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The Impact of AI-Based Reminiscence Therapy on Psychological Well-Being in Middle-Aged and Older Adults

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ABSTRACT

South Korea became a super-aged society in 2025, and this demographic transition has been accompanied by a growing number of older adults living alone, persistent depressive symptoms, and an increasing prevalence of dementia [1-3]. Previous studies have shown that reminiscence-based interventions can reduce depressive symptoms and improve life satisfaction, self-esteem, and self-efficacy in later life [4-7]. However, the therapeutic use of AI-generated reminiscence materials, particularly personalized images and videos, has not yet been sufficiently examined, especially in Korean settings [8-16]. This pilot study investigated the effects of AI-based personalized reminiscence therapy on psychological well-being, vitality, and physical self-perception in middle-aged and older adults. A total of 10 middle-aged and older adults aged 50-80 years participated in the study. Individualized videos were created using ChatGPT, Kling AI, and Runway AI, followed by one-to-one semi-structured interviews averaging 40 minutes per session. Qualitative data were analyzed using thematic coding. The findings suggest that AI-based reminiscence therapy may enhance psychological well-being, evoke positive emotions, increase vitality, and promote reflective awareness of physical change in middle-aged and older adults. These results support the potential of AI-assisted reminiscence interventions as a meaningful approach in digital healthcare and senior welfare.

Keywords: AI-Based Reminiscence Therapy; Psychological Well-Being; Vitality; Middle-Aged and Older Adults; Digital Healthcare; Qualitative Study

Introduction

Korea has entered a super-aged society. According to Statistics Korea, adults aged 65 years and older accounted for 20.3% of the national population in 2025, and this proportion is projected to exceed 30% in 2036 and 40% in 2050 [1]. Population aging in Korea is not only a demographic shift but also a major health and social care challenge, because later life often involves bereavement, social isolation, declining health, and reduced economic security. The psychosocial burden of aging has become increasingly visible in national statistics. The 2023 National Survey of Older Koreans reported that one-person households accounted for 32.8% of older adults, and depressive symptoms were more common among older adults living alone (16.1%) than among older couples (7.8%). The same survey found depressive symptoms in 11.3% of the overall older population [2]. In addition, the 2023 Dementia Epidemiology Survey reported a dementia prevalence of 9.25% and a mild cognitive impairment prevalence of 28.42% among Korean adults aged 65 years and older [3]. These data indicate that non-pharmacological interventions aimed at emotional well-being, social connectedness, and early cognitive support are increasingly needed. Reminiscence therapy has long been regarded as one of the most accessible psychosocial interventions for older adults.

Recent systematic reviews and meta-analyses have shown that reminiscence-based interventions can reduce depressive symptoms and improve life satisfaction, self-esteem, and broader psychological well-being among cognitively intact older adults [4,5]. An umbrella review published in 2025 also suggested that reminiscence therapy may improve self-esteem and reduce loneliness, although the methodological quality of the included reviews varied [6]. At the individual-study level, Sok reported that individual reminiscence therapy for older women living alone improved memory self-efficacy, memory practice, cognitive function, and quality of life [7]. Taken together, the

evidence suggests that reminiscence therapy may influence not only depressive affect but also vitality, self-worth, and perceived competence in later life. Traditional reminiscence therapy, however, often depends on family photographs, personal objects, caregiver input, and substantial therapist time. To address these practical limitations, recent work has incorporated digital and AI-supported tools such as interactive photo albums, AI-generated imagery, digital storytelling, and virtual reality. Wang et al. developed the AI-driven multimodal photo album Good Times and reported favorable usability and positive emotional engagement among cognitively intact older adults [8]. Nebot et al. introduced LONG-REMI, an AI-based reminiscence platform, and demonstrated that technology-assisted reminiscence can be personalized while retaining the therapeutic logic of conventional reminiscence therapy [9].t

More recently, the HARMONEE project used generative AI images in long-term care and reported high feasibility, strong participant satisfaction, and short-term mood improvement [10]. Related reviews of reminiscence-based digital storytelling and virtual-reality reminiscence therapy also suggest benefits for emotional engagement, memory stimulation, and social connectedness, although the evidence base remains heterogeneous and still developing [11,12]. In Korea, evidence on AI-supported reminiscence therapy remains limited. Moon and Park reported that digital reminiscence therapy for people with dementia showed promise in improving mood and engagement in a pilot randomized trial, but the study was small and focused on dementia care [13]. Won et al. found that a video-based reminiscence program for older adults with dementia improved ego integrity and vitality, although effects on depression and overall quality of life were limited [14]. Kim et al. proposed a personalized digital reminiscence service using AI voice technology and highlighted the potential of personalized care, while also identifying usability challenges related to forgetfulness and interaction design [15]. In addition, Korean research on digital literacy has shown that technology self-efficacy and perceived usefulness are important determinants of older adults' willingness to use new technologies [16]. Thus, although digital and AI-based reminiscence therapy appears promising, there is still little evidence from Korean middle-aged and older adults who directly experience AI-generated reconstructions of personally meaningful memories. The present study was designed to address this gap.

Purpose

The purpose of this study was to explore the effects of AI-based personalized reminiscence therapy on psychological well-being, vitality, and physical self-perception in middle-aged and older adults. Specifically, the study examined whether AI-generated memory reconstruction could alleviate depressive affect and emotional emptiness, stimulate vitality and motivation for social re-engagement, and promote reflective awareness of bodily change and healthier daily habits.

Method

Study Design and Participants

This study used an exploratory qualitative pilot design. A total of 10 participants aged 50-80 years were included, comprising 8 women and 2 men. The study was based on individualized memory reconstruction using culturally familiar scenes from the 1980s and early 1990s, a period that many participants associated with family labor, neighborhood play, and shared everyday life.

Procedure and Data Analysis

AI-generated visual stimuli were created with ChatGPT, Kling AI, and Runway AI. Based on participants' recalled experiences, the research team reconstructed scenes such as communal kimchi-making, dalgona candy at neighborhood stationery stores, marble games, ddakji, gonggi, and elastic-band jumping. After viewing the AI-generated videos, participants took part in one-to-one semi-structured interviews that lasted approximately 40 minutes per session. Interview topics included emotional responses, bodily recollections, changes in perceived social connectedness, and reflections on past versus present life. Audio-recorded interview materials and observational notes were analyzed using thematic coding to identify recurrent patterns and meaning structures. Because this was a pilot qualitative study, the emphasis was on interpreting experience and response patterns rather than on formal hypothesis testing.

Results

Three major themes emerged from the qualitative analysis.

Alleviation of Depressive Affect and Emotional Emptiness

Nine of the 10 participants described the videos as emotionally relieving and reported that the intervention reduced feelings of loneliness or inner emptiness. Participants did not merely recall events; they re-entered emotionally meaningful social worlds.

"These days my heart often feels empty, but after talking about the past, I laughed out loud for the first time in a long while".

"When I remembered making kimchi together, I felt connected again".

These narratives suggest that AI-based reminiscence may function as a prompt for social and emotional reconnection rather than as simple nostalgia.

Enhancement of Vitality and Social Re-Engagement

Eight participants reported renewed interest in social activity after recalling collective experiences such as kimchi-making and neighborhood games. The reconstructed scenes appeared to reactivate memories of cooperation, capability, and belonging.

"We used to prepare 300 cabbages for kimchi. Now even 10 feels like a lot, but the video reminded me of the joy of doing it together."

For some participants, especially those who had experienced spousal loss, the storytelling process with younger researchers also strengthened a sense of being heard and valued. These findings suggest that AI-supported reminiscence may foster vitality not only as subjective energy but also as a readiness for social participation.

Heightened Physical Self-awareness and Health Motivation

All participants compared their former physical strength with their present limitations. This contrast often triggered reflection on aging, bodily change, and health behaviors.

"Back then, I could carry cabbages all day without pain, but now my back hurts after only 10 minutes".

Six participants further reported that this comparison motivated them to adopt healthier everyday habits, such as walking more regularly. In this sense, the intervention did not only evoke positive memory; it also encouraged a realistic and sometimes constructive reappraisal of the present body.

Discussion

The present findings are broadly consistent with previous research showing that reminiscence therapy can reduce depressive symptoms and improve psychological well-being in older adults [4-7]. The narratives obtained in this study particularly support the view that reminiscence is not limited to recalling pleasant episodes; it can also restore continuity of self, social connectedness, and a sense of personal meaning. In our participants, this process appeared in the form of laughter, emotional release, and renewed feelings of connection after viewing AI-generated memory scenes. A notable contribution of this pilot study is the use of AI-generated video rather than conventional static memory cues alone. Earlier AI-supported and digital reminiscence studies have suggested that personalized multimodal stimuli can enhance engagement and emotional resonance [8-12]. Our findings extend this line of work by indicating that moving AI-generated scenes based on culturally familiar Korean life events may intensify memory vividness and facilitate richer emotional narration. The intervention therefore may work not only because it recalls the past, but also because it reconstructs the atmosphere of past experience in a more immersive way. The Korean context is especially important. Existing Korean studies have primarily examined digital reminiscence in dementia care or have focused on service design and usability [13-15].

The present study adds preliminary evidence from Korean middle-aged and older adults who directly viewed AI-generated reconstructions of everyday memories. At the same time, technology acceptance among older adults cannot be assumed. Prior Korean research indicates that digital self-efficacy and perceived usefulness are important prerequisites for the adoption of emerging technologies [16]. For real-world implementation, AI-based reminiscence therapy should therefore be culturally familiar, easy to use, and adaptable to differing levels of digital literacy. Several limitations should be acknowledged. First, the sample size was small and predominantly female. Second, the study included participants in their 50s as well as older adults, which broadens the age profile beyond a strictly geriatric sample. Third, the study did not include a control group or standardized pre-post measures of depression, vitality, self-esteem, self-efficacy, or loneliness. Fourth, the findings were based on short-term qualitative responses, so no claims can be made about durability of effects. Future studies should use larger samples and mixed-method or controlled designs, and should compare static photographs, AI-generated images, AI-generated videos, and therapist-led reminiscence protocols to determine which components of the intervention are most effective for different user groups.

Conclusion

AI-based reminiscence therapy appears to be a feasible and meaningful digital approach for enhancing psychological well-being in later life. In this pilot study, AI-generated reconstructions of culturally familiar memories were associated with reduced emotional emptiness, greater vitality and social motivation, and increased reflective awareness of physical aging. Although preliminary, these findings support the potential of AI-assisted reminiscence as an innovative tool for digital healthcare and older adult welfare in Korea. Further large-scale and methodologically rigorous studies are warranted.

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