

# ***Research on Virtual Reality App Design in the Perspective of Art Healing***

**Tingchi Liu<sup>1,a</sup>, Ying Wang<sup>1,b,\*</sup>**

<sup>1</sup>*Visual Communication Design, Northeast Normal University, Boshuo Street, Changchun, China*  
*a. liutc274@nenu.edu.cn, b. wangy986@nenu.edu.cn*

*\*corresponding author*

**Abstract:** In contemporary society, individuals commonly face emotional problems of stress and anxiety from multiple sources, which usually arise when facing challenges, pressure, or uncertainty. Understanding one's stress and anxiety responses, as well as learning to cope with them effectively, has a crucial impact on maintaining physical and mental health and improving the quality of life. To cope with this phenomenon, this paper, from the perspective of art healing, through an in-depth study of a variety of healing apps and healing tools commonly used in psychological studios, uses virtual reality technology to achieve multi-sensory channel stimulation and designs a game app that combines art healing and virtual reality technology, which, through personalized gaming sessions, enables the user to focus on his or her feelings during the game to improve the therapeutic effect, with the aim of Create a peaceful relaxation space for users, through an in-depth study of a variety of healing apps and psychological studio commonly used healing means, combined with multi-sensory channel stimulation. Explore the possibility of combining art healing and virtual reality technology, and provide theoretical and practical support for the progress and innovation of the art healing field.

**Keywords:** Art healing, Multisensory, Anxiety, Experiential

## **1. Introduction**

In the current high-pressure, fast-paced social context, people's mental health issues are getting more and more attention, and the search for effective psychological healing methods is crucial. Art therapy, as a relatively new healing method, has been increasingly widely used in psychotherapy and has great potential for development.

At this stage, most research focuses on single-sensory applications and art forms, such as guided expression through painting. Although these methods have shown some therapeutic effects, there is little research on combining multi-sensory and art healing. Multi-sensory integration can lead to a deeper experience. This study explores the impact of multisensory art healing on mental health, integrates visual, auditory, tactile, and other art forms, and provides a new way of thinking about multisensory art healing, which in turn enhances the effects of art healing on emotional regulation and psychological relief, and promotes its application and development in the field of mental health.

## 2. Psychological issues

Under the pressure of society and life, national mental health problems are highlighted. An analysis of the China Mental Health Development Report 2023(Figure 1)shows that only 36 % of the population consider themselves to be in good mental health, that college students are increasingly at risk of depression and anxiety, and that mental health problems are trending towards a younger age group.(Figure 2)

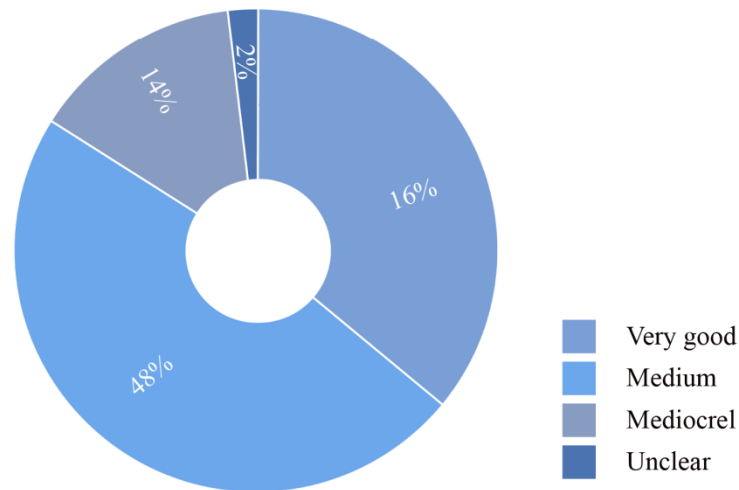


Figure 1: Self-assessment of national mental health.  
The 2023 Blue Book of China's Mental Health

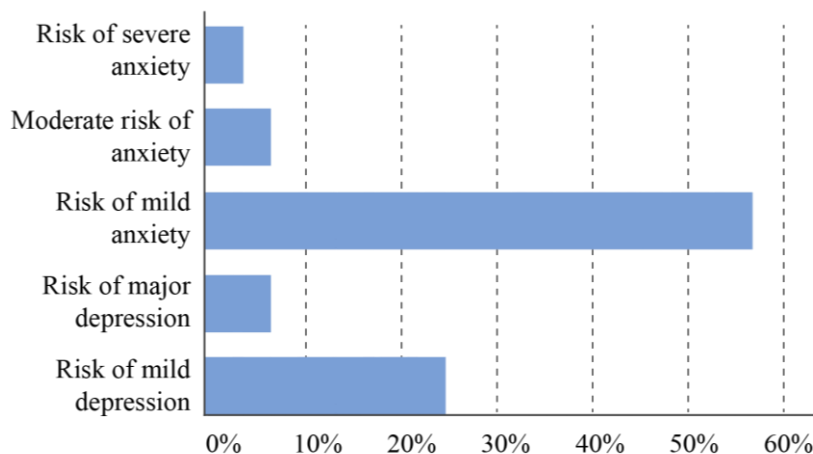


Figure 2: The detection rate of depression risk in different age groups.  
The 2023 Blue Book of China's Mental Health

In recent years, under the State's publicity and social guidance, society in general has become more concerned about mental health issues, and greater attention has been paid to mental health issues.

## 2.1. Anxiety Emotions

Anxiety is a normal phenomenon, but its duration and severity are not conducive to good health.

Anxiety is not easy to observe directly, but it can cause physiological, mental, and multifaceted responses in individuals. Anxiety may be caused by stress in the individual's life, changes in the social environment, disturbances in interpersonal interactions, or certain things that the individual is currently experiencing. For example, some people with low psychological tolerance may feel nervous, short of breath, and depressed before facing events such as major decisions or exams. Today, the detection rate of anxiety risk is 15.8%, which is 1.5 times higher than the detection rate of depression risk. Excessive anxiety tends to harm a person's daily life. When faced with the above situation, some of the anxiety may gradually improve over time, but the other part may haunt people for a long time. They lack channels to digest negative emotions, and if these emotions cannot be relieved, they may evolve into anxiety disorders or other heart problems. In response to the above, we can help individuals understand the nature of anxiety and ways to cope with it by design.

## 3. Art Healing

### 3.1. The concept of art healing

Art healing is based on art and psychology, transforming emotions into artistic expression. American education and psychologist Margaret Naumburg used painting as the main means of art healing, interpreting and associating paintings, creating a precedent for the combination of art and psychotherapy, and is known as the mother of art healing.

The healing power of art comes from the enhancement of well-being in life during the creation of a work of art, an expression of thoughts and feelings in a non-verbal form. Like other forms of psychotherapy and counseling, art healing is used to inspire personal growth, increase self-understanding, and aid in emotional healing, and can be used to treat people of all ages.[1]

Artistic expressions such as painting, dance, and music flow from self-exploration of the present state of being, and art is both a medium and a catalyst for emotional expression.

state. Art is not only a medium for emotional expression, but also a catalyst for emotional exploration.

### 3.2. The Role of Art Therapy

Although traditional psychotherapeutic methods are effective to a certain extent, they still have limitations regarding treatment period and effect. In contrast, art therapy, as an emerging form of therapy, shows unique advantages and plays an important role in relieving anxiety and promoting mental health. Through different art forms, it promotes emotional regulation and self-exploration, and the deepest emotions of individuals can be expressed in disguise.

Art itself has a certain effect of relaxing and delighting the mood. From an experiential point of view, appreciating artwork or listening to music can help individuals relax and reduce the tension and discomfort caused by anxiety. The sense of achievement brought by making artwork can promote the improvement of self-confidence. Art therapy provides emotional value in a variety of ways and can play a positive role in relieving anxiety and promoting mental health. The combination of art allows for a greater variety of ways for individuals to heal.

## 4. Case analysis

### 4.1. Case Table

Table 1:Case Studies

	Case Name	Image	Application	Pain Points
Case One	Online Art Therapy Salon - Emotion Box		Drawing and quiet space, accompanied by soothing music	Lack of immersive experience, unclear therapeutic effects
Case Two	at the MOMENT Art Design Therapy Studio (BAHE Art Research Institute)		Often uses aromatherapy, combined with chanting bowls or light music, crystal meditation	Limited by distance, fewer people can receive therapy at the same time
Case Three	Interactive Wall LUMES (Cabrini Hospital, Australia)		Designed for children, with diverse animation content, fresh and cute colors, pixelated style full of childlike fun. Moderate animation speed helps maintain a steady breathing rhythm	Effective only for mild emotional relief, ineffective for severe emotions
Case Four	Children's Healing Garden Crown Sky Garden (Chicago Downtown Hospital)		Creates natural light and shadow effects, accompanied by white noise found in nature	Requires high venue standards, expensive costs
Case Five	Bubble in the Forest FRANK		Provides an opportunity to connect with nature	Limited by distance

Table 1: (continued)

Case Six	"Eco-Dance", i.e. "Ecological Dance"		Helps return to the harmony between humans and nature, emotional experiences can be evoked through dance, group dancing enhances connections between people	Limited by venue and location restrictions, fewer organizers
Case Seven	Children in the earthquake-stricken area after the 2008 Wenchuan Earthquake show symptoms of PTSD		Drawing can help children express emotions and experiences that are difficult to put into words psychologically	
Case Eight	Alto's Adventure		Beautiful art style, weather changes in the scenery, user interest is stimulated through earning points	Single map, easy to get bored, insufficient reward mechanism to stimulate player emotions
APP Case Nine	Ethereal Land Meditation		Provides touring and meditation space, visual enjoyment is provided to players through ink wash style, can freely switch weather and seasons	Design style leads to reduced audience
Case Ten	Pillow - Lying Down Designed VR Game		Can customize bedtime stories. Can be played multiplayer or single player	



Table 1: (continued)

Case Eleven	White Noise 3D		An app containing a wide range of scenes and sound sources of white noise, offering various scenes, users can combine different sounds according to preference	Relatively single function
Case Twelve	Worry Doll		Provides a tree hole space to express personal emotions, a new doll is generated each time, giving users a sense of freshness	Relatively single function, minimal user feedback
Case Thirteen	Canned Meditation		Provides various meditation and breathing guidance methods. Users can check in daily	Most functions require membership activation
Case Fourteen	PlayGround Organic Mix		A musical instrument game, slide and collide with tiles randomly to create a nice music rhythm	Cannot customize maps, limited existing choices available, only in English

## 4.2. Combining Virtual Reality with Art Therapy

Art therapy has been proven to have great potential in psychological counseling. In daily life, people also choose to play games to relieve stress. If the two are organically combined and linked with VR technology to provide interactive opportunities, it is expected to enhance the therapeutic effects to a certain extent.

Meditation apps have maintained high download rates. VR technology provides users with a virtual independent space, helping to reduce external distractions and enter a meditative state. Painting, as the most easily achievable art form, is applied in art therapy. For example, in the online art therapy salon (Case One), healing purposes are achieved through online remote guidance in painting. In the 2008 Wenchuan earthquake (Case Seven), many children were frightened by the slight shaking of chairs after the quake. In response to this, volunteers guided the children to express their inner feelings and emotions through painting to provide targeted psychological counseling. By

incorporating VR technology into the field of artistic creation, an immersive creative environment is created for users to alleviate emotions and relieve stress through creative expression.

Healing games are emerging one after another, such as "Alto's Adventure" (case eight) featuring a simple flat style with soft colors. "Playground" with organic remixing (case fourteen) provides a way for people to vent, allowing users to release negative emotions by randomly sliding the screen, and the game will provide users with rhythmic music feedback.

### 4.3. Multisensory Integration and Anxiety Relief

Multisensory experiences provide individuals with a more comprehensive perceptual experience by simultaneously stimulating multiple sensory channels. Compared to single-sensory experiences, multisensory experiences are more immersive. In healing cases, it mainly combines visual and auditory stimuli.

Firstly, visual stimuli are widely used in healing environment design. By providing natural landscapes, visual artworks, and other visual elements, it promotes relaxation of body and mind, and alleviates anxiety. In Case Study Three, the interactive wall LUMES from Australia (Case Three) has been carefully considered in terms of spatial layout, color application, and pattern design. The target audience of this design is children, so the choice of colors and patterns is more lively and warm.

Crown Sky Garden (Case Four) is also dedicated to creating a therapeutic space suitable for children. In addition to incorporating natural elements such as green plants, it also uses brightly colored resin panels to enhance the sense of openness in the space, allowing patients to overlook the city skyline and creating a more spacious and bright atmosphere.

Psychologists believe that color has an important impact on people's psychological activities, especially emotions have a very close relationship. Colour acts on the human senses, stimulates the human nerves, and then has an impact on the emotional and psychological aspects. The poet Goethe said: in pure red to see a high degree of solemnity and solemnity. The color red was used as a symbol of kingship because of its solemn and secure character. Pure yellow is joyful, soft, and lovely. Blue expresses a paradox of excitement and security. The ability of colors to influence the mental state and mood of man lies in the fact that they originate from the innate colors of nature. [1]

Case four and case five both connect vision with the natural environment, capturing colors that benefit emotions. Studies have shown that color temperature is an important factor affecting comfort, and in the contrast between warm light and cool light, warm light makes people feel warmer and more relaxed[3] For example, the bubble installation FRANK in the forest (Case five) brings people back to nature, bathed in warm light.

Besides visual, auditory is also an important part of it. Birdsong, the sound of wind, and the rustling of leaves rubbing together in the natural world all belong to white noise. White noise is the sound hint given to us by nature, and low-decibel rhythmic white noise can effectively help people relax and focus. Nowadays, there are many white noise apps on the market, such as White Noise 3D (Case Eleven), where users can combine various sounds according to their preferences to create a more immersive auditory experience.

Rhythm is not only manifested in auditory perception, but also in dance, the two being different forms of rhythmic expression. Rhythm comes from movement, from the regular movement of objects. Its carriers of movement can be the rhythm in the music of sound: or the rhythm of the body in dance.[2]

Researchers have found that dance can effectively release stress, have a certain inhibitory effect on relieving emotions such as anxiety and depression. For example, "Eco-Dance" created by Andy Lubbof, moved the location of people's dance from indoors to the forest, helping people to return to natural harmony and establish a connection with nature.

The combination of multi-sensory experiences and anxiety relief provides an innovative approach to art therapy, and a more comprehensive experience can better alleviate anxiety emotions.

## **5. The integration of multi-sensory art therapy and virtual reality design strategies**

Perception is typically a process involving multiple senses. In most cases, it involves vision, sound, and sometimes touch, taste, and smell as well.[5] In practical applications, multimodal experiences have been widely used in virtual reality, augmented reality, entertainment, and education. By simultaneously stimulating multiple sensory channels, highly immersive environments are created, allowing users to deeply immerse themselves in the experience. Multisensory experiences enrich people's perception of the world, providing important theoretical foundations and practical guidance for innovation in technology and design fields.

### **5.1. Create a solitary space to confront feelings of anxiety**

Currently, most people are not aware of being troubled by anxiety, partly because this emotion often hides in the heart and is difficult to be aware of. Anxiety is easily confused with tension, unease, worry, fear, etc., leading many people to mistakenly consider anxiety as a normal stress response in daily life. In addition, the influence of social culture may cause people to have biased perceptions of anxiety, leading to anxiety being seen as a weakness or an unacceptable expression, so people may try to conceal or ignore their own anxiety.

So, raising people's cognitive level about anxiety emotions is crucial. Only when individuals are aware of themselves or trapped by anxiety emotions, and learn to correctly identify and cope with this kind of emotion, can effective measures be taken to alleviate anxiety emotions.

The goal of game design is to create a relatively quiet and private environment for players, providing opportunities for meditation and self-awareness, guiding players to explore themselves and their cognition, and allowing them to express and release emotions. During the process, players can freely explore the game world, interact with the environment, and thus enhance their level of self-awareness.

### **5.2. Provide personalized interaction**

Personalized interactive design is built on the understanding of user psychology and behavior, and is a technology that makes it easier, more effective, and more acceptable for users to receive information services.[5] Providing personalized interactive opportunities in healing games can enhance player engagement and involvement. Players shape their game experience based on their preferences and needs, making it more tailored to individual personality and emotional needs, thereby increasing their immersion in the game process. Additionally, personalized interactive opportunities can meet the individual diversity needs of different player groups. Different players may have different emotions, preferences, and needs. Personalized interactive opportunities can better adapt to the needs of different players, enhancing the attractiveness and playability of the game. Personalized interactive opportunities can enhance the resonance between players and the game. When players can freely shape the game world and interact deeply with the characters, they are more likely to develop emotions, deepening their involvement and participation in the game.

## **6. User Experience Process**

### **6.1. Sound Collection**

As an important perceptual channel, auditory perception will run through the entire game process, providing different auditory experiences in different game modules. Firstly, provide a tree hole as a



platform for players to relax and share. Players enter an independent space for sound collection, and based on the different sound waves formed by the player's output, the system will randomly generate game images for the next game stage, friendly to people with decision-making difficulties. At the same time, the sounds collected at this stage provide information source for the sound waves feedback to the players at the end of the game, achieving sound visualization, allowing worries to be presented in an abstract way.

## 6.2. Provide personalized game interaction opportunities

During the game process, provide players with personalized interaction opportunities that cater to different gaming preferences.

### 6.2.1. "Healing in the Wilderness" Game One

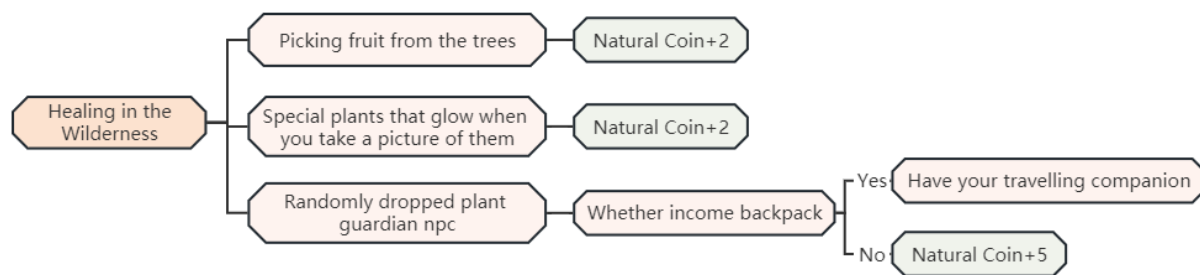


Figure 3: Healing of the Wilderness Game Flow.

Scientific research has shown that the act of picking can effectively alleviate anxiety. "The healing of the wilderness" approaches from a visual perspective, providing players with a color-healing game environment. During the process(Figure 3), players can obtain nature coins in two ways, by picking fruits from trees and taking photos with interesting and beautiful plants. Randomly dropped plant guardian NPCs can be collected as companions on the journey, making the game process no longer lonely.

### 6.2.2. "Dance of the Soul" Game Two

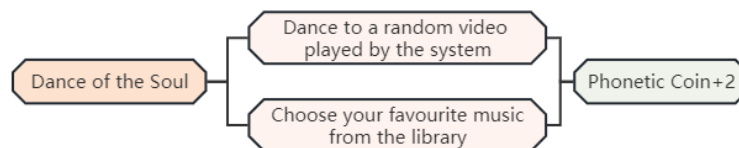


Figure 4: Dance of the Soul Game Flow.

For players who enjoy dancing and sports, opportunities have been created(Figure 4). Exercise can stimulate dopamine in the brain, bringing pleasure. Guiding players to relax through auditory and physical actions, achieving a healing effect. In the game, players can fulfill their dream of hitting the song and accumulate dancing time to continually obtain music notes coins for unlocking more favorite music or building their favorite game maps.

### 6.2.3. "Yard Space" Game Three

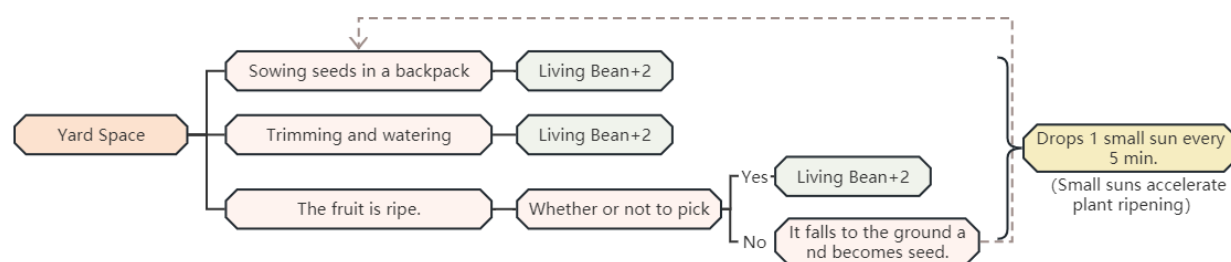


Figure 5: Yard Space Game Flow.

Combining the senses of vision and hearing, players can experience the joy of planting and harvesting in the game, achieving a sense of accomplishment while also accumulating life beans(Figure 5). In the game world, players can switch the weather according to their personal preferences, obtaining different auditory experiences.

### 6.2.4. "Cat House" Game Four

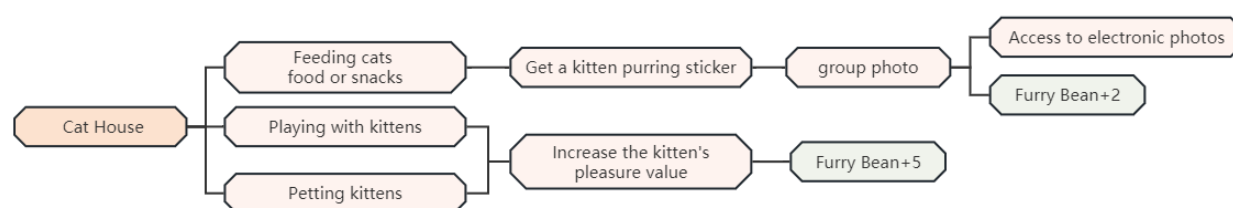


Figure 6: Cat House Game Flow.

Create a warm and healing game space for coexistence with small animals, combining sensory systems such as touch and hearing(Figure 6). The small animals in the virtual world are friendly to those allergic to cat fur. Players can interact with the kittens, feed them, play with them, earn Meow Beans, and continue to purchase toys or snacks. If players can bring a comfortable experience to the kittens, they will receive feedback in the form of purring, which is an effective way to soothe emotions.

### 6.2.5. "Creative Space" Game Five

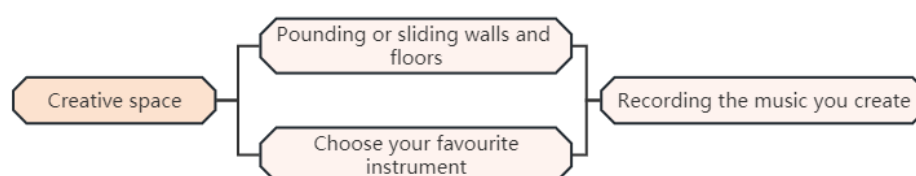


Figure 7: Creative Space Game Flow.

It is a space for players to vent(Figure 7). To avoid the process being boring, blocks representing different music rhythms are added to the game space. Players can get sound feedback by hitting or sliding these blocks, transforming their own negative emotions into pleasant music feedback for players.

In the above game, players are not affected by score pressure, and game time can only be exchanged for experience points, which can be used to draw consolation notes on the app side.

### 6.3. Sound collection feedback

Convert the collected confession audio from the first phase into voiceprints, visualize anxiety, guide players to face anxiety and actively solve problems. After solving the problems, players can choose different ways to deal with the papers containing their own troubles, symbolizing that they have overcome the worries. Anxiety visualization transforms abstract emotions into specific graphics, colors, or forms, making it easier for individuals to perceive the existence of anxiety and explore its roots more deeply.

## 7. Conclusion

In the context of rapid technological development, the combination of art therapy and virtual reality technology has shown great potential and significance, representing an innovative trend. Research has found that virtual reality technology can bring many advantages to art therapy, such as providing a more immersive experience, creating more realistic and rich emotional expressions, and offering personalized and customized treatment plans. In future research and practice, it is necessary to further explore the specific application methods of virtual reality technology in the field of art therapy and the expected outcomes, as well as continuously improve and optimize the related technologies and methods. At the same time, we also need to focus on individual needs and experiences, design more humanized and personalized art therapy programs, and make greater contributions to promoting human psychological health.

In conclusion, the combination of art therapy and virtual reality has important theoretical and practical significance. It not only brings greater possibilities to traditional art therapy, but also provides new directions and motivation for the development and application of virtual reality technology. In the near future, the integration of art therapy and virtual reality will become an important trend in the field of mental health, bringing more hope and possibilities for human happiness and well-being.

## References

- [1] *Handbook of art therapy*[M]. Guilford Press, 2011.
- [2] AI Min, LIU Yuhong, QIU Xiaohong, et al. Effects of colour on human physiology and psychology[J]. *Chinese Journal of Health Psychology*, 2015, 23(02): 317-320. DOI: 10.13342/j.cnki.cjhp.2015.02.042.
- [3] Tenji W, Tadashi K, Keishiro T, et al. The effects of illuminance, color temperature and color rendering index of light sources upon comfortable visual environments: in the case of office [J]. *Journal of light and visual environment*, 1977.
- [4] Tian Xu. *Research on the Relationship between Dance and Music* [D]. China Academy of Art, 2016.
- [5] Schroeder, C.E., Wilson, D.A., Radman, T., Scharfman, H., and Lakatos, P. (2010). Dynamics of Active Sensing and perceptual selection. *Curr. Opin. Neurobiol.* 20, 172–176.
- [6] Gu Liping. A review of research on personalized interaction design[J]. *Modern Library and Intelligence Technology*. 2010, (11): 10-1