

# Reframing Life Experiences: Emotional Reappraisal Through AI-Generated Memory Videos for Older Adults

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## ABSTRACT

Reframing negative past experiences is crucial for the psychological well-being of older adults. While Generative AI has shown potential in automating reminiscence material creation, existing systems often overlook the delicate process of handling negative emotions. This study proposes a novel photo-based reminiscence system designed to support “emotional reappraisal” by creating psychological distance. Using Generative AI, the system transforms personal dialogues into “memory videos” featuring third-person narratives and cinematic effects. We conducted an exploratory pilot study with four older adults to compare the emotional impact of these AI-generated videos against a static photo viewing condition. Preliminary results indicated that while static photos tended to sustain high-intensity negative emotions (e.g., anger, sadness), the AI-generated videos significantly reduced negative affect. Notably, three out of four participants reframed their primary emotion from negative states to “Joy” after viewing the video. These findings suggest that the objective narrative structure and visual presentation provided by the system can facilitate emotional reframing, helping older adults integrate painful experiences into a positive life story. This research highlights the potential of Generative AI in fostering ego integrity and resilience in the aging population.

**Keywords:** Emotional reappraisal, Reminiscence, Generative AI, Autobiographical memory, Older adults, Human–AI interaction

## INTRODUCTION

As the global population ages, supporting the psychological well-being of older adults has become a critical challenge in human factors and healthcare (Statistics Bureau of Japan, 2025; Cabinet Office, 2024). In Japan, specifically, the shortage of caregivers has intensified the need for effective, scalable support systems (Ministry of Health, Labour and Welfare, 2024). Reminiscence therapy and life review interventions are widely recognized non-pharmacological approaches that promote mental health by helping individuals recall and process autobiographical memory (Butler, 1963; Onishi and Suzuki, 2021). The goal of these interventions is not merely to evoke nostalgia but to facilitate the integration of past experiences into a coherent life story, a process essential for achieving ego integrity in later life.

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Traditionally, creating personalized reminiscence materials, such as “memory videos” or life story books, has been a labor-intensive task requiring significant time and skill from caregivers or therapists (Kuwahara et al., 2005). The recent emergence of Generative AI offers transformative potential to address this resource gap. Large Language Models (LLMs) and image processing technologies can now automate the retrieval of memories through natural language dialogue and transform them into structured multimedia artifacts (Shimizu et al., 2024). This advancement in Human–AI Interaction promises to make personalized reminiscence support more accessible and scalable.

However, a critical gap remains in how AI-supported systems handle the emotional nuances of life experiences. Existing systems typically prioritize the retrieval of positive memories or aim solely to improve mood and engagement. Yet psychological resilience often requires confronting and processing negative emotions—such as anger or sadness—rather than suppressing them. Emotional reappraisal, a cognitive strategy that involves reinterpreting the meaning of an emotional event, is a key mechanism for resolving these negative past experiences (Gross, 1998). It is unclear whether AI-generated content can successfully facilitate this delicate process of reframing without causing distress.

To address this, this study proposes and evaluates a photo-based reminiscence dialogue system designed to support emotional reappraisal. Unlike conventional slideshows, our system uses generative AI to craft third-person narratives and apply cinematic visual effects (zoom-and-pan) to personal photographs based on user dialogue. We hypothesize that framing personal narratives from a third-person perspective creates “psychological distance,” enabling older adults to view their negative experiences more objectively and reconstruct them as meaningful life episodes. This paper reports on a pilot experimental study comparing the emotional impact of these AI-generated memory videos against a control condition of static photo viewing, specifically focusing on the reappraisal of negative autobiographical episodes.

## SYSTEM OVERVIEW

The system developed in this study consists of two main components: a dialogue module and a video generation module.

**Dialogue Module** The dialogue module is designed to facilitate reminiscence through natural conversation. Users engage in a voice-based dialogue with an AI agent while viewing their personal photographs. We utilized Microsoft Azure OpenAI Service and Azure Speech Service to construct an empathetic agent capable of recognizing speech, generating text responses, and synthesizing voice output with a synchronized avatar. The agent is prompted to listen actively and encourage users to elaborate on the context of their photos.

**Video Generation Module** The video generation module automatically transforms the dialogue logs and photographs into a “memory video.” Using Azure AI Vision, the system analyzes the visual content of the photos.

The system then generates a third-person narrative script that contextualizes the user's spoken memories into a coherent story. Finally, the Python library MoviePy is used to apply cinematic "zoom-and-pan" effects (Ken Burns effect) to the static images, synchronizing them with the generated narration and background music.

## METHODOLOGY

**Participants** A pilot experimental study was conducted with four older adults to assess the system's feasibility and explore the qualitative nuances of the emotional reappraisal process. Given the exploratory nature of this research, a small sample size was employed to allow for an in-depth analysis of each participant's individual emotional shifts. Participants were recruited to participate in a two-day experiment involving reminiscence activities using their own personal photographs.

**Stimuli and Experimental Design** Each participant provided eight personal photographs associated with four specific emotions: joy, anger, sadness, and contentment (two photos per emotion). A within-subject design was employed to compare the effects of the AI-generated video against a control condition. The photographs were divided into two balanced sets (Set 1 and Set 2), matched for emotional valence. Each set was assigned to one of two conditions:

- **Condition A (AI Memory Video):** Participants viewed the AI-generated video featuring third-person narration, background music, and zoom-and-pan visual effects.
- **Condition B (Control):** Participants viewed the static photographs on a screen for a fixed duration without any narration, text, or visual effects. The assignment of photo sets to conditions was counterbalanced across participants to control for order and item effects.

**Procedure** The experiment was conducted over two separate days. Day 1 (Dialogue Session): First, for each of the eight photographs, participants were asked to identify which of the four emotions (joy, anger, sadness, contentment) they felt most strongly (Primary Emotion). Subsequently, they rated the intensity of all four emotions on a 7-point Likert scale (Pre-rating). They then engaged in a dialogue with the AI agent about each photo for approximately 5 minutes per photo. Day 2 (Viewing Session): Participants returned to watch the content generated from their Day 1 dialogues. They experienced both Condition A and Condition B (in counterbalanced order) with a break in between. Immediately after each condition, they completed subjective questionnaires. Finally, they identified the primary emotion and rated the emotional intensity of each photograph again (Post-rating).

**Safety Protocols** Given the sensitive nature of recalling negative autobiographical memories associated with anger or sadness, strict ethical and safety protocols were established to protect participant well-being. The protocol mandated the immediate suspension of the session if a participant expressed suicidal ideation or self-harm. If a participant reported strong

distress, a break and relaxation induction were provided; if recovery was not observed, the experiment was discontinued.

## Measurements

To assess emotional changes and the reappraisal process, we employed three types of subjective measures using 7-point Likert scales (1 = Not at all, 7 = Extremely).

1. **Photo-level Emotion Assessment:** Conducted on Day 1 (pre) and Day 2 (post). For each photograph, participants first selected the primary emotion they felt most strongly from four categories (Joy, Anger, Sadness, Contentment). Subsequently, they rated the intensity of all four emotions individually. Changes in the primary emotion and intensity ratings were analysed to quantify emotional reframing.
2. **State-level Emotion Assessment:** To monitor participants' immediate emotional states, a simplified version of the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988) was administered. Participants rated four items—"Energetic," "Happy" (Positive Affect), "Depressed," and "Anxious" (Negative Affect)—before and after each experimental condition on Day 2.
3. **Subjective Reappraisal & Burden:** Immediately after each condition (Video or Control), participants rated their subjective experience regarding three items: two items measured cognitive reappraisal ("I was able to think about the event in a different way," "I feel I was able to find new meaning in the painful memory"), and one item measured psychological burden ("How psychologically burdensome was this experience?").

## PRELIMINARY RESULTS

**Participant Demographics and Analysis Focus** Data were collected from four older adult participants (all female, aged 75–83). The analysis focused on the changes in emotional responses to photographs associated with negative memories ("Anger" and "Sadness"). Table 1 summarizes the pre- and post-intervention changes in negative emotional intensity and the categorization of the primary emotion for each participant under both conditions.

**Changes in Negative Emotional Intensity** As summarized in Table 1, a comparison between the two conditions revealed distinct trends in the intensity of negative emotions. In **Condition B (Control)**, where participants viewed static photographs, the intensity of negative emotions tended to persist or showed minimal reduction. For example, as shown in Table 1, Participant 2 (P2) and Participant 4 (P4) reported that the intensity of "Sadness" remained at the maximum level (Pre: 7 → Post: 7) after viewing the static photos. Similarly, Participant 1 (P1) showed no change in sadness intensity (Pre: 6 → Post: 6) in the control condition. In contrast, **Condition A (AI Memory Video)** resulted in substantial reductions in negative emotional intensity for the same photographs. Participant 2 reported a drastic decrease in sadness intensity from the maximum level to the minimum (Pre: 7 → Post: 1).

Participant 4 also exhibited a reduction in sadness intensity (Pre: 6 → Post: 3) and a significant decrease in anger intensity (Pre: 7 → Post: 1).

**Shifts in Primary Emotion** The categorization of the primary emotion—the emotion felt most strongly for a given photograph—also differed between conditions. In **Condition A**, three out of four participants (P1, P2, P4) redefined their primary emotion from a negative category (“Anger” or “Sadness”) to “Joy” after viewing the AI-generated video. For instance, Participant 2 shifted her primary emotion for the sadness-inducing photo from “Sadness” to “Joy”. In Condition B, such positive shifts were less consistent. While some shifts occurred, high-intensity negative emotions often persisted as the primary emotion, or shifted to another negative state (e.g., P1’s primary emotion shifted from “Anger” to “Sadness”).

**Table 1:** Changes in emotional responses to negative autobiographical memories.

Participant	Condition	Target Emotion (Original)	Negative Intensity (Pre → Post)	Change in Primary Emotion (Pre → Post)
P1	Condition A (AI Video)	Anger	5 → 2	Anger → Joy
		Sadness	6 → 6	Sadness → Joy
	Condition B (Control)	Anger	6 → 2	Anger → Sadness
		Sadness	6 → 6	No Change
P2	Condition A (AI Video)	Anger	4 → 1	Anger → Joy
		Sadness	7 → 1	Sadness → Joy
	Condition B (Control)	Anger	4 → 6	No Change
		Sadness	7 → 7	No Change
P3	Condition A (AI Video)	Anger	6 → 4	No Change
		Sadness	2 → 5	No Change
	Condition B (Control)	Anger	7 → 5	No Change
		Sadness	6 → 3	Sadness → Joy
P4	Condition A (AI Video)	Anger	7 → 1	Anger → Joy
		Sadness	6 → 3	Sadness → Joy
	Condition B (Control)	Anger	6 → 1	Anger → Contentment
		Sadness	7 → 7	No Change

## DISCUSSION

**The Impact of AI-Generated Narratives on Emotional Reappraisal** The results demonstrated that the AI-generated memory videos (Condition A) were more effective than static photographs (Condition B) in reducing the intensity of negative emotions and facilitating a shift toward positive primary emotions. While the control condition often resulted in the persistence of high-intensity negative emotions—such as the sadness remaining at maximum levels for Participants 2 and 4—the AI condition successfully mitigated this distress. We interpret these findings through the lens of emotional regulation theory. The persistence of negative emotions in the control condition suggests that

viewing static photographs without guidance may induce "rumination," causing individuals to re-experience the immediate pain of the past event. In contrast, the reduction in emotional intensity and the shift to "Joy" observed in the AI condition suggest that the system facilitated "self-distancing"—a cognitive process crucial for adaptive self-reflection. Specifically, the transition from a first-person subjective recall to a third-person AI-narrated perspective likely allowed participants to step back from their immediate emotional immersion. This "distanced" viewpoint enabled them to process the event not as a relived trauma, but as an objective, coherent chapter in their life story. Consequently, this shift in perspective reduced the visceral intensity of negative emotions (e.g., sadness) and created the cognitive space necessary to reinterpret the event's meaning, leading to the emergence of positive emotions such as joy.

## CONCLUSION

This study proposed and evaluated a reminiscence support system that uses generative AI to create autobiographical memory videos. The pilot experiment with older adults demonstrated that the system could effectively reduce the intensity of negative emotions associated with past memories and facilitate emotional reappraisal. Unlike static photo viewing, which may sustain negative emotions, the AI-generated videos—through third-person narration and cinematic presentation—helped users reframe painful experiences into meaningful life narratives. Although further validation is required, this work highlights the potential of Generative AI to support the psychological well-being and ego integrity of the aging population.

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