Virtual Healing: Application of Augmented Reality Games in Pet Loss Syndrome

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Abstract: As pets gain increasing significance in family life, pet loss syndrome has emerged as a mental health concern that demands urgent attention. When their pets pass away, many pet owners physically and psychologically isolate themselves, which makes it challenging to process unpleasant feelings in a healthy way. The purpose of this study is to investigate and explore how augmented reality (AR) game design can help users cope with the psychological trauma and emotional challenges caused by pet deaths. This study utilized user research, prototype design, user testing, and comparative research to develop and evaluate the usability and healing effects of the AR game. The research results indicate that this AR game has unique advantages in interactivity, immersion, and personalized experience. It can effectively provide users with emotional support, death education, and life enlightenment, helping them deal with negative emotions and gradually accept the reality of losing their pets. This study not only provides a new perspective for the treatment of pet loss syndrome, but also opens up new directions for the application of virtual therapy in the field of mental health, emphasizing the potential of electronic therapy games in emotional healing.

Keywords: Pet Loss Syndrome, Augmented Reality (AR), Exposure Therapy, Virtual Healing, Electronic Therapy Games.

1.   Introduction

The increasingly strong emotional bond between humans and pets has made people more aware of the psychological impact of pet deaths[1]. When a pet passes away, many people experience deep grief, loneliness, and loss, which is similar to the feeling of losing a loved one[2]. This strong emotional response is not only a nostalgia for pets but also a profound experience of losing companionship in life[3]. Many people may feel helpless and confused when experiencing this pain, which can even affect their daily life and mental health.

In psychology, this phenomenon is referred to as "Pet Loss Syndrome". It encompasses a range of emotional and psychological reactions, such as anxiety, depression, anger, and anxiety[4].Many pet owners experience pet loss syndrome, a common psychological condition marked by emotional distress. Research has shown that nearly 60% of pet owners suffer from pet loss syndrome when they lose their pets, leading to physical and mental isolation and difficulty in dealing with negative emotions[5]. The acute grief phase of pet owners after losing their pets is usually most evident within two months of loss, while the overall grief process may last from six months to a year[6].

This study centers on the design and implementation of an augmented reality (AR) therapy game intended to assist users in dealing with negative emotions and attaining life enlightenment following the loss of their pets. By leveraging the unique advantages of AR technology in interactivity, immersion, and personalization, this game aims to establish a safe space for users to handle emotions, engage in death education, and gain insights into life and loss. The study employs a mixed approach, encompassing user testing and comparative research, to assess the effectiveness of the game in providing emotional support and facilitating healing.

The significance of this study lies in its potential to transform the handling of pet loss issues in the mental health field. By integrating game elements with therapeutic practices, AR therapy games provide a novel approach that not only attracts users but also promotes emotional healing. This study contributes to the continuous enrichment of virtual therapy literature and emphasizes the importance of utilizing technology to enhance mental health interventions, ultimately paving the way for more accessible and effective support for those mourning the loss of a beloved pet.

2. Related work

In this section, we summarized exposure therapy, virtual therapy, and video game therapy. There is a close connection between exposure therapy, virtual therapy, and video game therapy, which provides a theoretical basis for us to understand and design emotional healing games. These research findings provide an important reference framework for this paper, guiding us to effectively integrate the principles of psychotherapy in game design.

2.1. Exposure Therapy

Exposure therapy is a psychological treatment commonly used to treat phobias and post-traumatic stress disorder (PTSD). By gradually being exposed to situations that trigger fear or anxiety, patients can gradually adapt and reduce negative emotions[7]. Exposure therapy can help people cope with the painful memories associated with pet loss, thereby promoting emotional healing.

2.2. Virtual Healing

With the use of virtual reality technology, virtual therapy offers patients immersive experiences to help them manage a range of psychological issues. Virtual reality technology can effectively help patients deal with trauma and anxiety[8]. By simulating interactions with deceased pets, virtual therapy can allow people to relive beautiful memories in a safe environment, thereby reducing the pain of loss.

2.3. Electronic Therapy Games

In recent years, electronic game therapy has garnered increasing attention as an emerging form of psychological treatment. Appropriately designed electronic games can effectively facilitate emotional expression and mental health[9]. Through interactive storytelling and emotional resonance, electronic game therapy can assist players in confronting the loss of their pets and offer a unique healing experience. This method combines entertainment and psychological support, providing players with a safe space to deal with lost emotions[10].

3. Game Design

3.1. Game design approaches

Avoiding problems cannot get rid of difficulties. Therefore, the game adopts exposure therapy to allow users to face pet related situations that they have been avoiding. However, the biggest challenge and difficulty of exposure therapy lies in the fact that users often lack the courage to face the situations they have experienced with their pets alone. Therefore, we adopt the treatment method of "on-site exposure+virtual reality exposure", allowing users to slowly face the situations they have experienced with their pets but now have negative emotions. We use appropriate "exposure scenarios" and gentle "healing elements" to heal users.

User Research. Based on the challenges and difficulties of exposure therapy, I conducted topic searches and user research on Xiaohongshu and found that the most frequently mentioned scenario related to pets by users is "walking".

Xiaohongshu user "Baobao" said, "For little dog, every outdoor adventure is like a treasure hunt. Little dog's closeness to nature and treasure hunting philosophy provide us with a new perspective on life."

Xiaohongshu user "lighters" said, "Little dog taught me not only love, but also how to feel the beauty of this world. "

Xiaohongshu user "Gotham Alice" said, "Tonight's route was chosen by Little Dog. He has his own ideas because he knows that no matter how dark the place is, as long as we go together, there will be no fear. "

During a walk, it is an extremely delightful experience for pets to guide their owners to explore beautiful things that are easily overlooked. Therefore, I will utilize the happy scene of walking that pets and their owners experience together as an exposure scenario in the game.

3.2. Game Concept

"Take That Road Again" is a first-person narrative-driven AR exploration healing game centered around the deep emotional bond between pets and their owners, delving into themes of death, loss, and life. The game uses augmented reality technology, integrating real world and virtual elements, to guide players to retrace the path of walking with their deceased pet from the perspective of a pet. By scanning specific items to collect corresponding sources of happiness, players can rediscover different experiences of happiness in a familiar environment and ultimately unlock the secrets of two mysterious gifts hidden by pets, achieving emotional healing and self-reconstruction.

Game World. One day, after experiencing the death of a pet and being immersed in negative emotions, you suddenly received a mysterious package from a pet funeral company called "That Road" entrusted by the deceased pet. The package contained a pet urn. Your pet tells you that it has embarked on a magical journey, and it is very happy. It hopes that you can also follow its footsteps and retrace the path you once walked on. It has left a secret there, and hopes that you can slowly explore and eventually find the two mysterious gifts it left for you.

Game Play. Based on the user's target emotional state, we divide the game into three stages (Figure 1) and clarify our gameplay using the user's first person as the game character.

Figure 1: Gameplay in three stages

Phase1: Pain stage

One day, the user suddenly received a mysterious package from a pet funeral company called That Road entrusted by their pet, which contained the ashes of a deceased pet in a urn. Driven by curiosity, he scanned a QR code on the urn and downloaded and installed an AR game on his phone.

Phase2: Curiosity stage

The user followed the game instructions and walked out of the house, embarking on the same path that their pet once took for a walk on. Players will follow the virtual pet footprints and explore the augmented reality environment where they once walked with their pets. The walking route they experienced together with their deceased pet becomes the main exploration scene. Every landscape carries unique memories and happiness, such as park benches, grass under the shade of trees, branches of varying lengths, furry sprouts, scenery in puddles, or friends who have played together. These items not only correspond to the source of joy that users need to collect, but also become key nodes for emotional healing.

Phase3: Healing stage

The user finally collected all the sources of happiness and continued to follow the virtual pet footprints to find the secret hidden in the pet urn. This secret is about the two gifts left by pets for their owners at the end of their journey on Earth. The visible gift: the urn, which is a physical carrier of emotional connection. The gift that cannot be seen: attitude towards death and understanding of life, that is, the philosophical significance of life and happiness in the eyes of pets.

4. User Experience Assessment

4.1. User Testing

In this study, we carried out user testing to evaluate the game design of 'Take That Road Again' and its influence on player emotions. The test subjects comprised 10 players from different age groups who took part in in-depth interviews after experiencing the game. One participant pointed out the problem of slow image recognition in the collection task. Apart from that, overall experience was good. However, they hope to have instructions on pet co creation at the end of the Happy Source collection, and more AI customized images of their own pets at the gift opening section. Other participants also expressed their anticipation for more occasional surprise interactions with deceased pets after the gift is opened.

We collected qualitative data on game mechanics, storytelling, and emotional resonance by observing players' emotional reactions, interactive behaviors, and feedback in the game. The results showed that most players experienced an emotional transition from pain to healing during the game,

especially showing strong resonance in tasks during the curiosity phase. These findings validate the effectiveness of game design and provide valuable references for subsequent optimization.

4.2. Comparative Study

This study compares the newly designed AR game with existing pet loss healing tools, including traditional psychological counseling, online support groups, and other electronic therapy games. By analyzing the pros and cons of these methods, we highlight the unique advantages of AR games in terms of interactivity, immersion, and personalization.

Traditional psychological counseling can provide professional psychological support and personalized treatment. However, it is costly, time limited, and sometimes difficult to obtain timely assistance. Online support groups can provide emotional support and enable experience sharing.. But they lack interactivity, and users may feel isolated. Compared to some electronic therapy games, the AR game in this study encourages users to explore and interact in the real world, motivating them to step out of their homes and participate in practical activities, which is crucial for the recovery of mental health. Many electronic therapy games, while providing interactive experiences, often lack real-world immersion. AR games combine virtual elements with the real environment, allowing users to explore in familiar environments and enhance emotional resonance. Many electronic therapy games provide a relatively fixed experience that is difficult to adapt to individual needs. The AR game in this study creates personalized AI pet images and a "source of happiness" library through user uploaded photos and videos, allowing users to customize according to their emotional needs, enhancing participation and healing effects.

5. Conclusion

This study presents an innovative augmented reality (AR) therapy game design, highlighting its distinctive advantages in interactivity, immersion, and personalized experience. By combining captivating game mechanics with therapeutic elements, it can effectively offer users with emotional support, death education, and life enlightenment, aiding them dealing with negative emotions and gradually accepting the reality of pet loss. This study provides a new perspective for treating pet loss syndrome and opens up new avenues for the application of virtual therapy in the field of mental health. The research findings emphasize the potential of electronic therapy games in emotional healing and demonstrate the crucial role of technology in addressing psychological challenges. Future work will focus on optimizing game mechanics to enhance user engagement and satisfaction. Additionally, long-term research will be carried out to evaluate the sustained impact of games on user emotional healing. At the same time, we will explore the introduction of more advanced interaction methods, such as emotion recognition technology, to further enhance user experience. By leveraging these innovations, we aim to create a more effective therapeutic tool that not only supports individuals' recovery during negative emotional journeys, but also cultivates their resilience and emotional health in the face of loss. Ultimately, this study provides increasing evidence for the integration of digital tools in mental health interventions, paving the way for more accessible and effective treatment solutions.

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