Exploration of Art Healing Functions in the Context of Digital Technology

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ABSTRACT
Digital technology has diversified the forms of art healing, allowing patients to experience diverse treatment methods through digital technology and resulting in more individualized diagnosis and treatment schemes and more efficient therapeutic effect evaluations. According to the theoretical basis, application approaches, basic characteristics and evaluation methods of digital technology in art healing, this paper discusses the functions of digital technology and analyzes its advantages and disadvantages in art healing.

Keywords: *Digital technology, Art healing, Virtual reality, Individualization.*

1. INTRODUCTION

The rapid development of digital technology has brought more explorations and innovations to the field of art healing. The diverse types of digital technologies present diverse forms of art healing, allowing patients to access more efficient treatment methods.

Firstly, it elaborates on some of the theoretical foundations of digital technology in art healing and explore the principles and inherent correlations between digital technology and art healing. Secondly, it mainly divides the application of digital technology in art healing into two categories: emotional expression and physiological experience, most of which still use traditional treatment methods in art healing, but the forms are more innovative. Digital technology provides patients with a new experience of interaction with art, and digital technology features such as no time and space limitations can accelerate the physical and mental recovery process of patients.

Next, it explores the basic characteristics of digital technology in art healing, including its role, uniqueness, and advantages and disadvantages. The widespread application of digital technology not only makes art healing more convenient and efficient, but also enables patients to have customized and individualized treatment plans, greatly reducing their psychological pressure and improving their emotional security. However, digital technology also faces issues such as technological limitation, privacy leakage, and reduced humanized experience in art healing.

Finally, it elaborates on the evaluation methods of art healing in the context of digital technology. Digital technology provides more intuitive data information and richer disease analysis methods for art healing, which helps to monitor treatment effectiveness in real-time.

This paper aims to explore and analyze the functions of digital technology in art healing, promote the development of digital technology in the field of art healing, increase the innovation and possibility of art healing, and provide more innovative inspirations and treatment plans for related disciplines such as art and medical treatment.

2. THE THEORETICAL BASIS OF ART HEALING FUNCTIONS IN THE CONTEXT OF DIGITAL TECHNOLOGY

Aesthetic theory holds that artistic forms have aesthetic and aesthetic value, which can bring joy and satisfaction. Art healing in the context of digital technology can create more diverse art forms through the creation and presentation of digital media, thereby enhancing the aesthetic and aesthetic value of art healing.

Dr. Meng Peixin proposed in 2009 that the healing function of art is related to the characteristics of the human brain, and the lateralization of brain function is the physiological basis of art healing function.[1] The process of artistic creation calls for the ability to visualize, directly extracting the visualized information located in the right brain of the human body. The lines and colors used in painting can express hidden emotions.[2]

Art healing in the context of digital technology stimulates the nervous system through various sensory pathways such as vision, hearing, and touch, resulting in physiological responses. In the paper "Neural Correlates of Music Listening and Recall in the Human and Brain" published in JOURNAL OF NEUROSCIECE in 2019, it was mentioned that music can affect the activity of human cerebral cortex. The study used functional magnetic resonance imaging (fMRI) technology to observe the changes of brain activity of subjects when listening to and recalling music. Research has found that when listening to music, multiple regions of the brain are simultaneously active, including hearing, movement, vision and emotion regions. When recalling music, prefrontal cortex, amygdala and other regions of the brain will be significantly active, indicating that music can promote people's emotional experience and pleasure.[3]

From the perspective of the visual cortex, regardless of the type of painting, the orbitofrontal cortex has different involvement in the perception of beautiful and ugly stimuli.[4] Artistic works in art healing can cause emotional and cognitive changes in individuals, which are related to the activity of specific regions of the brain. The degree of activation in these regions is correlated with the intensity of visual stimuli considered aesthetic and the subjective evaluation of individuals. Relevant literature suggests that when individuals master how to use visual perception to create art forms, they can know how to use perception to create a complete life and gain new insights.[5]

Digital art affects the physiological function of the body by influencing the psychological state of people. For example, soothing music can reduce heart rate, lower blood pressure, and relieve muscle tension; digital games can increase the frequency of brain activity and neural connections, stimulate creativity and imagination, and improve concentration and execution; virtual reality technologies such as VR games can promote physical movement and strengthen the body's immunity.[6]

The use of digital technology for art healing can provide a more intuitive observation of brain changes and facilitate the recording of patients' health data, personal preferences, emotional status, and other information. By detecting the physiological parameters and emotional state of patients, combined with various forms of art healing such as music, vision, and movement, the most suitable treatment plan for patients can be developed, providing positive emotions and pleasant experiences, promoting the function of the human immune system, enhancing the body's self-regulation and healing ability, and increasing the likelihood of patients' self-healing.

3. APPLICATION APPROACHES OF DIGITAL TECHNOLOGY IN ART HEALING

This study divides the application approaches of digital technology in art healing into two categories: emotional expression and physiological experience, based on psychological and physiological healing approaches.

3.1 Emotional Expression

Digital technology provides a wider range of choices for the artistic creation required in art healing. The application approaches of emotional expression focus more on allowing patients to express their emotions, better explore their spiritual world, and receive psychological healing, most of which still use traditional art healing methods such as painting, dancing, and writing, but the forms are more diverse and innovative and most of the forms are no longer limited by time and space.

3.1.1 Painting

Painting can enable patients to express their feelings through colors and lines and convey their inner emotions through visual language. The process of painting is also a process that stimulates cognitive function in the brain and patients can gain more focused observation and perception of the outside world during the painting process. Under the influence of digital technology, painting is no longer limited to physical drawing boards. The emergence of drawing tablet, iPad, and drawing software has made the forms of painting more diverse. Technologies such as dynamic fluid images

and virtual reality painting are changing rapidly, allowing artists and patients to choose to paint in virtual time with higher degree of freedom, more abundant painting tools, and more diverse painting effects. At present, people can interact with painting images through touch and gestures, greatly enhancing the sense of participation in artistic experiences.

3.1.2 Dancing

Dancing can relieve stress through the rhythm of the body. Individuals pay more attention to their dynamic display and body perception during the dancing process, and their body consciousness is awakened during the dancing process, making more use of individuals themselves to explore their own sense of self-identity. Digital technology has promoted innovation in the field of dancing. Virtual reality dancing generated by sensors and motion capture functions enables individuals to experience more diverse visual effects and make more relaxed movements. The design of a digital stage can increase the audience's immersion, which is also more convenient for patients to receive treatment for art healing. Dancing also has a significant positive effect in the rehabilitation treatment of patients. Specific dancing movements can specifically exercise a certain muscle group. For example, depression patients participating in soothing dancing movements can release suppressed emotions through physical movements and promote blood circulation, this type of aerobic exercise of which can also effectively improve individual cardio-pulmonary function and physical endurance, enabling the individual to obtain a healthier physique from a physiological perspective, and enhancing patients' confidence and sense of self-identity.

3.1.3 Writing

Writing is a direct way to organize one's own thoughts. Writing can enable individuals to reflect more, think from the perspectives of bystanders and objects, gain a deeper understanding of oneself, and better analyze and understand oneself. Writing is a self-healing process, a behavior full of privacy and creativity. Digital technology has made writing online, allowing individuals to choose to edit and store documents online. The storage of text is more stable, greatly improving the efficiency of text recording and generation and helping patients better perceive their own needs and improve self-awareness.

3.2 Physiological Experience

The art healing of physiological experience focuses more on the individual's physiological condition, placing extra emphasis on physical contact. The art healing of physiological experience under digital technology often uses virtual reality technology. Among them, the category of "music" is relatively unique. Music can be seen as both a physiological experience and an emotional expression. However, due to the influence of digital technology, the physiological feedback brought by music to individuals is more significant, this study now categorizes music as an art healing approach of "physiological experience".

3.2.1 Music

Music can directly affect an individual's emotions, and the rhythm and tone of music can effectively regulate an individual's breathing and heart rate. Soothing music helps individuals maintain stable blood pressure, breathe slowly, reduce muscle tension, promote dopamine secretion, make people emotionally happy, and reduce their stress.

Music itself is a powerful tool for expressing emotions and digital technology makes the steps of creating music more concise. The emergence of virtual instruments and digital music has increased the freedom of creators to create, allowing them to no longer be trapped in the situation where traditional instruments are difficult to play due to their limited timbre and variety. Most of the creator's work can be processed online. The speed of music dissemination has increased and the types of dissemination are diverse. The interaction between creators and listeners has been enhanced through virtual reality technology. The process of listening to music is a process of art healing and this musical experience can soothe the patients' emotions.

3.2.2 Handicraft

For example, handicraft activities such as embroidery and ceramic require more hand movements, and individuals' attention will be more focused. For another example, in ceramic creation, mud is mainly used as the raw material, with a soft texture and rich forms, which creates a psychological tendency to touch and shape, meeting people's psychological needs for mastery and control.[7] The plasticity and gentleness of mud enable individuals to feel "contained" and that

things are controllable, thereby enhancing their own control.

The changes in the form of handicrafts are often based on the individual's own psychological direction. The process of kneading and pressing handmade raw materials can also help individuals fully release pressure and alleviate emotions. Nowadays, handicraftsmen also integrate digital technology into their work, such as digital embroidery technology, digital carving, numerical control laser cutting machine etc. Handicraftsmen can use digital technology to better arrange their artwork visuals and production progress, and can also simulate the actual effects of the final output in advance, reducing error rate and improving production efficiency.

3.2.3 Animal-assisted Therapy

Animal-assisted therapy is often used for the treatment of mental and psychological diseases. Behaviors such as touching and playing with animals can reduce an individual's cortisol index, and the emotions provided by animals have no tendency and are more pure, which can reduce individual vigilance and stress levels. Digital technology can enable some people who are allergic to animal hair to undergo "cloud therapy" through virtual reality technology. The development of social platforms under digital technology also allows individuals to access a wider range of animal treatment information, and advanced detection equipment can better collect the patient's body data under animal-assisted therapy, thereby obtaining better treatment plans.

3.2.4 Naturopathy

When an individual is in a suitable natural environment, slow and deep breathing can trigger parasympathetic responses in the body, maintaining stable physiological balance in a quiet state. Adequate oxygen content provides more oxygen molecules, resulting in a higher concentration of negative ions in the air. From existing research, negative ions can promote the release of serotonin in the brain, reduce individual stress, stimulate human metabolism, and improve sleep quality. The broad and bright scenery of nature can also make people feel relaxed, and sports such as hiking and mountain climbing can also strengthen their physical fitness. Digital technology can directly visualize the natural environment, allowing individuals to truly experience the feeling of being in nature by wearing relevant equipment. Vocal devices can simulate the sounds of nature's waterfalls, trees, and more. The odor transmission device can make odor capsules and odor spray from earth and other odors in nature, which can realize the art healing of simultaneous vision, hearing and smell senses by using naturopathy at any place.

4. BASIC CHARACTERISTICS OF ART HEALING FUNCTIONS IN THE CONTEXT OF DIGITAL TECHNOLOGY

This study divides the basic characteristics of art healing functions under digital technology into three parts for elaboration: the role of art healing functions in the context of digital technology, the uniqueness and advantages of art healing functions in the context of digital technology, and the limitations of art healing functions in the context of digital technology.

4.1 The Role of Art Healing Functions in the Context of Digital Technology

Its role mainly focuses on the individual emotions of patients, enabling them to better exert their subjective initiative and increase their own control.

4.1.1 Providing Emotional Support

Virtual reality and augmented reality technologies can immerse patients in a virtual art world, providing them with a safe and unbiased space.[8] The virtual world weakens the limitations of social roles, language communication, and social interaction in real life, giving patients more freedom and control. In the virtual world, patients' own image and environment are determined by themselves, allowing them to express their true emotions more freely without worrying about being ridiculed or denied, and to focus more on themselves.

Establishing interactions and connections within patients through the virtual world can alleviate their sense of loneliness, and the finer their perception and classification of emotions, the better they can adapt to the corresponding environment.[9] The sense of identification and empathy between patients can enhance each other's sense of security and psychological well-being, and enable them to better understand and handle their own emotions.

4.1.2 Enhancing Emotional Expression Skills

Digital technology provides diverse forms of art healing, such as creating passionate music works with images, creating visually impactful three-dimensional paintings, and wearing VR equipment to participate in action games. These detailed and specific behaviors that express their emotions can allow patients to fully vent their stress and express their emotions more directly.

4.1.3 Privacy Protection and Anonymity Mechanism

The art healing environment under digital technology is often more private, and doctors and patients can choose to communicate through electronic devices or virtualize their own images, using music as a medium. Doctors and patients no longer communicate face-to-face for diagnosis and treatment, nor do they need to know each other's identities. Patients can seek medical treatment anonymously online through digital technology, reducing the sense of constraint brought by their own identities.

A private and anonymous healing environment is more conducive to patients with anxiety, depression, and other related conditions expressing emotions and telling the symptoms, effectively reducing patients' psychological pressure, and enabling medical staff to have a deeper understanding of patients' conditions.

4.1.4 Providing Individualized Treatment Plans

Compared with traditional medical forms, art healing under digital technology has a wider range of options, and the treatment method, time, location, and even the therapist can be determined by patients themselves, resulting in stronger subjective initiative of patients. The treatment data of patients can also be managed through cloud records to generate treatment information that belongs solely to patients themselves.

4.2 The Uniqueness and Advantages of Art Healing Functions in the Context of Digital Technology

In the context of digital technology, the art healing functions have visualization, no time and space limitations, and privacy, which can provide real-time feedback on patients' mental and physiological states, reduce social pressure, and establish better treatment models for them.

4.2.1 Visualization and Interactivity

Digital technology can provide real-time feedback on patients' physiological and mental states through devices such as eye tracking and brain wave sensors. When patients receive treatment through digital technology, they can interact with doctors and digital devices in real-time through touch screens, verbal instructions, and other means, making the data more real-time and intuitive. This reduces the lag in treatment caused by information gaps and inadequate communication between doctors and patients in traditional medical treatments.

Visualization of art healing can help people return to their true selves, better summarize means of expression such as colors, images, and numbers, and establish a better therapeutic framework.[8]

4.2.2 No Time and Space Limitations

Unlike traditional medical treatments that require clinical surgery or medication, art healing focuses more on mental and psychological aspects of treatment. The artistic creation under digital technology has broken through the limitations of time and space and most of it is done in the cloud, avoiding the constraints of time and space. Patients can choose treatment time more freely, improving the timeliness of treatment, and reducing the incidence of delayed treatment time.

4.2.3 Privacy

Art healing through digital technology can keep patient information in the cloud, the information has no physical carrier, and the loss rate will be greatly reduced. The treatment process doesn't require the participation of a second person, and the degree and number of participants are determined by the patient. During the treatment process, patients can choose anonymous or virtual identities, reducing the sense of pressure that social interaction may bring.

4.3 Limitations of Art Healing Functions in the Context of Digital Technology

Digital technology has technical limitations, privacy security leakage, and a reduced humanized experience in art healing, leading to discomfort for

some groups when using related devices. Additionally, digital technology lacks humanistic care, which can reduce the humanized experience of patients.

4.3.1 Technical Limitations

Digital technology mostly relies on high-tech equipment and the maintenance and use of equipment require professional personnel to operate. The operation also requires a certain technical foundation, and promoting such technology to the public requires time and money support. When using digital technology for treatment, individual differences should be taken into account, as some groups may experience symptoms such as 3D dizziness when using virtual reality devices.[10]

4.3.2 Privacy Security Leakage

Digital technology not only provides social privacy, but also carries the risk of information leakage. Personal data may be stolen by malicious software and viruses. Users should pay attention to protecting personal information when using digital technology.

4.3.3 Reduced Humanized Experience

Digital technology, as a tool, can't provide humanistic care to patients. For art healing, emotional experience is crucial, and digital technology can't understand human emotions, greatly reducing the patient's humanized experience.

5. EVALUATION METHODS OF ART HEALING FUNCTIONS IN THE CONTEXT OF DIGITAL TECHNOLOGY

This study divides the evaluation methods of art healing under digital technology into objective and subjective methods. As art healing is more subject to subjective influence, the evaluation method of questionnaire survey is more special in art healing, which is a type of collecting patients' subjective feelings in an objective form.

5.1 Objective Evaluation

Objective evaluation is mainly divided into two forms: physiological parameter testing and questionnaire survey. The former refers to the objective data of physical functions such as heart rate, pulse, and blood pressure, which are evaluated based on individual physiological parameters to assess their functional impact. It may be obtained through methods such as electrocardiogram and electroencephalogram examination, and the data is intuitive and clear.

The questionnaire survey, on the other hand, categorizes patients' personal information, their condition, and various forms and types of art healing. While ensuring the authenticity and representativeness of the sample, it objectively collects patients' subjective feelings, which is conducive to more systematic quantification of patient information and analysis of treatment effectiveness.

5.2 Subjective Evaluation

The subjective evaluation of art healing functions under digital technology can be divided into three forms: patient's subjective evaluation, doctor's subjective evaluation, and professional evaluation of artistic works. Among them, the patient's own subjective evaluation is the determining factor for the effectiveness of art healing. Art healing is more focused on diseases caused by physical and mental imbalance and it is more acceptable to use patients' subjective feelings as an index to evaluate the healing function.

The subjective evaluation of doctors is often based on the patient's external performance during the treatment, as well as the feedback obtained from verbal communication with the patient, such as whether the patient is emotionally tense during the treatment, whether the patient's attention can be focused, how the patient's eyes change, and whether the patient's symptoms have alleviated after treatment.

Most forms of art healing don't use language. Non-verbal therapy relies more on images, which can convey information more intuitively. The colors and shapes contained in images make emotional expression more vivid and distinct.[11] But different artistic works have different meanings and professionals can analyze the creator's intentions and emotional tendencies through the analysis of elements such as structure, lines, colors, and composition in the artistic works. During the creative process, professionals can also provide guidance to guide creators to better create, ensure that the created work meets the creator's expectations, and try to avoid the phenomenon of the work being misinterpreted due to the insufficient skill level of the creator.

6. CONCLUSION

To sum up, digital technology provides more individualized and diverse treatment options for art healing, which has broad application prospects in the functions of art healing, providing more innovation and possibilities for art healing.

The use of digital technology for art healing allows patients to express their true emotions more freely and enhance their emotional expression skills. Choosing a treatment method involving no second person intervention and simply using electronic devices to communicate with doctors can effectively reduce the psychological pressure of patients. Digital technology can rapidly improve the efficiency of data visualization, make human-computer interaction closer, and can effectively improve the efficiency of treatment without being limited by time and space.

However, there are also some drawbacks to using digital technology. Privacy security leakage, discomfort caused by patients using virtual reality devices, and the inability to provide humanistic care as electronic devices which may lead to a decrease in patients' humanized experience, are all issues that can't be avoided by using digital technology for art healing at this stage.

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