

Research on the application intention of virtual photo technology in commemorative culture based on the theory of planned behavior

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Abstract. In recent years, artificial intelligence technology has developed rapidly, and its prospects have also attracted much attention. In the field of digital commemoration, artificial intelligence technology also plays a huge role. In this field, artificial intelligence technology is deeply integrated with emotional commemoration methods to provide participating individuals with videos of deceased loved ones, providing a highly immersive emotional connection and experience. This research plan is based on the theory of planned behavior and aims to analyze individual attitudes, subjective norms, and perceived behavioral control in individuals' use of virtual photo technology. And further, study how these factors influence individuals' behavioral intentions to use technology and their evaluation of interactivity during use. This study adopted a quantitative method and designed a questionnaire to measure relevant variables of individuals' behavior using virtual photo technology based on the guidance of the TPB Behavior Manual. This study will contribute to understanding how emotional value, social influence, and personal confidence influence individuals' participation intentions in virtual commemoration technologies. The research results can provide theoretical guidance for the future digital commemorative entity industry.

Keywords: Virtual photo technology; theory of planned behavior; memorial culture; interactivity.

1. Introduction

Virtual photo technology stimulates multiple senses such as vision and hearing. Users can reproduce the image and voice of deceased relatives through social tools, further obtaining a high-level immersive experience. This experience may trigger a deeper emotional resonance in the user and may lead to a more lasting emotional and cognitive connection with the deceased loved one. Previous research has shown that virtual photos, as one of the ways of immersive digital commemoration, can effectively help individuals relieve the pain caused by loss and provide a new way of emotional connection [1, 2]. The purpose of this study is to conduct an in-depth analysis of individuals' attitudes, subjective norms, and perceived behavioral control toward the application of virtual photo technology based on the framework of the Theory of Planned Behavior (TPB), and to explore how these factors jointly affect whether individuals intend to use it in the future. Willingness and motivation for this technology. Specifically, it mainly explores individuals' overall evaluation and views on AI virtual photo technology for resurrecting deceased relatives. Previous research has shown that the emotional value and practical utility of technology significantly affect user acceptance [1]. It is also necessary to study whether individuals feel social pressure the extent of it when using virtual photo technology, and how society and others respond to it. How the attitude towards this behavior affects the individual's behavioral intentions, and also measures the individual's confidence in whether they can successfully use or master virtual photo technology to resurrect their deceased relatives. Previous data show that individual self-efficacy has a significant impact on technology use intentions [3]. Combining the above factors, this paper will use quantitative research methods and design a questionnaire based on the theory of planned behavior based on the guidance of the Health Service Researchers' Handbook of the Theory of Planned Behavior [4] to measure individuals' behavioral attitudes, subjective norms, and behaviors regarding the use of virtual photo technology. Perceived behavioral control and behavioral intention provide empirical support for the influencing factors of an individual's willingness to use digital memorial culture.

2. Literature review

2.1. Theory of planned behavior

The Theory of Planned Behavior (TPB) is an important behavior prediction model proposed by Ajzen. This theory believes that an individual's behavioral intention is determined by three main factors: behavioral attitude, subjective norms, and perceived behavioral control. The model of this theory is a widely used expectancy-value model of the attitude-behavior relationship, which has achieved a certain degree of success in predicting various behaviors [5,6].

Behavioral attitudes are mainly reflected in individuals' positive or negative views on using virtual photo technology to resurrect deceased humans. This study will focus on defining "others" in subjective norms as the individual's family, that is, in the context of virtual photo technology, subjective norms can reflect the attitudes and opinions of people around the individual (such as family, and friends).

Perceived behavioral control is the degree of confidence an individual has in their ability to successfully use a technology. For virtual photo technology, this confidence may be affected by factors such as technical complexity, user skills, and financial cost.

In the dual-process model of the relationship between attitude and behavior, self-identity is considered to be a factor that can influence intention independently of attitude, and as the behavior is repeated, the predictive effect of self-identity on behavior may increase [7]. This may help to understand how users' attitudes toward virtual photo technology influence their behavior through intention or in a more spontaneous manner in different contexts.

2.2. Virtual photo technology and interactivity

Existing research on virtual photo technology mainly focuses on two aspects: technical implementation and user experience. Many studies have examined the use of virtual photo technology in psychotherapy, particularly to help individuals deal with bereavement. Sustained emotional connection is an effective way for individuals to cope with grief, and virtual photo technology can help maintain this connection [2]. Individuals maintaining interaction with deceased relatives through digital means can reduce grief and increase emotional comfort [8]. Emotional connection requires a carrier, and design can trigger users' emotional responses, thereby improving user experience.

Interactivity refers to the extent to which users can control ad content or engage in interaction. Previous research has found that interactivity and advertising value have a significant positive impact on user attitudes. Ads with high interactivity can increase users' attention and participation, while content with high advertising value increases users' acceptance and recognition. When studying individual attitudes towards virtual photo technology resurrecting deceased humans, the concept of interactivity can be compared to the quality of interactivity in virtual photo technology. Interactive behaviors using virtual photo technology may also affect users' behavioral intentions by enhancing their emotional involvement [9]. In addition, the "value" of virtual photo technology is similar to advertising value, which refers to the emotional value and commemorative significance of the technology, which will also affect users' attitudes and acceptance intentions.

Interactivity is equated to the technical capabilities of the medium, and interactivity refers to the user's psychological state when interacting with the medium, which is affected by both media attributes and personal or situational characteristics [10, 11]. This concept can provide a moderator variable for this study to further analyze how interactivity affects users' intention to use virtual photo technology by affecting variables in the theory of planned behavior.

Although many studies have emphasized the importance of emotional responses and cognitive attitude changes [12], most studies have ignored the formation process of behavioral intentions. For virtual photo technology, it is crucial to verify and explore individual behavioral intentions and actual usage behavior based on the theoretical framework of planned behavior. Moreover, existing research mostly uses qualitative methods and lacks quantitative data support, making it difficult to widely generalize conclusions. At the same time, previous research on interactivity (perception of

interactivity) [9] mainly focused on the interaction between brands and users and has not been fully studied in the field of private life (such as virtual interactions related to deceased relatives). Therefore, in the context of virtual photo technology resurrecting deceased relatives, there is still a lack of empirical support on how to specifically affect users' emotional responses and behavioral intentions.

3. Methodology

This study adopted a quantitative research method and collected data through a questionnaire survey. The questionnaire was designed based on the framework of the theory of planned behavior, covering five parts: behavioral attitude, subjective norms, perceived behavioral control, behavioral intention, and interactivity. Each part is set with multiple questions, measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Through the analysis of large amounts of data, we can better understand and predict individuals' behavioral intentions toward resurrecting deceased humans with virtual photo technology.

3.1. Questionnaire

The researchers developed a questionnaire based on the Theory of Planned Behavior (TPB), which was divided into five parts to assess participants' attitudes toward virtual photo technology, subjective norms, perceived behavioral control, and the impact of interactivity on behavioral motivation.

The first part collects the personal background information of the respondents, including gender, age, educational background, etc. to provide background support for subsequent result analysis. The second part aimed to measure participants' overall attitudes toward virtual photo technology, including cognitive and emotional responses to virtual technology resurrecting deceased loved ones. Through a series of scale questions in the questionnaire, participants' subjective attitudes towards virtual photo technology in terms of emotional comfort, commemorative significance, and technical acceptability were assessed. The third part aims to explore the social pressure or support that participants feel when using virtual photo technology, mainly by measuring the attitudes of participants' relatives, friends, and the public towards individuals' use of virtual photo technology and its impact on their behavioral intentions. The fourth part measures participants' ability and sense of control over their use of virtual photo technology. The question design includes the evaluation of dimensions such as technical complexity, functional satisfaction, and the user's ability to adjust settings independently. The last part is about the measurement of the concept of interactivity, which mainly assesses participants' feelings about technology interaction and its impact on technology acceptance and motivation to use virtual photo technology.

3.2. Participants

The sample of this survey was 184 participants, covering different genders and age groups, and all participants participated through an online questionnaire. Participants were recruited through purposive sampling and approval to participate was obtained. The participants are mainly between the ages of 18 and 60. They all have a certain understanding of virtual photo technology and have tried to use this technology independently, as shown in Figure 1. Researchers were selected based on their willingness to participate in the research.

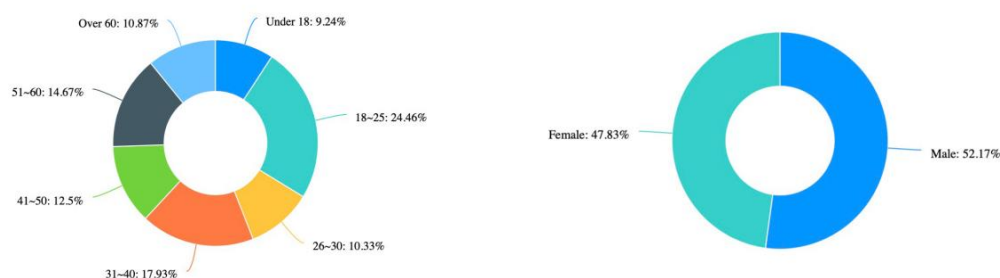


Fig 1. Basic information of participants.

4. Results

4.1. Attitude

The survey showed that participants generally had a positive attitude towards the use of virtual photo technology to resurrect deceased relatives as a digital memorial method. Respondents showed a moderate tendency to accept this technology, with an average score of 3.47 (out of 5). This suggests that a significant proportion of participants are willing to incorporate virtual technology into commemorative events. As shown in Figure 2: 63% of respondents “agreed” or “strongly agreed” that the technology had the potential to emotionally comfort them while grieving, with an average score of 3.58. So, it can be inferred that most people have a positive attitude toward this technology, as shown in Figure 2.

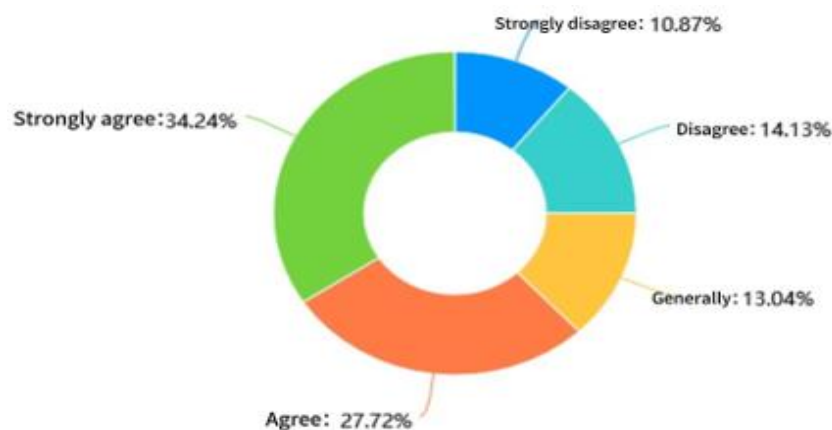


Fig 2. Results collected for the question "I hope to use virtual photo technology to revive deceased loved ones in my own time of need".

4.2. Subjective norms and social influence

According to the survey, the overall impact of the attitudes of family and friends on individuals' motivations for using virtual photo technology is relatively average. As shown in Figure 3: half of the people chose the two options "probably not" and "not at all possible", accounting for a total of 57.07%. Only 39.35% of people selected the two options of "definitely" and "very likely" to support the use of virtual photo technology to resurrect deceased relatives. Therefore, it can be seen that most people are skeptical or opposed to using virtual photo technology to resurrect deceased relatives. Likewise, participants were unsure about the social acceptance of sharing virtual entertainment on social media, with 34.24% saying their friends would not approve of such behavior. Therefore, it can be seen that external factors will affect individual's willingness to use virtual photo technology at a subjective level, as shown in Figure 3.

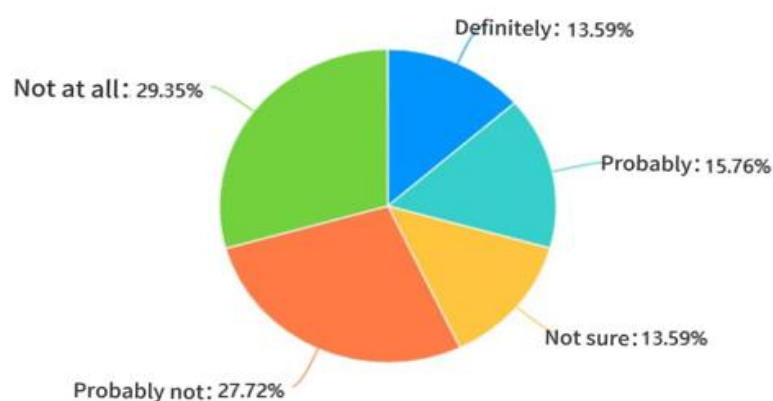


Fig 3. Results collected for the question "I think my family would support my use of virtual photo technology to resurrect deceased loved ones".

4.3. Perceived behavioral control

The survey also assessed respondents' perceived ability to use virtual photo technology. The results showed that participants had a moderate level of confidence, as shown in Figure 4: Participants' average score for "I think I can choose and control the use of virtual photo technology" was 3.48. It can be concluded that although actors are interested in the technology, there may still be uncertainty about its accessibility or operational feasibility, as shown in Figure 4.

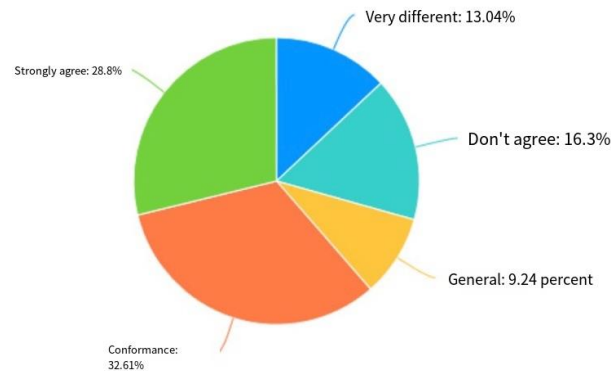


Figure 4. Results collected for the question "I think I can choose and control the use of virtual photo technology".

4.4. Interactivity

When examining the degree of interactivity experienced by participants when experiencing virtual photo technology, as shown in Figure 5: 31% of participants said they enjoyed the creative process of this technology. The data also shows that participants can express their aesthetic style and pursuits through this technology. Therefore, the degree of interactivity an individual experiences during the use of technology will moderate his or her subsequent willingness to use technology, as shown in Figure 5.

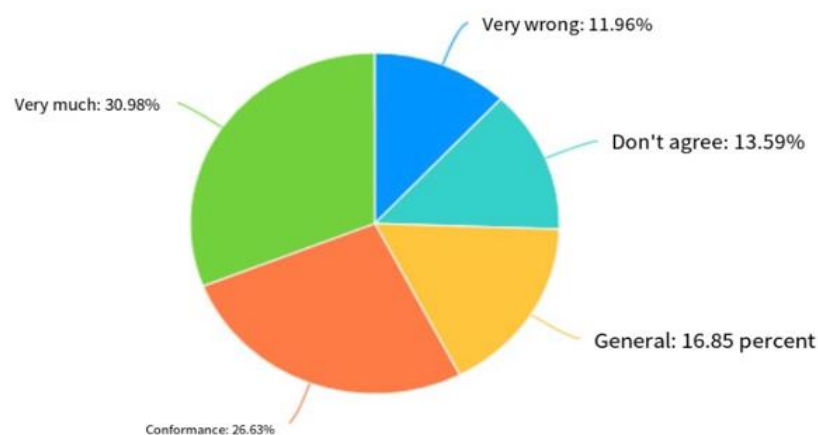


Figure 5. Results collected for the question "I enjoy the creative process of using virtual photo technology".

5. Discussion

5.1. Interpretation of results

The results demonstrate the potential of virtual photo technology as a tool for digital memorialization, particularly for individuals seeking new ways to emotionally connect with deceased loved ones. A large proportion of participants expressed positive attitudes toward the technology, consistent with previous research on how digital tools can enhance emotional well-being in grief.

However, participants still experienced hesitancy and constraints on using this technology, such as regarding the reactions of family and friends to their use of such technology.

5.2. The role of subjective norms

The study found that subjective norms play a key role in influencing participants' behavioral intentions. This conclusion is consistent with existing literature that emphasizes the importance of social approval in the use of new technologies. Specifically, for virtual photo technology to be widely accepted by society, it is necessary to focus on standardizing the use of this technology in the cultural atmosphere and family environment.

5.3. Perceived behavioral control and accessibility

Respondents perceived behavioral control was moderate, meaning that in situations where many people are interested in the technology, barriers such as perceived difficulty in using it or unfamiliarity with the technology may prevent widespread use of the technology. Therefore, online platforms that provide certain educational mechanisms or mutual assistance among users within society can alleviate concerns about technology use and increase individuals' confidence in using the technology.

5.4. Practical significance

Encouraging the use of virtual photo technology for commemoration requires addressing technical and social barriers. Developers of virtual photo technology should focus on creating intuitive user interfaces that include simple introductions to features to enhance individuals' perceived behavioral control in using the technology.

This study was limited by the sample size and the relatively narrow demographic range of participants. Future research should include a more diverse population and better understand how different cultures and age groups view the use of virtual photo technology in commemoration events. Additionally, qualitative research exploring deeper emotional responses to the technology could provide valuable insights into its long-term impact. In summary, while virtual photo technology shows promise for commemorative purposes, social acceptance and ease of access remain significant barriers. Addressing these issues is critical for its widespread adoption.

6. Conclusion

This study explores how personal attitudes, subjective norms, perceived behavioral control, and interactivity individually influence individuals' intentions to use virtual photo technology in digital memorialization. The results show that social recognition, especially at the family level, and personal confidence in mastering the technology remain the main obstacles facing this technology, but individuals generally have a positive attitude towards the technology. The findings highlight the importance of subjective norms, particularly family and personal social circles, in shaping individuals' behavioral intentions to use. Additionally, perceived behavioral control, such as concerns about the complexity and accessibility of a technology, moderately affects the likelihood of an individual's intention to use it. Limitations of this study include the relatively narrow population sample size of participants and reliance on self-reported data. Future research should expand to include more diverse populations and explore more qualitative aspects of individuals' emotional responses to digital commemorations. Overall, virtual photo technology has some promise as a new digital commemoration tool, but overcoming technical barriers and social biases, as well as ethical issues, is critical for widespread adoption.

Reference

- [1] Schroeder, R. (2011). "Emerging digital technologies and the future of virtual memorials." *Journal of Media Studies*, vol. 12, no. 3, pp. 45-58.

- [2] Bonanno, G. A., & Kaltman, S. (2001). "The role of continuing bonds in bereavement: Theoretical perspectives and empirical data." *Death Studies*, vol. 25, no. 8, pp. 713-740.
- [3] Stroebe, W., Schut, H., & Stroebe, M. S. (2007). "Health outcomes of bereavement: A review of the evidence." *The Lancet*, vol. 370, no. 9603, pp. 1960-1973.
- [4] Francis, J. J., Eccles, M. P., Johnston, M., Walker, A., Grimshaw, J. M., Foy, R., & Kaner, E. F. (2004). *Constructing Questionnaires Based on the Theory of Planned Behavior: A Manual for Health Services Researchers*. Newcastle, UK: University of Newcastle.
- [5] Ajzen, I. (1991). "The theory of planned behavior." *Organizational Behavior and Human Decision Processes*, vol. 50, no. 2, pp. 179-211.
- [6] Madden, T. J., Ellen, P. S., & Ajzen, I. (1992). A Comparison of the Theory of Planned Behavior and the Theory of Reasoned Action. *Personality and Social Psychology Bulletin*, 18(1), 3-9.
- [7] Conner, M., & Armitage, C. J. (1998). "Extending the theory of planned behavior: A review and avenues for further research." *Journal of Applied Social Psychology*, vol. 28, no. 15, pp. 1429-1464.
- [8] Klass, D., Silverman, P. R., & Nickman, S. L. (1996). *Continuing Bonds: New Understandings of Grief*. Philadelphia, PA: Taylor & Francis.
- [9] Sung Wook Shim, Chunsik Lee, & Dae-Hee Kim. (2012). "Interactivity and user attitudes toward online ads: Implications for virtual technologies." *Journal of Interactive Advertising*, vol. 12, no. 1, pp. 54-67.
- [10] Sohn, D. (2011). "The role of interactivity in digital media: A theoretical exploration and its application in virtual environments." *Journal of Media Psychology*, vol. 23, no. 4, pp. 163-175.
- [11] Kioussis, S. (2002). Interactivity: a concept explication. *New Media & Society*, 4(3), 355-383.
- [12] By Harmon-Jones, Eddie, Harmon-Jones, Cindy, Amodio, David M., Gable, Philip A. *Journal of Personality and Social Psychology*, Vol 101(6), Dec 2011, 1332-1350