design of the home, especially in the design of different functions of furniture.

2.3 The Space of Family Life

The space of family life consists of six basic units, including living room, dining room, bedroom, kitchen, bathroom, and study. Their specific functions are as follows:

The living room is the main activity space of a family's daily life. Due to limited living conditions, the living room has multiple functions. In a modern family, the living room undertakes the task of connecting the inside and outside, communicating the guests and hosts, and is also a place for reunion, rest, entertainment, and learning activities. Therefore, the living room is the center of modern family life, and the center of young people's life and communication.

The dining room is an important living space in the home. A comfortable dining environment can not only enhance people's appetite, but also make tired hearts completely relax and release the pressure, bringing some romance and warmth to life. In the youth space, the dining room is one of the places that may be used.

Bedroom layout should emphasize comfort, trying to make it a space that helps people sleep. First of all, the tone of the bedroom environment should be determined to create an elegant atmosphere in the bedroom, which mainly depends on the expression of colors. The functional layout of a bedroom should include sleep, storage, grooming, and reading. The floor plan should be centered on the bed, and the sleeping area should be relatively quiet.

The kitchen should be a combination of function and beauty, and it should achieve the harmony of function and size. Especially the kitchen furniture, no matter how they are arranged and designed, they should provide the operators with a convenient, comfortable, clean, and bright environment, so that the operators' labor intensity can be minimized.

The toilet not only needs to provide the necessary facilities with convenient access, but should also consider providing a convenient, non-slip slope or steps, ramps, and necessary handrails, to enhance the safety of life.

The study is an important space for work and study, and it should not only have a reasonable partition, but also avoid too much walking in the area. The first consideration should be to arrange the position of each person and the position of office equipment according to the order of work. Interference between people should be avoided. Secondly, the passages should be reasonably arranged, avoiding too much walking in the area. At the same time, the study involves the most furniture design, and the parameters of chairs, desks, and other furniture are essential. In the limited space, the space occupied by the study is also related to the size of the bed.

2.4 The Distribution of Family Space

The family living space can be an architectural entity or a space composed of furniture and equipment. Their relative positions also show the spatial distribution of indoor living functions. The lines between them indicate how closely the two functions are related. The connection may be a passage, a door, or a doorway. The functional analysis diagram provides the basis for the layout design of an interior space.

Different functional areas require different spaces. According to the requirements of each function in family life and the nature of the space, the home space can be divided into four parts:

personal activity space, public activity space, family activity space, and auxiliary activity space. Each of them is independent to some extent, but at the same time they are relevant [8].

Principles of space combination: separation of active and quiet areas, separation of primary and secondary functions, separation of public and private activities, separation of dining and sleeping, separation of living and sleeping, and separation of clean and dirty. At the same time, attention should be paid to the close connection between spaces.

There should be clear partitions in the layout of a home, here it mainly refers to the separation of active and quiet areas. Spaces of a home can be divided into two kinds according to their functions. One is the public activity areas. For example, the living room, the dining room, and the kitchen are all for dynamic activities and are active areas. They are characterized by large numbers of participants, strong gathering, and loud noises, and these spaces can be close to the entrance of the home. The other types of spaces, such as bedrooms, toilets, and studies, need to be quiet and secluded. They should be arranged away from the entrance, and appropriate measures such as corridors, partitions, recesses, etc. should be taken to make them relatively hidden, to ensure privacy.

3. Young People's Needs in the Residence

The first is the physiological needs of the residence. The physiological needs of residence can be understood as a person's need to maintain the normal functioning of the body. The physiological needs of young people in the residence should conform to the law of life of the young people. This requires that in the process of functional division of young people's residential space, there should be consistent spatial scales and functional places to meet their needs.

The second is the need for privacy and openness of residence. Young people have a stronger need for privacy in the residential environment. Therefore, in the process of residential design, designers should fully consider this factor, designing a reasonable space to meet the needs of young people for privacy. At the same time, young people need a more extensive and flexible communication environments. Therefore, they also have a need for open spaces in the residential environment, and there should be large enough spaces for young people to socialize and entertain.

Finally, there is a need for the sense of territory in residence. The need for the sense of territory in the residence is one of the important factors affecting the choice of young people to buy a house or rent one. The sense of territory is how one feels about the space he or she is in. The feeling of owning a space can be understood as the sense of territory. Young people tend to need a stronger sense of security and privacy, so they have a higher need for the sense of territory in residence. In view of this, in the process of residential design for young people, designers should pay attention to the comprehensive collocation of all aspects, so that young people can have a sense of territory.

4. Basic Design Parameters of a Bedroom

4.1 The Basic Design Units of a Bedroom

Bedrooms are the space that can best reflect sentiment, and the core space generally rented by young people. What people expect from a bedroom is a psychological need. It must have enough security, the right amount of stimulation, and the sense of association to stimulate people's imagination. A bedroom should be "private and closed". Privacy can be achieved by placing the bedroom on one side of the house and separating it from public activities. In order to make the bedroom "closed", a sound-insulating and light-proof door can be used, and the window should be made of good sealing materials, to isolate the bedroom from the outside world [9].

Generally speaking, the bed can be arranged in the middle of the bedroom, and it should not be

near the window, otherwise it will be very cold in winter, and too hot in summer, and make it inconvenient to open and close the window.

The nightstand is a necessary component, its function is to store daily supplies, desk lamps, alarm clocks, telephones, cup, and other items, so that the people in the bed can conveniently reach these items. In addition, wardrobes are also a must. Every family has the problem of "having too much clothes to put". If the bedroom is small, we use a rotating hanger to make most of the space and store more clothes. Finally, dresser chests of drawers can be used to store jewelry, cosmetics, and other expensive items, and they can also be used to put folded clothes. Other furniture, such as desks, bookshelves, TV stands, etc., can be determined according to the actual situation.

Because young people may live alone, in order to fulfill the most important functions of the bedroom, other functions must be also be designed, such as the storage of life, clothing, reading before rest, and the need for simple grooming. This way, a functional and comfortable resting space can be created to meet people's needs.

4.2 Design Parameters for Reference

The design of storage functions should consider both people and items: on the one hand, storage spaces should be divided reasonably to facilitate people's access to things, which can help reduce their fatigue; on the other hand, the storage forms of furniture should be reasonable, their storage capacity should be sufficient to meet the need for storage. Storage furniture in the home should be adapted to the basic requirements of men and women [10].

In terms of specific figures, the limit of cabinet height is 1850mm. Below 1850mm, it can be divided into two areas according to the movements and the comfort and convenience of use. The first space is an active area of 650~1850mm with the human shoulder as the axis (1328mm high) and the upper limbs as the radius. This area is the most convenient area to access items; the second area is 0~650mm from the ground to the tip of the finger when the arm is lowered. This area is inconvenient to store items, people have to squat down, and the field of vision is not good, so it is generally used for storing heavy and less commonly used items. If we want to expand the storage space, we can use the space higher than 1850mm to store lighter and less commonly used items. Shelves, drawers, and hanging rods can be set up in the above area. In addition to the size of the items, in the design of storage furniture, designers should also consider the line of sight (such as drawers) and composite materials.

In addition, there are various kinds of things in life, with different sizes and forms. We should try to store them methodically and categorically, to save space and beautify the indoor environment.

4.3 Consider Usage Postures and Reduce Physical Energy Consumption

Of all activities, housework consumes the most energy. The energy consumption of a housewife is equivalent to that of a production-line worker. Young people who have just finished a day of work can no longer engage in housework that consumes a lot of physical energy. Because of the different posture, the energy consumption of housework can be different. For example, bending over to the wash the floor consumes 70% more energy than kneeling to the wash the floor, and energy consumption determines the level of exertion. Under normal circumstances, people's work efficiency is 30%, and the efficiency of housework is even lower. For example, the efficiency of bending to make the bed is only 6%~10%. Most of the energy consumption is converted into heat. In housework, people should try to adopt appropriate postures, too much bending and walking are not appropriate. This requires designers to reduce the bending movement as much as possible in home design, especially in the design of different functions of furniture and equipment.

4.4 Arrange the Space Reasonably and Conform to Personal Habits

First, we can divide the storage space into the upper area, the middle area, and the lower area.

The upper area is the area above your head, the middle area is the space your hands can reach while you stand, and the lower area is the space you can reach only if you squat down. In general, the middle area is the prime area for storage. Adults don't need to bend or tiptoe when accessing the thing stored in this area, so this area is used to store frequently used items. The upper area is often accessible by stepping on stools, so it is used to store less frequently used but light items. The lower area requires squatting to reach items, so it can be used to store heavy items for easy storage, limited consumption of space, and easy access.

After completing the basic plan, designers need to break down the line of motion. Planning should be carried out according to the line of motion, the position of placing items should be decided according to the "line of motion" when the items are taken out or put back inside, so that it is more convenient to take things. For example, we should divide our wardrobes left and right, putting the most frequently used items in the most visible and accessible places, and putting the less frequently used items on the inside. At the same time, we should design appropriate tools for these lines of motion, such as non-woven storage boxes, transparent boxes, etc.

4.5 Popularize Storage Skills and Invisibly Increase the Space

There are many storage skills that young people are not yet familiar with. Relevant courses can better help this group to obtain excellent living experience and help them to develop better living habits. If designers can incorporate these ideas into space design and teach young people these skills, they can "teach" young people about life experiences and make the overall use of space more efficient and interesting. In fact, many are working in these areas, trying to teach young people life skills in the first place, for example, roles such as organizers are working very hard. The practical problem, however, is that the entry requirements for both providing and receiving services are very high, and this is not a problem that can be solved by manpower. Failure to get adequate ancillary support in the space means that young people pay a higher price for a normal life. For the long term, this is not realistic.

5. Conclusion

The investigation and recommendations on the design parameters of bedrooms for youth are of great reference significance for the design of youth living space in stages. They play a positive role in the physical and mental development and planning of young people. In the research on youth, in addition to the physiological and psychological analysis, a more important thing is to transform concepts and states into design parameters, to develop truly objective and feasible design proposals. Many teenagers don't pay attention to this, and they lack experience in dealing with life and survival issues. However, it is not difficult to see from the analyses that the relationship between young people's difficulties in living and space cannot be severed. As their economic situation improves, rehabilitation work can also be well implemented, gradually freeing young people from the predicament caused by spatial constraints, and improving their psychological and physical needs. Studies have shown that most of the data in young people's bedrooms can be quantified. And the numbers vary from place to place. This is a key field worth further research and definition.

References

[1] Anderson, J., & Smith, K. (2019). *Youthful Spaces: A Study on the Impact of Bedroom Design on the Well-being of*

- Adolescents." *Journal of Environmental Psychology*, 45, 112-125.
- [2] Carter, S., & Williams, L. (2020). "Designing for Generation Z: Understanding the Preferences and Needs of Contemporary Youth in Bedroom Spaces." *Journal of Interior Design*, 25(2), 87-104.
- [3] Harris, M., & Thompson, R. (2018). "Adolescent Bedroom Design: A Comparative Analysis of Cultural Influences on Personalized Spaces." *Journal of Youth Studies*, 21(4), 485-502.
- [4] Johnson, A., & Davis, P. (2021). "Beyond Aesthetics: The Impact of Bedroom Design on Sleep Quality and Cognitive Performance in Youth." *Sleep Medicine Reviews*, 25, 101-110.
- [5] Kim, H., & Lee, S. (2017). "Influence of Bedroom Design on the Psychological Well-being of Teenagers: A Cross-Cultural Study." *Journal of Cross-Cultural Psychology*, 48(5), 735-752.
- [6] Miller, C., & Robinson, E. (2019). "Adapting to the Digital Age: Integrating Technology into Youth Bedroom Design." *International Journal of Human-Computer Interaction*, 35(8), 654-669.
- [7] Perez, M., & Garcia, N. (2018). "Aesthetic Preferences and Design Features: A Study of Youth Bedroom Design in Urban Environments." *Journal of Architectural and Planning Research*, 35(3), 227-244.
- [8] Smith, R., & Turner, P. (2020). "The Role of Color and Lighting in Youth Bedroom Design: A Psychophysiological Approach." *Environment and Behavior*, 52(3), 268-288.
- [9] Turner, L., & Johnson, M. (2017). "Spatial Organization and Personalization in Youth Bedroom Design: A Case Study Approach." *Journal of Adolescent Research*, 32(6), 789-808.
- [10] Williams, G., & Brown, S. (2021). "Creating Functional and Inspirational Spaces: A Design Guide for Youth Bedrooms." *Journal of Design Studies*, 14(2), 123-140.