

# Research on Healing Furniture Design under the Background of Big Data

Qiyu Gao

Hebei University of Technology, Tianjin, 300000, China

gaoqiyu2001@163.com

**Abstract.** From the background of healing furniture, the concept of healing furniture, its current status and its own characteristics, the design ideas and methods of designing healing furniture for children with depression are analysed. From the concept of big data, the impact of big data on three different aspects of healing furniture design is investigated. Based on the behavioural and sensory aspects of depressed children, the healing design needs of depressed children for furniture design are presented, and a concrete case study is used to demonstrate the design of furniture for depressed children based on the concept of healing design. The design approach of behavioural intervention, sensory soothing and emotional empathy is proposed to meet the psychological healing needs of depressed children. The introduction of healing interactive design into the design of furniture for depressed children not only allows for timely analysis of the psychological changes in depressed children, but also promotes the ability of depressed children to perceive externally and makes healing furniture more innovative.

**Keywords:** Big Data; Healing; Children with Depression; Home Design.

## 1. Introduction

According to the World Health Organization, the number of people diagnosed with depression is 350 million worldwide, and the incidence of depression among adolescents accounts for about 1/4 of the total number of people. In China, the number of depression patients is also on the rise year by year, while the age of the disease is getting lower and lower, according to statistics, the prevalence of depression in China is as high as 2.1%. The symptoms of depression in adolescents are often more hidden than in adults, so the negative emotions generated are more easily ignored, and the consequences are more serious. At present, there are few furniture designs for depressed children, and only some therapeutic devices for insomnia or poor memory and hyperactivity are available on the market, which do not play a good role in healing. Therefore, by analyzing and summarizing the behavioral and sensory needs of the design objects, and then applying the sensory, behavioral and emotional aspects of interactive design to the design of furniture for depressed children, we will eventually have a better understanding of the heart needs of depressed children, and provide design models and references for future furniture design for depressed children.

## 2. Healing Furniture

### 2.1 Background of Healing Furniture

Healing furniture is a design concept that aims to provide a comfortable, warm and relaxing environment through changes in the form, function, materials and colors of furniture to help people relieve stress, restore energy, soothe emotions and promote physical and mental health. The background of this design concept stems from people's reflection on modern lifestyles and concern for physical and mental health, especially the high incidence of stress, fatigue and mental illnesses prevalent in modern society. In recent years, healing furniture has gradually become a hot topic in the field of interior design, attracting more and more attention and research. Healing furniture is widely used in daily life, they can be used in homes, offices, hospitals, nursing homes and other places to help people relieve physical and mental stress and improve the quality of life.

## **2.2 The Characteristics of Healing Furniture**

The characteristics of healing furniture itself include the following aspects: functionality, comfort, aesthetics, interactivity and intelligence.

### **2.2.1 Functional Features**

Healing furniture should have different functional settings for different users' needs, for example: massage chairs, intelligent mattresses and other furniture, which are designed to provide specific healing functions in the future. For example: "Mia hoodie chair", which is designed to create non-restrictive seating options to encourage children when they feel overwhelmed or fidgety. The chair can quickly pull up the fabric cover when children feel overwhelmed and partially isolate themselves, and the chair is also a swinging seat that allows the user to move freely.

### **2.2.2 Comfort Features**

Healing furniture needs to focus on user comfort, including aspects such as hardness, elasticity, and softness of the surface material. The main purpose of healing furniture is to relieve the user's fatigue and stress, and relax the body and mind.

### **2.2.3 Aesthetic Features**

Healing furniture needs to focus on different materials, colors and other aspects of the choice for different people, to retain the functionality and comfort of furniture while taking into account the aesthetics to enhance the user's experience.

### **2.2.4 Interactivity**

Interactivity can improve the user's sense of participation and satisfaction, and at the same time can promote socialization and communication. For example, the Perception Table, which is designed to help users reduce stress, enhance concentration and focus, and improve physical coordination and balance, uses a variety of interactive design elements. For example, "Synchrony" for children with autism is designed to help children with autism and their parents build a close relationship and promote mutual understanding through improvised music.

### **2.2.5 Smart Features**

Healing furniture usually contains technologies such as sensors, smart chips and software that monitor the user's health status and behavioral data in order to adjust, the functionality and performance of the furniture. For example, a smart mattress can achieve real-time monitoring of human health data through sensors, smart chips and other technologies to provide a better sleep healing effect.

## **2.3 Status of Healing Furniture and its Shortcomings**

In recent years, there has been an increased focus on patient-centered care, which has led to a greater emphasis on the design and features of therapeutic furniture. Healthcare organizations are seeking to create a more comfortable recovery environment for their patients, which includes investing in more advanced therapeutic furniture.

The trend toward incorporating technology into therapeutic furniture is also growing. For example, some hospital beds are now equipped with monitoring systems that can track a patient's vital signs and alert healthcare professionals if there are any abnormalities. In addition, some treatment tables may incorporate massage or heat therapy to improve patient comfort and reduce pain.

Another trend is the development of portable and modular healing furniture. These types of furniture are designed to be easily moved and reconfigured, allowing healthcare professionals to adapt to changing patient needs and treatment requirements.

In terms of deficiencies, there is still a significant gap between the availability of healing furniture in developed and developing countries. Many healthcare facilities in developing countries may lack the resources to invest in the latest equipment, resulting in suboptimal patient care.

Overall, while some progress has been made in healing furniture, continued innovation and investment is needed to improve patient outcomes and enhance the quality of healthcare delivery.

Also, in terms of research, one of the main challenges is the complexity of designing and evaluating healing furniture. There are many different factors to consider, including patient comfort, safety, durability, and functionality. In addition, assessing the impact of healing furniture on patient prognosis can be difficult because it usually involves assessing subjective factors such as pain and satisfaction. The main purpose of this study is to overturn traditional design concepts and to heal children with autism with the help of behavioral and sensory elements from the level of environmental psychology and evidence-based design theory, to give warmth and affection, and to strive for them to come out of their sadness as soon as possible and be able to This is what I focused on when designing the program.

### **3. Healing Furniture Design in the Context of Big Data**

#### **3.1 Background of Furniture Design in the Context of Big Data**

In today's increasingly rich information resources of big data, the use of information resources will play its main role in the development of society. The use of big data information technology to assist in the development of furniture product design has become an important trend in the development of the furniture industry. In addition, with the improvement of living standard, people pay more and more attention to the quality of their living environment and furniture. Using comfortable homes at home can help people relax and relieve stress. The design of healing furniture can better adapt to people's needs and psychological state.

In the context of big data, by collecting and analyzing a large amount of user data, understanding user needs and behaviors, focusing on user perception and experience in the process of use, providing users with personalized and customized home design solutions, designing furniture products with emotional interaction, context creation and diversity, and using technologies such as the Internet of Things and artificial intelligence to give furniture an intelligent degree, thus optimizing furniture design and improving user experience.

#### **3.2 Healing Furniture Design Methods in the Context of Big Data**

Big data technology allows people to collect, process and analyze a large amount of data to gain a deeper understanding of people's life and health status, which provides a more accurate basis and direction for the design of healing furniture. Specifically, big data technology can influence the design of healing furniture in the following ways:

Design based on user data: Big data technology can collect and analyze user habits, health status and other data, providing accurate user needs and usage scenarios, as well as relevant health data references for the design of healing furniture.

Design based on medical data: Big data technology can collect and analyze medical data to understand the causes of diseases, symptom characteristics and other information, so as to design healing furniture in a targeted manner and improve the treatment effect. For example, when designing furniture for autistic children, medical data can provide information about the characteristics and needs of autistic children.

Design based on environmental data: Big data technology can collect and analyze environmental data to understand the impact of the environment on people's physical and mental health, so that environmental factors can be taken into account in the design of healing furniture and the furniture can be better adapted to different usage scenarios.

In the context of big data, the background of healing furniture design is mainly derived from the in-depth understanding and research of people's lifestyle and health condition. Big data technology allows people to collect, process and analyze a large amount of data, and then gain a deeper understanding of people's life and health status, which provides a more accurate basis and direction for the design of healing furniture.

### 3.3 Features of Healing Furniture Design in the Context of Big Data

Healing furniture in the context of big data has the characteristics of data-driven, intelligent, personalized, interconnected, and user participation and feedback, in order to provide more accurate and personalized healing experience and effect.

**Data-driven:** Healing furniture in the context of big data uses data analysis and intelligent technology to collect, analyze and apply a large amount of data to understand users' needs, emotions and behaviors in order to provide personalized, targeted healing effects. By monitoring and analyzing the data, the furniture's functionality, interaction style and environment can be adjusted in real time to meet the specific needs of the user.

**Intelligent:** Healing furniture usually has intelligent functions and features in the context of big data. They can integrate sensors, intelligent control systems and artificial intelligence algorithms to automate monitoring, analysis and adjustment. For example, a smart mattress can adjust the firmness, temperature and massage intensity of the mattress through sleep monitoring and analysis to provide a better sleep experience.

**Personalization:** Healing furniture in the context of big data can be personalized according to the individual characteristics and needs of each user. By collecting and analyzing users' data, we can understand their physical conditions, preferences and preferences, and thus design furniture products that are more suitable for them. Personalization can improve the healing effect and user experience, and enhance the adaptability and operability of the furniture.

**Interconnectivity:** Healing furniture is often characterized by interconnectivity in the context of big data. They can exchange and interact with other smart devices and systems to achieve more comprehensive health management and healing effects. For example, healing chairs can be connected to smart bracelets, health monitoring devices, etc. to share health data and achieve comprehensive monitoring and healing support.

**User participation and feedback:** healing furniture in the context of big data focuses on user participation and feedback. By interacting and communicating with users, their opinions and needs are collected and fed back into furniture design and adjustment in time to continuously improve and optimize the product. User participation and feedback can enhance user initiative and satisfaction, and improve the effectiveness and sustainability of the healing effect.

## 4. Analysis of Furniture Design Strategies for Children with Depression

### 4.1 Overall Strategy

As a medium for transmitting emotional information to depressed children, furniture contains behavioral elements as well as sensory elements that are key to accomplishing the healing utility. Healing furniture design needs to be designed with the starting point of helping depressed children to relieve their emotions by providing comfort, safety, intimacy, and an atmosphere of positive encouragement and support to enhance children's self-esteem and self-confidence and establish positive behavior patterns. In addition, it can also help children better manage their emotions by incorporating technological elements in furniture design, such as big data analytics, intelligent sensing, and artificial intelligence.

Healing furniture design also needs to consider the properties of the materials themselves, as well as the color preferences and acceptance of depressed children, based on the overall design strategy. As shown in Table 1, choosing the right materials and colors not only enriches the sensory attributes of the furniture itself, but more importantly, reinforces the way emotional information is transmitted to facilitate the formation of healing.

### 4.2 Behavioral Elements

According to the survey data obtained, 58% of adolescent depression groups rely on the bed to a high degree, lying posture to a certain extent can relieve the discomfort brought about by somatic

symptoms; 64% of adolescent depression groups will sit on the sofa, chair or study table will not be able to focus on doing things; more than 70% of adolescent depression groups do not use the washroom furniture frequently, do not care to dress up, not in the accidental in the image; 80% of the adolescent depression group use the closet type furniture infrequently and refuse to socialize. From this, the healing furniture type is concentrated on the design of beds, study tables and chairs. This paper focuses on the design of study tables.

Depressed children may become bored with school, disgust themselves and some self-harming behaviors in the learning process, which requires furniture design features to add design elements to reduce the possible harm to depressed children, such as setting the four corners of the study table to rounded corners, and reducing the choice of materials such as metal, glass and other materials that make people feel cold.

During the onset of depression, children may appear to close themselves off and refuse to socialize, children can press the emergency button on the study table screen, the study table network information will be sent to the child's parents, so that parents understand the situation and first give the child alone space.

### **4.3 Sensory Elements**

#### **4.3.1 Visual Senses**

Visual senses are the most direct way to understand things, so they can be used as a precondition for healing furniture design. According to the questionnaire survey, this type of children's preference for yellow, blue and purple and similar colors is more prominent; red, gray and similar colors are less preferred; therefore, the study table design will use fresh and cool colors in the color selection, and try to avoid large areas of warm colors and gray. In the choice of materials will also choose wood, bamboo and other natural healing sense is relatively high material.

#### **4.3.2 Tactile Senses**

According to the results of the questionnaire, this type of child has higher tactile requirements for furniture due to the influence of family, self or external environment. In psychotherapy for depressed children, there is a well-known sand tray therapy, which uses sand trays to improve the child's hands-on skills, and the psychologist can also analyze the child's psychological state by the shapes the child builds in the sand tray. Through the online questionnaire format, it is concluded that the child's psychological state is different at home and in the psychotherapy room, and the sand tray data collected by the study table will be more accurate as well as more relevant to the child's changing psychological state.

The table has a small screen, and a community APP about depressed children is created online. The APP can use big data collection to further analyze the psychological changes of the user, and the user can click on the screen and make their own remarks on the community APP. Once the user appears to want to self-harm, the APP will send an alert to contact the people around who also use the study table as soon as possible.

#### **4.3.3 Auditory Senses**

When children with depression close themselves off, psychologists usually intervene through interactive music, for example, when they are in early childhood, psychologists use Orff music for musical initiation of young children. The study table for depressed children in early childhood is designed so that parents of users can use the music for children on the study table screen at home to relieve the child of relevant emotions.

## **5. Conclusion**

This paper understands the basic features and requirements of healing furniture design in the context of big data healing, and analyzes the psychological and behavioral conditions of depressed children at the onset of depression with the support of questionnaires and search data, and carries out

the furniture design of study tables for depressed children around the behavioral and psychological needs of depressed children at the onset of depression, as well as the use of big data information collection and Internet of things, etc. We also designed a community app for depressed children using big data collection and Internet of Things. The interactive function of the study table can reflect the depressed child's psychology at that time to a certain extent, and use the big data to synchronize to the parents' cell phone, so that they can get more effective help in the next psychological treatment.

## References

- [1] Haoyang Wang, Tiejun Liu. "A study of emotionally informed furniture design from an artistic healing perspective" *Furniture and upholstery* 2022, 29 (05).
- [2] Tanhao Gao, Xiaotong Zhang, Hongtao Zhou. "A study of urban furniture design based on art healing" [J] *Furniture and upholstery*,2021(05):10-15.
- [3] Yang Jiao. "A study on the application of embodied cognition in product design" [D]. Zhenjiang: Jiangsu University.
- [4] Hu Pan, Qiang Gao. "An exploration of perceptual holistic reconstruction in furniture design" [J]. *Furniture and upholstery*.