

EMOTIONAL FURNITURE DESIGN FOR THE ELDERLY : HOW TO MAKE DESIGN CONNECT TO END-USERS

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Abstract : As the problem of an aging society becomes increasingly serious, the emotional needs and quality of life of the elderly are receiving more and more attention. Furniture is not only closely related to people's daily lives, but also shows the emotional pursuits and personality characteristics of users during use. Therefore, in order to narrow the distance between elderly furniture and users, it is necessary to use the concept of emotional design, and then design furniture products with spiritual care and emotional satisfaction characteristics according to the physiological and psychological characteristics of the elderly and their emotional needs. This paper aims to explore how to improve the comfort and emotional resonance of furniture used by the elderly through emotional design methods. Through empathetic design and metaphorical techniques, we designed furniture that can arouse emotional resonance and psychological memory to meet the social and emotional needs of the elderly in environments such as reading rooms. The ultimate goal is to design furniture that is both practical and that can give emotional support and spiritual satisfaction to the elderly, so that they can feel the care and respect of society in their later years.

Keywords: elderly furniture, emotional design, empathy, end-users

1. INTRODUCTION

In the context of globalization, the growth of the elderly population has become a common phenomenon. China, as the most populous country in the world, has a particularly significant growth rate in its elderly population (RIVM 2013)(World Health Organization 2002). Elderly people are the consumers of the future as they are growing in number and make up different components of the world's population (Zhengjun et al. 2019). However, the design industry has shown a certain degree of neglect when targeting this growing consumer group, and has invested more resources and innovation in the middle-aged, young and children's markets. With the improvement in the economic conditions of the elderly and the increase in their spending power, the elderly furniture market has shown great development potential (Zhang et al. 2023). As the main force of future consumption, the elderly have a profound impact on the market not only because of their growing numbers, but also because of their proportion in the global population structure. The growth of China's elderly population is a social phenomenon that cannot be ignored. This growth trend has put forward new requirements for the furniture design industry, requiring the industry to have a deeper understanding of and attention to the living habits, physical conditions and aesthetic preferences of the elderly. At present, the design industry has deviations in market positioning and has failed to fully recognize the market opportunities brought about by the growth of the elderly population. This phenomenon has restricted the development and innovation of the elderly furniture market to a certain extent. With the improvement of the economic level of the elderly and the change in consumption concepts, the demand for the elderly furniture market is growing. This market not only has a broad space for development, but also has important significance for improving the quality of life for the elderly(Wu 2023). The design industry should adjust its market strategy and pay more attention to the needs and preferences of the elderly. Through innovative design and personalized services, the elderly's requirements for functionality, comfort and aesthetics in furniture can be met.

In the context of rapid social and economic growth, people's pursuit of quality of life has gone beyond basic material needs and is moving towards deeper spiritual and emotional satisfaction. Furniture, as a core element of daily life, should not only be designed for beauty and practicality, but also be committed to meeting the comprehensive functional needs of users.

For emotional furniture design for the elderly, designers need to adopt a comprehensive design strategy that takes into account safety, convenience, comfort, and aging-friendly design that adapts to the physiological and psychological

characteristics of the elderly (Zhengjun et al. 2019). Safety ensures the stability of the furniture structure and prevents potential safety risks. Convenience focuses on simplifying the operating process and reducing the barriers to use for the elderly. Comfort improves the daily life experience of the elderly by providing excellent ergonomic support. Aging-friendly design pays special attention to the specific needs of the elderly, including fine-tuning the size, shape, and operation of furniture.

The core of emotional design is to have a deep insight into the emotional needs of the elderly, which requires designers to show a high degree of empathy and truly understand their living conditions and emotional pursuits from the perspective of the elderly. Through careful design, designers can create furniture that is both functional and beautiful, while also being able to resonate with the elderly on a spiritual level, providing them with a sense of home and emotional support.

2. THE EMOTIONAL DESIGN PERFORMANCE OF ELDERLY FURNITURE

Emotional design is an important guiding concept for the design of furniture for the elderly. It can use visible or invisible design language to place users' emotions in it, so as to achieve the purpose and effect of conveying emotions, and thus meet the spiritual and psychological needs of users. Specifically, the emotional design of furniture for the elderly should be manifested in the following aspects:

First, soft curves and large surfaces should be chosen in the modeling design, avoiding straight lines and sharp corners. At the same time, elements or symbols with traditional cultural characteristics should be matched, so as to show the characteristics of the primitive and nostalgic atmosphere, to meet the physical and mental characteristics of the elderly as well as their emotional needs. Second, the color design should highlight the applicability of the effect, paying attention to the harmonious relationship of color collocation. Thirdly, the functional design should be based on the living habits and concepts of the elderly, highlighting the simplicity and convenience of the use of furniture and ensuring that furniture for the elderly can be widely used. Fourthly, the material design should take into account the elderly people's feel when they touch the furniture. On the one hand, the use of high-tech materials should be reduced; on the other hand, mainstream materials should be used in line with the elderly's needs when they were young, so as to give them good visual and tactile feelings through the surface characteristics of the furniture, and also healthy and positive psychological association. Thus, the recessive interaction between furniture product design and the elderly can be realized.

3. THE EMOTIONAL DESIGN APPEAL OF ELDERLY FURNITURE

As a growing special group in modern society, the elderly deserve to have their quality of life and emotional needs studied in-depth and given attention. Although the living conditions of many elderly people may not be ideal, they usually show high satisfaction. This satisfaction stems from the difficult life they have experienced in the past and their gratitude for the improvements in their current life. However, the satisfaction of the elderly with their quality of life does not mean that they do not have higher pursuits in life. In fact, with the relative decline of material conditions, the spiritual needs of the elderly are growing. This transformation requires us to deeply explore and understand their living conditions and real needs when designing emotional furniture for the elderly. The living conditions of the elderly are affected by many factors, including economic conditions, health conditions and social support. Designers need to consider these factors comprehensively to ensure that furniture design can truly solve the actual problems of the elderly. The emotional characteristics of the elderly are mainly manifested in the fear of loneliness and isolation, the pursuit of a sense of belonging, and the desire for the love of their children. These emotional characteristics provide us with several aspects that need special attention when designing furniture for the elderly. Emotional design should not only meet the practical needs of the elderly, but also pay attention to their emotional experiences. Designers can create furniture that can resonate emotionally through the color, shape, material and function of furniture(Lu 2021). Considering the elderly's need for their children's care, furniture design can promote communication and interaction between family members. For example, designing furniture with common activities can enhance the connection between family members. The elderly often have a deep emotional connection to their past lives. Incorporating cultural and nostalgic elements into the design can help the elderly maintain a connection with the past and enhance their sense of belonging and happiness.

3.1 Focus on Safety

The physiological and psychological state of the elderly changes with age. Psychologically, they may be afraid of loneliness, especially those who live alone who are more likely to have and be in negative emotions for a long time, which may have an adverse effect on their physical health. Their physical strength, endurance, balance and coordination abilities generally decline, and some elderly people may also suffer from chronic diseases. These factors have put forward higher requirements for the safety of furniture design. Safety design should not only meet the actual needs of the elderly, be easy to use, and adapt to different life scenarios, but also give psychological comfort to the elderly so that they can live more assuredly.

3.2 Consideration of Comfort

The emotional design concept emphasizes that "good-looking things are more useful". As a high-frequency item in daily life, the attractiveness of furniture becomes the key to design. For the design of furniture for the elderly, comfort is the primary factor to win the favor of the elderly. Considering the changes in the body shape of the elderly, the furniture design should meet their special size requirements and ensure comfort during use (Shanat, M. & Saili, J. 2018). This design concept can not only enhance the user experience of the elderly, but also win their trust.

3.3 Design of Convenience

As they age, the mobility of the elderly may gradually decline, so convenience becomes an important aspect of the emotional design of furniture for the elderly. In addition to traditional convenience design, the advantages of intelligent design should also be fully utilized in the modern social environment. Intelligent furniture should be easy to operate, and can be adjusted and used through simple remote control buttons, reducing the frequency of elderly people getting up and walking. At the same time, the design of intelligent furniture should simplify the process to ensure that the elderly can easily accept and use it accurately to achieve real convenience.

3.4 Highlighting of Personalization

In the emotional design of elderly furniture, personalization is an element that cannot be ignored. The "personalization" here refers to the design that conforms to the personality of the elderly, that is, the design style that reflects the unique taste and life experience of the elderly. In terms of color, structure, form, etc., retro elements can be incorporated to fit the furniture style of the elderly when they were young (Fu & Zhang 2019). Such a design can meet not only the emotional and psychological needs of the elderly, but also stimulate their desire to buy and use.

4. THE EMOTIONAL DESIGN PATH OF ELDERLY FURNITURE

By analyzing the needs of elderly furniture design, we can find that in order to make the design closer to users, it is necessary to conform to their actual needs. In the design of elderly furniture, we should expand from the following aspects: safety, convenience, comfort and aging-friendly.

4.1 Meeting the Needs of the Elderly and Paying Attention to the Safety Design

Through the behavior analysis of the elderly, it is not difficult to find that after entering old age, most of the urban elderly live at home in the state of retirement, generally spend a long time in the family, and are not used to sitting or lying down for a long

time. Therefore, most older people still want to get fit by walking, despite the decline in physical functioning that can occur, such as a decline in balance and coordination. It is therefore necessary not only to cancel the older furniture design elements such as tough, sharp corners, but also to use more rounded without edges and corners design ideas, in order to prevent serious injury for the elderly resulting from physical contact and falls. At the same time, the psychological benefits can also give the elderly a higher sense of security, so as to achieve the purpose of caring and respecting the elderly from the design level.

In the dynamic design of furniture, it is necessary to move the handrail as far as possible for the furniture design, in order to not only make it easier for the elderly to find the fulcrum when sitting up and help them maintain balance in their body and prevent falls, but also to give the elderly a certain sense of security.

In the process of independent living, the elderly are also faced with certain safety and disease risks. Therefore, in furniture design, we can also add intelligent interactive equipment to carry out real-time supervision and early warning for the elderly. For example, the design for toilets can incorporate "monitoring cushion", automatic monitoring of the elderly's heart rate, breathing, blood pressure and other data indicators. When there is a problem, information can be sent to the family phone, so that they can receive timely assistance.

4.2 In Line with the Preferences of the Elderly, Pay Attention to Comfort Design

The body shape of the elderly is quite different from that of the youth, so in the emotional design for elderly furniture, it is also necessary to adhere to the basis of ergonomic design. The furniture size and design will have to take into consideration the elderly's height, activity ability, weight, body width, chest waist circumference and other data to optimize the design, in order to ensure that the furniture conforms to the elderly's bodily requirements, and achieves the effect of improving its comfort level. For example, the normal sitting height of the general furniture is 45-52cm, but the elderly will be short due to the curvature of the back, stiff feet and other problems. So the sitting height design can be reduced to a moderate amount, 37-38cm, which is more appropriate(Shanat, M., 2014).

The home life needs of the elderly are also significantly different from those of young people(Yang 2014), especially in terms of psychological comfort. Given that the elderly spend much more time at home than young people, the design of the home environment should focus on meeting their deep emotional needs. In emotional design, choosing a relatively traditional Chinese style can evoke nostalgia in the elderly and satisfy their emotional attachment to traditional culture. Chinese-style furniture design, with its classic aesthetic characteristics and profound cultural

heritage, provides a familiar and warm living atmosphere for the elderly. Traditional Chinese furniture is known for its practicality and comfort. For example, the frosted texture of a wooden sofa not only gives people a warm and natural feeling, but its materials and craftsmanship are also more in line with the physical needs and usage habits of the elderly. In furniture design, the attention to detail is particularly critical. Pairing with soft and comfortable cushions and traditional wooden coffee tables can not only enhance the practicality of furniture, but also give the elderly a sense of comfort and peace of mind in terms of vision and touch, thereby enhancing their physical and mental comfort.



Figure 1. Wooden sofas with a matte texture

4.3 Close to the Old Life, the Use of Convenience Design

The elderly face decline both psychologically and physiologically. Psychologically, they have an increased fear of loneliness and hope to be cared for, but at the same time they hope to independently handle things they think they can solve, which forms a real contradiction. To solve this problem, the design of elderly furniture can add height adjustment functions, which not only improves the convenience of use, but also meets the psychological needs of the elderly to solve problems independently, allowing them to adjust the height of the furniture at any time according to their needs.

Physiologically, the layout of the elderly's living room should be as simple as possible, and the partition design should be reduced to improve the convenience of movement. In order to further meet the convenience needs of some elderly people, furniture can add simple intelligent auxiliary functions. For example, button for height adjustment can be set on chairs that can be easily controlled by the elderly.



Figure 2. Button for height adjustment can be set on chairs

4.4 Highlight the Nostalgic Style and Implement the Design of Aging

The elderly group is different from other social groups, as most of the elderly began to enter the period of facing death after retirement, so the fear of loneliness is naturally generated. They tend to find meaning in life by recalling the people and things in the past. This process leads to the formation of nostalgic sentiments, evoked by old objects and cultural forms, which serve as anchors to their former lives.

Therefore, in the emotional design of elderly furniture, it is also necessary to meet the nostalgic needs of the elderly and provide necessary spiritual support for them. To meet the general nostalgia of the elderly, designers can incorporate traditional cultural elements and symbols into furniture design to weaken the stiffness of mechanical parts, and try to use curved surfaces as much as possible to avoid excessive contrast, making the use of furniture more comfortable for the elderly and creating a good emotional experience (Mu 2021). Therefore, in addressing the design needs of the elderly, we should try our best to reduce the psychological impact of the changes brought by time on the elderly, so we can choose to imitate and learn the furniture design characteristics of the 80's and 90's, which should not only highlight the gentle and concise, but also highlight the "golden mean", showing the unique characteristics of simple, smooth, stretch and vigorous furniture.

5. DISCUSSION

5.1 Principal Findings

In this study on the application of empathy and availability theory to the user experience of geriatric furniture design, the importance of user-centered design that prioritizes the emotional and physical well-being of older users is emphasized. By

applying availability theory to geriatric furniture design, we found that clear, intuitive design elements can significantly improve usability and safety for older adults. Features such as adjustable heights, non-slip surfaces, and easily accessible storage spaces are directly related to the physical needs of older users and promote both independence and safety in their daily interactions with furniture.

5.2 Empathy-Driven Design Meets Emotional and Psychological Needs

Furniture designs that incorporate traditional aesthetics, such as nostalgic Chinese styles, not only cater to the cultural preferences of the older generation, but also evoke a positive emotional response that helps to reduce loneliness and enhance a sense of belonging. The balance between modern functionality and cultural familiarity is key to meeting the complex emotional needs of this demographic.

5.3 Integration of Smart Technology Enhances the Functionality of Furniture

The combination of smart technologies, such as height-adjustable seats or assistive features such as “lift” buttons on armrests, meets both physical and mental needs. These innovations increase convenience and allow older users to feel in control of their surroundings while maintaining their independence. Smart furniture that meets the needs of the user without over complicating them is a promising way to enhance the experience of older users.

6. CONCLUSION

In summary, with the development of modern society, the elderly furniture industry has found new development opportunities in an aging society and has become an important pillar to help countless elderly people enjoy their old age. The development of modern furniture continues to diversify, showing different morphological characteristics and aesthetic styles, but it obviously does not meet the actual needs of contemporary elderly people. Under the guidance of emotional design concepts, the design of elderly furniture should go beyond traditional aesthetic and functional considerations, follow the design principles of safety, convenience, comfort and aging-friendly, and pay more attention to the physiological and psychological needs of the elderly. Help the elderly create a safe, healthy, happy and happy living environment and atmosphere.

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