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Integrating Immersive Art-Based Interventions into Chinese Elderly Communities: A Conceptual Study

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Abstract

The aging of contemporary China's population is intensifying, and the demand for innovative community mental health services is increasing. Immersive art, including virtual reality, interactive projection and multimedia devices, provides a promising way for artistic interventions aimed at improving the mental health and well-being of the elderly. This article discusses the potential of integrating immersive art intervention into the specific social and cultural background of the elderly community in China, and puts forward a strategic framework. This study adopts non-empirical qualitative research methods, integrates existing literature and theoretical perspectives, and analyzes the practical challenges and therapeutic potential of digital art media in the community environment. The study identified some key implementation obstacles, including the elderly's fear of digital technology, the multifunctional overlap restrictions of community physical space, and cultural aesthetic mismatch. Therefore, this article builds a theoretical framework, emphasizing that immersive technology should be in line with the cultural preferences and psychological needs of the elderly in China. The study concluded that structured immersive art interventions provide transformative potential for elderly care services and can create a meaningful and fulfilling environment conducive to healthy aging. This study provides a theoretical basis for practitioners to develop inclusive and culturally resonant digital art interventions in elderly communities.

Keywords: Immersive Art, Art-Based Interventions, Elderly Communities, Well-Being, Mental Health, Chinese Elderly, Digital Media

Introduction

Contemporary Chinese society is facing unprecedented challenges brought about by an aging population. By the end of 2024, the population aged 60 and above in China will reach 310.31 million, accounting for 22.0% of the total population (National Bureau of Statistics of China,

2025). With *Home-based Care* and *Community-based Care* becoming the core pillars of the elderly care service system, the demand for community services and mental health support among the elderly is increasing (State Council of the People's Republic of China, 2013). Research has shown that elderly people in communities often face risks of loneliness, social isolation, and cognitive decline. These issues not only reduce their quality of life, but also increase the burden on public health (World Health Organization, 2021; Yu et al., 2021); Lara et al., 2019).

Art-based interventions (ABIs) have been widely proven to be effective non pharmacological therapies that can improve the well-being of older adults (Fancourt & Finn, 2019). Creative arts activities can significantly alleviate anxiety and depression, and provide channels for emotional expression (Stuckey & Nobel, 2010). In China, traditional arts such as calligraphy, painting, and square dancing have been proven to effectively promote social participation and emotional regulation among retirees (Ou et al., 2022; Liu et al., 2024). With the increasing aging population, these traditional art forms are unable to provide strong multisensory stimulation or profound emotional experiences (De Witte et al., 2021). In addition, they often fail to meet the needs of elderly people with limited mobility (Freiberger et al., 2020; Szanton et al., 2016).

Immersive Art integrates cutting-edge technologies such as virtual reality (VR), interactive projection and digital narrative. With its unique "sense of presence" and high interactivity, it injects new vitality into elderly intervention (Healy et al., 2022; Slater & Sanchez- Vives, 2016). Preliminary research shows that immersive experience can effectively stimulate positive emotions and relieve the psychological stress caused by cognitive decline by reshaping the sensory environment (Anderson et al., 2017; D'Cunha et al., 2019; Gruber et Al., 2022). However, although immersive technology has great potential in clinical and long-term nursing environments, its application research in specific community environments in China is still limited (Gruber et al., 2022; Ming et al., 2025; Sang et a L., 2025). At present, the theoretical research on how immersive art can adapt to the aesthetic habits, physical space and socio-psychological characteristics of the elderly in China is still in its infancy (Li et al., 2025; Ming et al., 2025).

Existing studies suggest that arts-based interventions and immersive media can benefit older adults' well-being, but the evidence is fragmented and often focused on clinical or institutional settings rather than community-based aging-in-place contexts. In China, research tends to examine either traditional cultural activities or technology adoption barriers, with limited work integrating space constraints, culturally resonant content, and well-being mechanisms into a practical framework. To address this gap, this conceptual study uses qualitative content analysis to synthesize interdisciplinary literature and proposes a culturally adaptive framework for immersive art interventions in Chinese elderly communities, including design principles and an evaluation pathway for community implementation.

This research aims to build a theoretical framework for integrating immersive art intervention into the elderly community in China to explore feasible ways to improve the well-being and mental health of the elderly. In order to achieve this goal, this study will explore the following intermediate issues:

1) Identify the technological bottlenecks and physical infrastructure barriers to

implementing immersive art in Chinese elderly communities.
2) Explore the psychological mechanisms through which immersive art influences the well-being of the Chinese elderly from a theoretical perspective.
3) Formulate strategic recommendations for the culturally adaptive integration of immersive art in community-based elderly care services.

Literature Review

Flow Theory and Immersive Art

The effectiveness of immersive art as a means of psychological intervention depends on its ability to trigger mind flow. Flow describes a best experience, in which individuals are completely immersed in an activity and feel the balance between challenges and skills (Csikszentmihalyi, 1990; Nakamura & Csikszentmihalyi, 2014). In digital media, the immersive environment can support the generation of mind flow by reducing interference factors and providing rich and sensitive sensory feedback. These characteristics can also enhance the sense of remote presence, that is, the "immersive" feeling felt in the media environment (Steuer, 1992; Lee, 2004; Cummings & Bailenson, 2016). For the elderly, flow is of therapeutic significance because it can shift attention to pleasant, goal-oriented aesthetic activities, thus reducing persistent sources of stress, such as chronic pain or social alienation (Payne et al., 2011; Campbell et al. , 2010).

Recent empirical research shows that immersive art intervention can support emotional regulation by shaping a sense of presence and related emotional responses (Diemer et al., 2015; Chirico & Gaggioli, 2019). Evidence also shows that higher technical immersion tends to enhance the sense of presence, thus enhancing the psychological impact of the media experience (Cummings & Bailenson, 2016). When the elderly interact with interactive digital devices, including interactive projection or generative sound environment, rich sensory feedback can maintain their attention and encourage them to actively participate. In dementia care institutions, interactive projection systems are associated with reducing indifference and increasing social interaction, indicating that a fascinating environment can affect emotions and motivation (Konrad et al., 2024). The immersive virtual natural environment has also been proven to improve the mood and reduce stress of elderly participants, which is consistent with the recovery path achieved through a soothing sensory environment (Chan et al., 2021). Over time, successful participation can enhance individuals' perception of control and self-confidence, and these beliefs are associated with better health and happiness (Lachman & Weaver, 1998). Flow Theory provides a useful framework for linking these technical attributes with measurable results. It explains how continuous attention and intrinsic rewards develop in immersive activities (Norsworthy et al., 2021).

It may be challenging to let the elderly enter a state of flow. With the enhancement of immersion, some users may experience motion sickness or cognitive overload, especially in cases of sensory clue conflicts or high vestibular sensitivity (Weech et al., 2019; Breves & Stein, 2023). Availability and workload may also be obstacles for the elderly to use immersive systems, so intervention design needs to be carefully matched with the user's ability (Dilanchian et al., 2021; Huygelier et al., 2019). Therefore, successful immersive interventions need to maintain a balance between challenging and technical. Too complex interaction will increase anxiety, and too simple will reduce participation (Nakamura & Csikszentmihalyi, 2014). For the Chinese community environment, this shows that low-friction introductory

design has important value, which can reduce technical barriers and support gradual adaptation, thus helping to maintain participation in repetitive courses (Vanden Abeele et al., 2021; Xia and Zhu, 2025; Chen and others, 2023).

Participatory Art and Active Aging

Participatory art shifts the viewer's role from observing to making and emphasizes social relations as part of the artwork itself (Bishop, 2012; Bourriaud, 2002). This orientation fits the World Health Organization's active ageing framework, which treats social participation as central to quality of life, health, and security in later life (World Health Organization, 2002). Evidence from participatory arts with older adults shows consistent psychosocial benefits, including improved wellbeing and stronger social connection, especially when activities are welcoming and sustained over time (Noice et al., 2014; Liu et al., 2022). In immersive art, participatory formats such as collaborative digital storytelling and shared interactive installations can support meaningful community connection and reduce isolation loneliness by giving older adults an active role and a shared purpose (Chang et al., 2023; Sen et al., 2022).

In Chinese elderly communities, collectivist norms often shape expectations of shared participation, so participatory immersive art can strengthen social connection. Through multi user installations such as digital collaborative painting or shared virtual performance rehearsal, older adults can move beyond solitary engagement and contribute to a common cultural outcome (Zhang et al., 2023; Helguera, 2011). This shared sense of agency can be particularly meaningful after retirement, when social roles narrow and opportunities for contribution may decrease. Digital media can also support intergenerational storytelling and increase the visibility of older adults' experiences, and such programs have been reviewed as promising approaches for reducing loneliness and social isolation (Phang et al., 2023).

In the social and cultural background of China's elderly community, participatory art can enhance social cohesion, create a supportive social environment, and help individuals move from isolation to joint participation. The development of these intervention modules requires cooperation with community managers and social work professionals, and requires prior consideration of the limitations in staffing, space and service processes from the perspective of implementation (Damschroder et al., 2009). The design of digital tools should focus on building a meaningful interactive framework rather than encouraging isolated sensory consumption, because compared with less interactive alternatives, the social virtual environment can enhance the sense of social presence and strengthen community awareness (Barreda-Ángeles et al., 20 23; Sen et al., 2022). By giving priority to relationship participation, immersive intervention can promote mental health and provide a reference for the digital transformation of community elderly care services in China. In China, policies and research continue to emphasize the obstacles and inequality faced by the elderly when using services (General Office of the State Council, 2020; Chen et al., 2023).

Sociocultural Aesthetics and Human-Centered Design

The effectiveness of technically assisted interventions usually depends on the degree of cultural fit, that is, whether the content and interaction are consistent with the user's life experience and local values (Naderbagi et al., 2024). For many elderly people in China, familiar visual language, such as landscape painting traditions, calligraphy and local stories, can help them maintain their identity and bring positive emotions. Studies on Chinese retirees also

show that they have a steady preference for traditional art forms (Wu et al., 2025; Wang & Tang, 2024). Reminiscence therapy is based on this principle, using personally meaningful clues to evoke memories and dialogues. A review of relevant evidence shows that nostalgia therapy has potential benefits in improving the quality of life, cognitive ability and mood of dementia patients (Woods et al., 2018). When presented through immersive media, personalized and culturally adaptable nostalgic content is often more effective, which can improve participation and emotional effect (Mao et al., 2024). These research results together show that immersive art in the Chinese community environment should regard cultural aesthetics as a core design resource so that the digital experience is more familiar and more acceptable to elderly users facing digital participation barriers (Li et al., 2025).

Human centered design (HCD) provides a clear process for this cultural integration by prioritizing understanding, inclusion and user participation throughout the design cycle (Gould & Lewis, 1985; Karat, 1997; Nor Man, 2013). In the elderly community in China, design goals should not be limited to basic usability, but should consider how visual complexity, layout and presentation patterns affect the cognitive load of elderly users (Liu & Qu, 2026). Collecting feedback from the elderly on cultural themes, interaction steps and comfort through an iterative cycle can make the immersive device more intuitive and acceptable while maintaining its aesthetic richness (Vanden Abeele et al., 2021). This helps to make advanced technology a bridge rather than an obstacle to cultural heritage, and enhances the possibility of immersive art as a culturally sensitive intervention to promote mental health through familiar and meaningful sensory experiences.

Subjective Well-being in China's Aging in Place Environment

Aging in Place refers to the elderly can live safely, independently and comfortably in their own homes and familiar communities. In China, the national pension policy increasingly emphasizes home and community pension services, and puts community services at the core of maintaining the mental health and daily well-being of the elderly (State Council of the People's Republic of China, 2013). Against this background, community centers are not only physical facilities, but also can be regarded as healing spaces. Their material environment, social relations and common meanings together shape the health and subjective happiness of the elderly (Gesler, 1992; Bell et al., 2018). The subjective happiness of the elderly includes life satisfaction and emotional experience, and is closely related to health outcomes (Steptoe et al., 2015). Evidence from China also shows that neighborhood relationships and belonging are crucial to the mental health of the elderly, partly because of their impact on subjective happiness (Lin et al., 2024; Pan et al., 2024).

The integration of immersive art into the community environment can be explained by Attention Restoration Theory. The theory believes that the restorative environment can gently attract attention and create a feeling of psychological distance from daily needs, thus reducing mental fatigue and stress (Kaplan, 1995). Immersive digital devices can reproduce these characteristics in the familiar community space, so that the elderly can experience emotional relaxation without traveling, which is especially important for the elderly with limited mobility. Evidence from the virtual environment also shows that immersive experiences can improve mood and reduce stress, including elderly participants (Chan et al., 2023). If the design of immersive experience is participatory, it can further enhance positive emotions and meaning, which is the core element of well-being in Seligman's PERMA model

(Seligman, 2011). In summary, an immersive and participatory community environment provides a practical way to improve life satisfaction and mental health, which is consistent with broader health and aging priorities (World Health Organization, 2015).

Methodology

This study adopts qualitative non-emimical research design. It builds a strategic framework through literature-based analysis of second-hand materials (including peer-reviewed journal articles, academic books, policy documents and conference proceedings) (Bowen, 2009). After qualitative content analysis, this study summarizes the categories from the selected texts and iteratively improves these categories in the three dimensions of space, content and psychology (Mayring, 2014; Schreier, 2012). Subsequently, this study synthesized the literature on immersive media, participatory art and the welfare needs of the elderly in China, and built a cultural adaptability framework suitable for community immersive art intervention. This method does not rely on the collection of first-hand data, but critically evaluates existing theories and evidence to support the integration of concepts and the consistency of logic.

Results and Discussion

Technology Integration Logic in Community Settings

Spatial Adaptation

From a spatial perspective, this integrated logic takes the existing multi-functional community activity room as the main venue for immersive art activities. Without the need to spend a lot of money on renovation, the non-invasive projection system can transform white walls, floors or lightweight screens into interactive visual surfaces. The relevant projection system used in dementia care shows that interactive content can be presented by projecting it onto the daily surface, which supports the feasibility of this low-cost transformation scheme (Konrad et al., 2024). For the elderly, it is also very important to limit intervention activities to a familiar room layout, because spatial loss is a common risk in complex or unfamiliar environments, and supportive environmental design can improve the ability to find and perceive a sense of security (Marquardt & Schmieg, 2009). In this sense, superimposing digital narratives within stable physical boundaries helps to maintain the continuity of the place and enhance the sense of ontological security, which is closely related to feeling at ease in the home environment (Dupuis & Thorns, 1998).

Perceived Ease-of-Use

In order to reduce the technological anxiety and phobia of the elderly, the framework gives priority to the interaction with as few learning costs and operating steps as possible (Di Giacomo et al., 2020; Tsai et al., 2025). It does not rely on handheld controllers such as joysticks, remote controls or touch screens, but adopts non-invasive sensing technologies such as visual tracking and proximity sensing to integrate the interface into the background of user experience. This method is consistent with the concept of physical interaction, which emphasizes skilled and situational practice rather than abstract instruction (Dourish, 2001). By reducing operational complexity, the design reduces the additional cognitive load, so that limited attention resources can be used for aesthetic experience and immersion, not interface decoding (Sweller, 1988; Norman, 2013). The immersive system design guidelines for the elderly further support the simplicity of interaction to maintain and reduce friction during use (Vanden Abeele et al., 2021; Dilanchian et al., 2021).

Safety-First

Safety should be regarded as the premise of psychological immersion. Age related changes in balance and sensory processing increase vulnerability to dizziness and falls, so immersive interventions should include clear safety measures and provide a way to easily pause or quit when feeling unwell (Weech et al., 2019; Monte Ro Odasso et al., 2022). The design should help users maintain a perception of the surrounding environment and avoid common visual stimuli. At the same time, the intervention area should provide basic physical support, such as clear passages, non-slip floors and necessary handrails (Montero Odasso et al., 2022). The immersive system design guidelines for the elderly further emphasize that friction should be minimized and comfort should be improved to maintain long-term user participation (Vanden Abeele et al., 2021).

Cultural Resonance and Restorative Narratives

The content development of immersive art intervention should give priority to cultural resonance, so that digital narrative can be linked to the collective memory and aesthetic habits of the elderly in China (Naderbagi et al., 2024). For this population, cultural adaptive design can draw on the familiar visual logic in traditional art, including the spatial hierarchy of landscape and calligraphy rhythm, so as to create a psychologically familiar rather than technically intimidating experience (Lin et al., 2016; Wu et al., 2025). In practice, these elements can be transformed into interactive and generative forms, which not only retains the recognizability of cultural clues, but also allows users to shape images that continue to unfold through simple actions. This cultural ergonomic method shifts attention from technological novelty to aesthetic vitality and artistic conception, which have long been regarded as the core standards of meaningful participation in Chinese aesthetics (Hongmei, 2023; Hu, 20 21). Building the experience on familiar cultural forms also helps to reduce technical anxiety and support more calm participation, especially for elderly users who have linked traditional activities such as calligraphy with peace of mind and stress self-management (Di Giacomo et al., 2020; Wa Ng & Tang, 2024).

The core element of this content strategy is to carry out reminiscence therapy through immersive media. The goal is to use digital means to reconstruct highly regionalized scenes, such as the 20th century street scene and indoor environment familiar to the elderly, including residential environments such as hutongs or long ponds. Nostalgia therapy uses familiar clues to stimulate memory and dialogue. The relevant evidence shows that this therapy may have a positive impact on the mood, communication and quality of life of dementia patients (Woods et al., 2018). The immersive experience can enhance the experiential and emotional impact of the reminiscence process, thus improving the participation. A recent systematic evaluation shows that reminiscence therapy based on virtual reality (VR) is expected to improve the emotional state of the elderly with cognitive disabilities and support their cognitive function (Mao et al., 2024). This method can also support the life review process related to the self-integrity and meaning construction of the elderly. Meta-analysis evidence shows that reminiscence intervention can improve psychosocial results, including self-integrity (Pinquart & Forstmeier, 2012). In China, where loneliness is a growing concern among older adults, and the culturally familiar immersive reminiscence therapy can provide a safe and structured way to help the elderly reconnect with individuals and common memories, while promoting social interaction (Wang et al., 2024).

In addition to the overall narrative theme, content design should also follow sensory ergonomics, taking into account age-related perception changes, so as to ensure the comfort and therapeutic effect of the immersive experience. Since the elderly are usually more sensitive to glare and slow to adapt to light changes, they should carefully adjust the projection brightness, contrast and related color temperature to reduce visual discomfort and fatigue (van den Berg et al., 2010; Che et al., 2 025). Sound can further create a calm and soothing experience, especially when the sound scene is soft and predictable rather than intense or chaotic (Ratcliffe, 2021). Since sensory sensitivity usually decreases with age, critical interactions should provide clear and immediate confirmation through multiple channels, such as combining visual prompts, audio and providing tactile feedback under appropriate circumstances, so that users can reliably perceive their own operations (Farage et al., 2012; El Kamali et al., 2023). Keeping the interaction steps simple and timely feedback also helps to match challenges with abilities, thus supporting the state of flow on which many immersive happiness mechanisms depend (Csikszentmihalyi, 1990).

Evaluation of Well-being and Multi-dimensional Intervention Pathways

The immersive art intervention framework developed in this research aims to improve the subjective happiness of the elderly through three interrelated mechanisms: immersive art, social participation and cultural identity. Low-friction interactive design can promote positive emotions and continuous participation, which is in line with the positive emotional elements in the PERMA model (Seligman, 2011). When the elderly get instant and easy-to-understand feedback in a culturally familiar digital environment, they are more likely to enter the state of flow and regain the sense of control and competency that they have gradually lost with age (Payne et al., 2011; Lachman & Weaver, 1998). This shift from ease of use to perceived sense of accomplishment has become the key driving factor of this path. At the same time, the participatory form can transform personal experiences into shared narratives, thus strengthening interpersonal relationships and social support within the community, which is closely related to better mental health outcomes (Cohen & Wills, 1985). In this sense, immersive devices can also be used as the "third space" of the community（Figure 1）, so that the elderly and nursing staff can repeatedly and easily establish connections in the home nursing environment (Oldenburg, 1989).

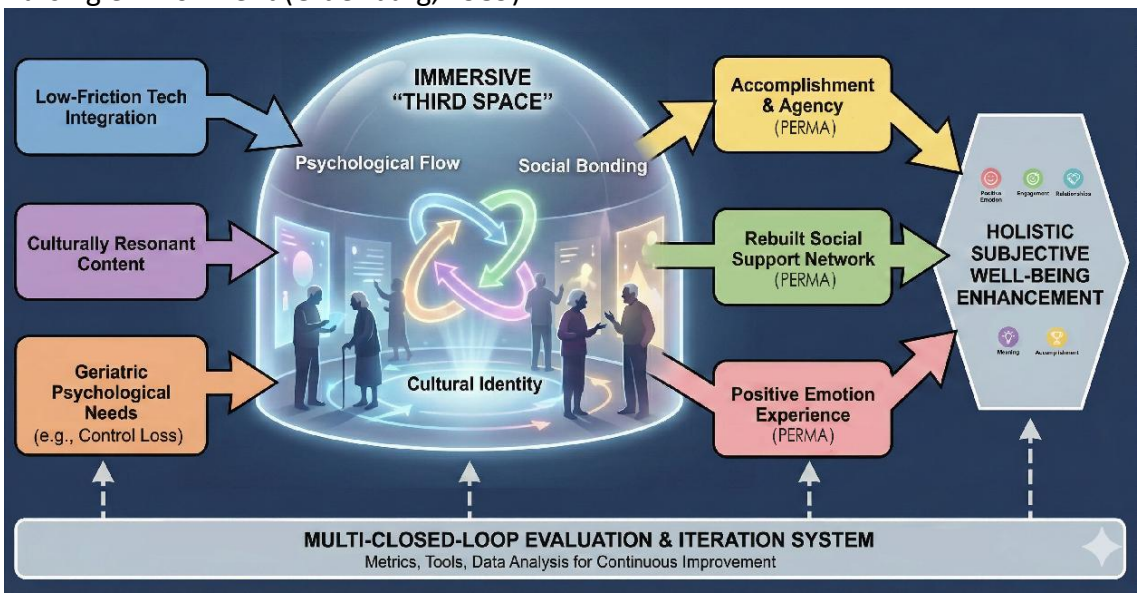

Figure 1: Immersive 'Third Space' intervention framework

Evaluating the effectiveness of this multidimensional pathway requires interdisciplinary criteria that combine short term psychological assessment with longer term wellbeing tracking. At the outcome level, validated measures can be used before and after the intervention to capture change in life satisfaction and affect, for example the Satisfaction With Life Scale and the PANAS (Watson et al., 1988). To reflect your pathway targets, social isolation can be assessed with established loneliness measures, resilience can be tracked with a standard resilience scale, and cognitive engagement can be monitored with brief screening tools when appropriate (Russell, 1996; Connor & Davidson, 2003; Nasreddine et al., 2005). To capture changes in community belonging, a brief sense of community measure can be added and complemented with short qualitative reflections on cultural connection (Peterson et al., 2008). In addition to outcomes, a closed loop evaluation should document implementation and mechanisms, linking environmental settings and content features with user response, which aligns with guidance for process evaluation of complex interventions (Moore et al., 2015). With this structure, immersive art can be iteratively refined to meet older adults' changing needs and can be positioned as a community mental health intervention aligned with Healthy China 2030 priorities.

Conclusion

This study integrates flow theory, participatory art and human-centered design, and puts forward an immersive art intervention strategy framework suitable for Chinese communities. The framework links digital technology with the psychological needs of the elderly through low friction interaction and culturally rooted healing narratives. In the context of Aging in Place, immersive media is not only regarded as a sensory experience tool, but also as a medium that can support social participation and cultural connection. By enhancing the participation, interpersonal relationships and sense of meaning of the elderly in the familiar community space, the framework provides a coherent path for improving the subjective well-being of the elderly. In addition, it also provides practical guidance for community service innovation under the goal of healthy aging and outlines the direction of intervention to address challenges such as loneliness and declining cognitive participation in an aging society. This study emphasizes the people-oriented technical approach and advocates the construction of a more inclusive, emotionally supportive and aesthetically valuable community elderly environment.

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