Coller: An AI-Assisted Traditional Collage-Making System for Therapeutic-Oriented Support

YALONG LUO, HII Lab, Duke Kunshan University, China
LEYAN WU, HII Lab, Duke Kunshan University, China
JINGYI YANG, Beijing University of Chemical Technology, China
HAOJIE ZHOU, Duke Kunshan University, China
PENGCHENG AN, School of Design, Southern University of Science and Technology, China
WANLING CAI*, School of Computer Science, University College Dublin, Ireland
YUCHENG JIN*, HII Lab, Duke Kunshan University, China

Collage-making is an expressive arts practice where individuals create new compositions by arranging found materials, enabling multi-modal forms of visual, tactile, and symbolic expression. Although AI has demonstrated potential for supporting creativity and emotional expression, its integration into traditional collage-making remains underexplored. In collaboration with collage creators and mental-health professionals, we developed Coller, an AI-assisted collage-making system that integrates voice interaction, image recognition, adaptive sound feedback, and generative AI to support reflective and expressive creative experiences. A study with 12 users and three mental-health practitioners employed surveys and in-depth interviews to evaluate user experience and therapeutic engagement. Through the lens of the Expressive Therapies Continuum (ETC), we characterize how these technologies shaped therapeutic processes and examine the system's roles and potential from both user and expert perspectives. We conclude with design implications for integrating AI with traditional practices in expressive arts therapy.

CCS Concepts: • **Human-centered computing** → *Empirical studies in HCI*; • **Applied computing** → *Consumer health*; **Sound and music computing**; *Media arts.*

Additional Key Words and Phrases: Therapeutic support, collage creation, generative AI, human-AI collaboration

ACM Reference Format:
Yalong Luo, Leyan Wu, Jingyi Yang, Haojie Zhou, Pengcheng An, Wanling Cai, and Yucheng Jin. 2018. Coller: An AI-Assisted Traditional Collage-Making System for Therapeutic-Oriented Support. In *Proceedings of Make sure to enter the correct conference title from your rights confirmation email (Conference acronym 'XX)*. ACM, New York, NY, USA, 5 pages. https://doi.org/XXXXXXX.XXXXXXX

*Corresponding Author

Authors' Contact Information: Yalong Luo, yalong.luo@dukekunshan.edu.cn, HII Lab, Duke Kunshan University, Kunshan, Jiangsu, China; Leyan Wu, lw403@duke.edu, HII Lab, Duke Kunshan University, Kunshan, Jiangsu, China; Jingyi Yang, 2024700068@buct.edu.cn, Beijing University of Chemical Technology, Beijing, China; Haojie Zhou, haojie.zhou@dukekunshan.edu.cn, Duke Kunshan University, Kunshan, Jiangsu, China; Pengcheng An, anpc@sustech.edu.cn, School of Design, Southern University of Science and Technology, Shenzhen, China; Wanling Cai, wanling.cai@ucd.ie, School of Computer Science, University College Dublin, Dublin, Ireland; Yucheng Jin, yucheng.jin@dukekunshan.edu.cn, HII Lab, Duke Kunshan University, Kunshan, Jiangsu, China.

Manuscript submitted to ACM

1 Introduction

Collage-making is a widely accessible creative practice in which individuals assemble visual materials such as photographs, magazine fragments, text, and textures into new compositions [3]. Because collage does not require advanced artistic training and supports symbolic forms of self-expression, it has been widely adopted in reflective and therapeutic contexts [8, 14, 15]. Prior work has shown that collage-making may support emotional externalization, narrative meaning-making, and self-reflection through embodied creative engagement [2, 12, 18].

In recent decades, with the advancement of technology, collage-making practices have increasingly shifted from traditional physical forms toward digital collage-making [13, 17]. In therapeutic contexts, many interventions have also adopted digital collage tools [1, 4, 7, 11]. These systems are typically implemented through drawing interfaces, collage-making applications, or web-based platforms accessed via computers or tablets, offering accessible ways for users to create visual compositions and engage in reflective activities.

Despite these benefits, fully digitalized collage tools may reduce some of the tactile and embodied qualities inherent to traditional collage-making [5]. In traditional collage-making, users engage in selecting, cutting, and pasting materials while physically interacting with paper textures and adhesive materials. These embodied experiences may support emotional release and relaxation [9, 16]. In addition, many existing systems for therapeutic collage-making rely on professional facilitation, where reflective prompts and interpretive guidance are provided synchronously or asynchronously by therapists or facilitators. As a result, relatively little work has explored how AI might support self-guided traditional physical collage-making while preserving its embodied qualities.

To address this gap, we developed Coller, an AI-assisted traditional collage-making system designed to support self-guided collage-making experiences while preserving the embodied and material qualities of physical artmaking. Through this exploratory case study, we examine how AI can be integrated into traditional collage-making to support therapeutic-oriented creative experiences while preserving the embodied and material qualities of the medium. Our findings suggest that Coller shaped users' experiences across multiple dimensions of the Expressive Therapies Continuum, particularly by supporting cognitive/symbolic reflection through thematic guidance, reflective dialogue, and soundscape narration. Building on these findings, we discuss the need for flexible, stage-sensitive AI support and reflect on how technology can be integrated with traditional art practices by complementing material engagement, preserving users' agency in meaning-making, and building on the affordances of specific artistic media.

2 System Design

Based on insights gathered from co-creation sessions with collage creators and mental-health professionals, we developed Coller, an AI-assisted traditional collage-making system. The system supports users across three stages of the collage-making process: pre-creation, during-creation, and post-creation.

2.1 Stage 1: Pre-Creation

In this stage, before collage-making begins, the system sequentially activated the ***Meditation*** and ***Thematic Guidance*** features. The ***Meditation*** feature guided users through a short voice-based breathing meditation. The meditation script was co-developed with an art therapist and delivered using a calm voice cadence designed to resemble breathing meditation in therapeutic contexts. Following the meditation, the system activated the ***Thematic Guidance*** feature by providing prompts structured around three temporal dimensions: past, present, and future. The prompts were authored by a collaborating art therapist and delivered by the system in spoken form, inviting users to reflect on "important

moments from the past," "the current state of life," and "an envisioned future life." After each prompt, users were given time to pause and reflect before continuing to the collage-making activity.

2.2 Stage 2: During-Creation

In this phase, users engaged in hands-on traditional collage-making while both the ***Sound Trigger*** and ***Voice Assistant*** features remained active concurrently. The ***Sound Trigger*** dynamically played corresponding environmental sounds based on visual elements appearing in the collage. For example, nature-related imagery could trigger sounds such as birdsong, rainfall, or flowing water. Multiple sounds could overlap when different elements appeared simultaneously, with gradual fade-in and fade-out transitions applied during playback. The ***Voice Assistant*** allowed users to actively request support through voice interaction during collage-making. Based on the current collage content and users' spoken input, the system generated spoken responses using multimodal AI interaction. Responses included contextual prompts, emotionally supportive feedback, and open-ended suggestions related to visual elements and personal associations within the collage.

2.3 Stage 3: Post-Creation

After users completed their collage, the system initiated two sequential features: ***Reflection Guidance*** and ***Soundscape Story***. The ***Reflection Guidance*** feature guided users through a multi-round voice-based dialogue about their collage. The dialogue combined fixed prompts, developed in collaboration with an art therapist and informed by therapeutic practice, with dynamically generated follow-up questions produced by the multi-modal LLM based on users' responses and collage content. The prompts guided users from overall impressions toward more specific details while progressing across past, present, and future themes represented in the collage. Follow-up questions further encouraged users to elaborate on previously mentioned elements or discuss visual content that had not yet been addressed during the dialogue. Following the reflective session, the ***Soundscape Story*** feature generated a short narrative audio experience based on the completed collage and users' reflections. The narration incorporated visual elements and themes mentioned during the dialogue across the past, present, and future sections of the collage, while environmental sounds associated with collage content were layered into the generated soundscape.

3 Exploratory Case Study

To explore how users experienced and perceived Coller during traditional collage-making, we conducted an exploratory qualitative study with twelve participants (U1–U12; 9 female, 3 male), aged 19–28 years ($M = 22.5$). Participants engaged in self-guided collage-making activities using the system and subsequently took part in semi-structured interviews. In addition, three mental-health professionals (T1–T3) interacted with the system and provided supplementary feedback regarding ethical considerations, therapeutic-oriented support, and potential practical applications.

The study generated multiple forms of qualitative data, including completed collages, interaction records, reflective dialogue responses, and interview transcripts. Drawing on the Expressive Therapies Continuum (ETC) [6], we examined how different system features shaped users' embodied, emotional, perceptual, symbolic, and reflective experiences throughout the collage-making process. We further analyzed participants' perspectives on the role of the system in shaping the overall experience, its perceived therapeutic-oriented potential, and expectations for future development.

3.1 ETC-Based Analysis of Therapeutic Experience

We used the Expressive Therapies Continuum (ETC) as an analytical lens to examine how Coller shaped users' therapeutic-oriented experiences during collage-making [6]. The ETC delineates four levels: Kinesthetic/Sensory (K/S), Perceptual/Affective (P/A), Cognitive/Symbolic (C/S), and Creative (CR), which are often used to examine the therapeutic dimensions of art-making [10]. Our analysis suggests that Coller supported users across all four ETC dimensions. At the K/S level, the system preserved hands-on collage-making while adding sensory feedback through environmental sounds. At the P/A level, sound and visual elements helped evoke emotional responses and memories. At the C/S level, thematic prompts and reflective dialogue supported users in articulating symbolic meanings and personal narratives. At the CR level, the combination of physical making, multimodal feedback, and post-creation narration helped users integrate their collage into a more complete reflective experience.

3.2 Perspectives on System Role and Potential

Beyond the ETC-based analysis, we examined how users and professionals perceived the role, potential, and future development of Coller. Participants understood the system's role as stage-sensitive: before creation, it served as a guide through meditation and thematic guidance; during creation, it functioned as a supportive companion and atmosphere builder through the ***Voice Assistant*** and ***Sound Trigger***; and after creation, it became a dialogic partner that helped users revisit and express the stories, symbols, and emotions embedded in their collages. Users viewed Coller as a self-guided tool for preliminary self-exploration and short-term stress relief, while professionals saw potential for it to provide pre-intervention insight and serve as a supplementary tool for people with mild needs. At the same time, both users and professionals emphasized that future versions should better personalize prompts, interaction tone, and system feedback to different users and expressive intentions.

4 Discussion

Our case study suggests that Coller supported multiple dimensions of users' therapeutic-oriented collage-making experiences. Through the ETC-based analysis, we found that the system was particularly salient at the Cognitive/Symbolic level, where thematic guidance, reflective dialogue, and soundscape narration helped users articulate symbolic meanings and personal narratives. At the same time, environmental sound and multimodal feedback also shaped sensory and affective engagement, suggesting that AI can extend traditional collage-making while preserving its embodied qualities.

The findings also highlight the need for flexible and stage-sensitive AI support. Participants perceived Coller differently across the collage-making process: as a guide before creation, a low-interruption companion during creation, and a dialogic partner after creation. Users and professionals further emphasized that future versions should adapt to different user groups, emotional contexts, and communicative preferences. This suggests that AI systems for therapeutic-oriented artmaking should adjust their role, tone, and level of intervention according to both the stage of the activity and the user's needs.

Finally, our work offers implications for integrating technology with traditional art practices. ***First***, technology should complement rather than replace traditional artmaking by preserving material engagement while adding supportive interaction. In Coller, AI was positioned around the physical act of collage-making, preserving users' engagement with paper, texture, cutting, and arrangement while adding ambient and reflective support. ***Second***, AI support should preserve users' agency in interpreting and assigning meaning to their own artwork, while offering gentle prompts, possible directions, or optional aesthetic suggestions when needed. ***Third***, technology should be tailored to the

affordances of the specific medium. For collage-making, fragmented visual materials, symbolic arrangement, and tactile manipulation make it especially suitable for image-based reflection, sound mapping, and narrative integration. Together, these implications suggest that AI support for traditional art practices should be medium-sensitive, non-prescriptive, and grounded in users' own expressive intentions.

5 Conclusion

Our work explored how AI technologies can be integrated into traditional collage-making to support therapeutic engagement during individual creative processes. Co-created with collage creators and mental-health professionals, we designed Coller, which integrates multimodal sensing, voice interaction, and generative AI to provide continuous and low-interference support across pre-, during-, and post-creation phases. Through a user study with 12 participants and 3 professionals, we found that the system supported therapeutic experiences across all four levels of the Expressive Therapies Continuum (ETC). Both users and professionals, from their respective perspectives, recognized the potential of Coller to support therapeutic engagement. Rather than offering a generalizable solution, this case study aims to prompt further reflection on how human-centered AI can be sensitively integrated into traditional art-making practices to support creative and therapeutic experiences.

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Received 20 February 2007; revised 12 March 2009; accepted 5 June 2009