

# Design of Children's Emotional Toys based on Synaesthesia

Liwei Qiu\*, Yixuan Xie and Xiaoming Shi

Wenzhou Polytechnic, Wenzhou, 325000, China

## Abstract

In the face of the increasingly severe psychological problems of children, in order to deeply explore the application of children's mental health toy design under the concept of synaesthesia, this paper summarizes the concept of synaesthesia and the existing problems in the design of children's toys, combined with children's emotional and psychological needs, to explore the application principles of the synaesthesia concept in the design of toys to meet the needs of children's mental health, and put forward the application ideas of children's toy design under the concept of synaesthesia according to the actual situation, so that the children can be reasonably improved in the high-incidence period of children's psychological sensitivity, and let children have a more healthy mental state and promote the common development of children's mental health.

## Keywords

Synaesthesia Concept; Infant Emotion; Children's Toy Design.

## 1. An Overview of the Concept of Synaesthesia

Early childhood is a plastic period of early language, thinking and social skills. Therefore, during this period, children's growth rate slows down, their intellectual development accelerates, their range of activities increases, and their exposure to social things increases. Significant development of language, thinking and social skills. Therefore, we should guide children to correctly perceive the things around them while playing, and form correct values in a subtle way. Compared with other educational behaviors and methods, children's playing aids under the concept of synaesthesia are closer to the characteristics of children's thinking stages, and resonate with children's senses to help them overcome the limitations of the senses of object perception, so as to maximize the Effectively mobilize children's enthusiasm for learning, give full play to their imagination and creativity, and then make them more abundant, strong and effective education.

## 2. Problems Existing in the Design of Children's Toys

### 2.1. Lack of Psychological and Physiological Analysis of Children, Poor Usability

Early childhood is a period of heightened curiosity and curiosity. During play, young children will try to distinguish different toys, explore how toys work and understand how toys are used. In my country's toy market, many actual functions have not been carefully distinguished. Children of different ages and genders have different needs for toys of different types and functions.

This product designs a rattle that transmits different sounds through different textures through children's curiosity and curiosity about things in childhood, which not only satisfies children's curiosity about sounds, but also exercises the identification and analysis of sounds and the sound source. Pursuit enhances the child's insight and concentration.

## 2.2. Lack of Development of New Toy Functions, Weak Experience

It lacks innovation, lacks new design concepts, and does not combine new technologies, new ideas, and children's psychological and physiological factors to design new toys that are multi-functional, combine static and dynamic, and promote children's hands-on and brain-moving abilities.

This product is modified based on the prototype of the rattle handed down from the Neolithic period, adding different textures and new materials. The rattle, which has formed a new era and new characteristics, not only realizes the development of new toys and new functions, but also enhances the sense of interaction between children and adults, and enhances the communication and experience between the two parties.



**Figure 1.** Product display of variable sound bamboo rattle



**Figure 2.** Handheld display of children

## 2.3. Toy Materials are not Environmentally Friendly, and There are Potential Health Hazards

Children in early childhood have weak physique and poor self-protection ability. Any unreasonable design link, rough production process and unqualified materials may have potential safety hazards. And degradable environmentally friendly materials have become the first choice.

This product is made of degradable bamboo, and bamboo products not only conform to the green principle in the Code of Names, but also have the characteristics of automatic adjustment and maintenance of temperature, warm in winter and cool in summer. It can not only protect children's eyesight, but also avoid allergic asthma, and distribute natural fragrance, which is beneficial to physical and mental health. [7]

And the use of a round and smooth design satisfies adults' concerns about the hidden dangers of children's safety. The thickness is thin and the texture is light, which can not only exercise children's grasping power, but also will not consume children's physical strength.



**Figure 3.** Schematic diagram of the production structure of the variable sound bamboo rattle drum

### 3. Application Ideas in the Design of Children's Mental Health Toys under the Concept of Synaesthesia

References are cited in the text just by square brackets [1]. (If square brackets are not available, slashes may be used instead, e.g. /2/.)

#### 3.1. The Application Significance of Children's Toy Design Combined with the Concept of Synaesthesia

Young children are in a critical period of comprehensive development of multi-faceted abilities and physical and mental growth and development. The concept of synaesthesia is the core of the design with user experience, combined with every step and detail in the user's use process, and the changes in the user's psychological needs. From different aspects such as hearing, vision, taste, touch, smell, etc., observe the psychological needs of each child, and construct different types of models to meet the material and spiritual needs of different children. In the process of use, it can fully mobilize multiple senses for synergy, thereby increasing children's play experience.

For example, the texture of the rattle is different, and the touch of the toy is different when the child touches the toy. When the rattle is rotated, the sound of the beads hitting different textures is different, which enhances the child's perception and strengthens the hearing. Therefore, it has certain practical significance to apply the concept of synaesthesia to the rattle of children's toy design.

#### 3.2. Analysis of Children's Needs for Toys

##### 3.2.1. Style Requirements

###### shape outline

Since young children's understanding and memory of shapes will gradually become stronger, under the practical principle of the synaesthesia concept, combined with the user's behavioral habits and cognitive customs, a corresponding application model is designed to restore the user's Exactly what it looks like when you use this product in your life. It can quickly and accurately capture the real demands of users, further strengthen and shorten the psychological distance between the product itself and the user's psychological default model, meet the needs of young children for shapes, and enhance their understanding.

###### color

Children are natural sensory explorers, so while the design pursues beauty, the material needs to be safe, non-toxic, and the most important thing is to be able to stabilize and concentrate. Therefore, the tender white color containing bamboo fiber can automatically adjust and

maintain the temperature, which is warm in winter and cool in summer. The characteristic bamboo has become the first choice. In addition, its natural texture is either brown, brown, or brown. The elegance contains stability, and the quiet factor can not only protect the eyesight of children, but also soothe children's emotions.

### **3.2.2. Performance Requirements**

At this stage, children already have cognitive emotions, they can distinguish several basic colors, spatial positions and near and far directions, and they also have certain cognition and needs for time and space, appearance and performance. This stage is the unconscious development stage, and also the conscious embryonic stage. There will be relatively concise and clear thinking and associations in behavioral activities, and various emotions have been basically completed. But it was not stable, so a more complex emotional experience began to appear.

### **3.2.3. User Experience Needs**

Through the application of structure, material, style, etc., this product provides more ways to present the rattle with the help of design thinking and cognitive habits. By using three-dimensional carving technology to improve the frame structure of the inner wall of the tympanic membrane, different texture structures are created, and different sounds can be made after percussion to easily attract the attention of young children, thereby arousing the curiosity of young children. The user's emotional experience needs are sufficient in the interaction.

## **4. Application Principles of Children's Toy Design under the Concept of Synaesthesia**

### **4.1. The Principle of Localization**

The design principle of localization refers to the design activities based on the cultural characteristics of the nation in the process of toy design, combined with the technology of modern design. This product is a drum toy for young children developed by redesigning traditional toys under the concept of synaesthesia. Let children have a new understanding and cognition of traditional toys.

### **4.2. The Principle of Personalization**

Through the concept of synaesthesia, the improvement of toy design concepts, the application of high-tech, the combination of traditional culture and modernity, and many other aspects. The personalization of toy design is closely linked with the unique creativity of toy design. Thereby broadening the association of children's brains.

### **4.3. Principles of Educational Practicality**

Taking into account the current social value orientation and other aspects, it is very necessary for toy companies and designers to integrate more education into the toy design and development process. The application of the concept of synaesthesia in the design of children's toys should follow the principle of practicality. The principle of practicality means that the operation of the product should be as simple as possible and conform to the user's behavior habits.

### **4.4. The Principle of Interactivity**

Another point of the concept of synaesthesia is to pay attention to the user's experience at the spiritual level when meeting material needs. In the scientific field, the content is effectively internalized to form a movable, touchable and sound environment, so that children can effectively interact with the environment to better improve the effective guidance of the scientific interactive environment.

## 5. Conclusion

This paper first analyzes the existing problems in the design of children's toys; then expounds the current problems in the design of children's toys; finally, it describes the application principles and ideas of the synaesthesia concept in the design of children's mental health toys to show the design concept of this product, and the future Outlook.

## 6. Looking to the Future

This product combines the concept of synaesthesia, takes the mental health of children as the foundation, inherits the traditional appearance and incorporates innovative design. It not only promotes traditional Chinese culture, but also meets the needs of the people's growing spiritual and cultural needs and promotes the needs of economic and social development.

Rattles of different materials and styles are still being produced. This product is a unique, simple and multi-functional product designed to keep up with the actual market. Times are progressing, society is developing, and people's needs are constantly changing. What we have to do is to be realistic and meet the real needs of users. In the future, the R&D team will gradually improve traditional toys by borrowing natural materials such as bamboo for more specific psychological problems of children, and propose different design possibilities.

## Acknowledgments

This product is a drum toy for young children developed by redesigning traditional toys under the concept of synaesthesia. Let children have a new understanding and cognition of traditional toys.

## References

- [1] Zhou Juan. Exploring the interactive needs of autistic children for toy design [J]. *Grand View of Fine Arts*, 2014(02):106.
- [2] Qian Jia. Research and application of traditional farm tools in the redesign of children's toys [D]. Zhejiang Sci-Tech University, 2019. DOI: 10.27786/d.cnki.gzjlg.2019.000121.
- [3] Bai Xinlei. "Sensory Design" - Discussion on the relationship between synaesthesia and design [J]. *Shenhua* (1), 2019(11):139.
- [4] Zhang Yangli. Early childhood is a critical period for language ability development [J]. *Development of the West: Mid-term*, 2010(4):1.
- [5] Wu Li, Sun Chunmeng, Jin Wenkui. Redesign of traditional toys for pop culture [J]. *Packaging and Design*, 2020(04):112-113.
- [6] Yan Dong. Problems and countermeasures in the design of modern children's toys in my country [J]. *Journal of Henan University of Technology (Social Science Edition)*, 2013,9(03):132-135. DOI: 10.16433/j.cnki.cn41-1379.2013.03.001.
- [7] Chen Yuanyuan. The influence and redesign of traditional toys on the cultivation of children's emotional intelligence [D]. Hubei University of Technology, 2016.