

FRactal Drawing as Support for Emotional Well-being and Everyday Cognitive Efficiency in Older Adults Following the Loss of a Partner: A Multiple Case Study**^{1,*} Maja Žmukić and ² Martina Kosec**¹Faculty of Educational Sciences, University of Sarajevo, BiH²Center for Development Through Art, Zagreb, CroatiaReceived 15th December 2025; Accepted 24th January 2026; Published online 23rd February 2026

Abstract

The aim of this paper is to examine how the Intuitive Cycle of the fractal drawing method may be associated with changes in emotional well-being and subjectively perceived aspects of everyday cognitive efficiency (attention, mental organisation, practical problem-solving, and emotional functioning) in older adults during the period following the loss of a partner. The study was conducted as a multiple qualitative case study based on the logic of analytic replication. Two independent cases were implemented in two different locations, facilitated by two different practitioners, while following a harmonised protocol of activities and data collection. The participants were Olga (80), a retired chemist, and Klara (64), a retired preschool teacher, both of whom had experienced the loss of their husbands. Primary data sources included participants' diary entries, verbal reflections during the process, and facilitators' process observations. Thematic analysis revealed convergent patterns of change in both cases: stabilisation of emotional state, increased experiences of joy and gratitude, and a subjectively perceived strengthening of concentration and mental efficiency in everyday situations. A difference between the cases was observed in the maintenance of practice: Klara continued drawing after the completion of the cycle, whereas Olga reduced her drawing activity but redirected her energy into other forms of engagement. Over the following year, both participants, through occasional contact, reported an "echo" of the benefits across various spheres of everyday life.

Keywords: Multiple case study, Fractal drawing, Older adults, Bereavement, Art therapy.

INTRODUCTION

Ageing is associated with changes in cognitive functions and emotional regulation, with older adults often subjectively reporting difficulties in maintaining attention, mental flexibility, and a sense of "mental clarity." Although contemporary health and social policies increasingly emphasise the prevention of dementia, enhancement of quality of life, and the concept of healthy ageing, intervention programmes for older adults remain predominantly focused on medical and social care aspects. Programmes integrating neurocognitive and art-therapeutic approaches, despite evidence of their effectiveness in promoting neuroplasticity, emotional regulation, and the preservation of cognitive functions, are still insufficiently represented in both institutional and non-institutional settings for older populations. This gap points to the need for systematic inclusion of creatively oriented, interdisciplinary models within existing healthy ageing programmes. The period of bereavement following the loss of a partner can further burden everyday functioning: lowered mood, decreased motivation, withdrawal, and mental fatigue often intertwine with a subjective experience of reduced cognitive capacity. Within contemporary frameworks of health promotion and active ageing, there is growing interest in non-pharmacological approaches that support well-being and cognitive vitality through meaningfully structured activities. A broader body of research suggests that artistic engagement may be associated with improved well-being and quality of life and, in some studies, with cognitive outcomes in older adults (Fancourt & Finn, 2019; Fioranelli *et al.*, 2023; Stuckey & Nobel, 2010).

Longitudinal population-based studies indicate that cultural engagement can predict changes in cognitive function over time (Fancourt & Steptoe, 2018) and is also associated with a lower risk of incident depression in later life (Fancourt & Steptoe, 2019). Intervention studies, although methodologically heterogeneous, show that short-term arts programmes may contribute to improvements in affective and cognitive domains among older adults (Noice *et al.*, 2004). In the context of bereavement, expressive and visual modalities are often used as complementary approaches that can facilitate symbolic processing of loss and support emotional regulation (Weiskittle & Gramling, 2018). In this sense, fractal drawing, as a structured visual-motor activity, may represent a novel way of fostering attention, presence, and emotional stabilisation in later life. In the paper *Art Therapy May Be Beneficial in Reducing Stress-Related Behavioural Disorders in Patients with Dementia – A Case Report* (Mimica & Kalinić, 2011), the authors highlight the clinical importance of non-pharmacological interventions in the treatment of dementia-related behavioural disturbances. The case report describes the treatment of a patient with moderate dementia and emphasises the potential of art therapy as an augmentative form of treatment. After a detailed evaluation, art therapy was introduced as a non-pharmacological intervention. Particularly noteworthy is that the patient, who had shown no pre-morbid interest in artistic expression, unexpectedly revealed creative potential and artistic talent. The drawing process was fulfilling, contributing to a sense of calm and satisfaction. As an immediate consequence, the patient's behaviour became significantly more appropriate, eliminating the need for additional psychopharmacological interventions for behavioural control (Mimica & Kalinić, 2011). The authors conclude that art therapy may not only have beneficial effects in reducing stress-induced behavioural disturbances but may

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also serve as a first-choice method in augmenting standard antedementia treatment. This interpretation strongly supports earlier research emphasising the importance of non-pharmacological interventions in alleviating agitation and behavioural symptoms in people with dementia (Kong *et al.*, 2009; Rusted, 2006).

Ivanović, Barun, and Jovanović (2014) emphasise that art therapy, as a form of psychotherapy, uses the creative visual process as a primary means of expression and communication, and that visual expression can reach pre-verbal emotions and facilitate conflict resolution more rapidly than verbal expression in patients with emotional or psychological difficulties, including dementia. These findings are further supported by results from the project “Enhancing Cognitive Abilities of Older Adults through Art Therapy – Fractal Drawing,” which involved more than 110 older adults. Although the primary aim focused on dementia prevention and preservation of cognitive functions, significant secondary benefits were also observed in emotional functioning and mood regulation. Kežman (2025) demonstrated that fractal drawing is associated with higher levels of subjectively assessed emotional well-being, improved attentional focus, and greater emotional stability.

These findings are particularly relevant in work with individuals experiencing bereavement, who often face prolonged states of sadness, reduced concentration, and loss of motivation for everyday functioning. Fractal drawing provides a structured yet free creative space in which individuals can express internal emotional states without the need for verbalisation. Special emphasis is placed on the colouring process as a therapeutic effect in the context of stress and emotional tension reduction. Each colour, due to its specific wavelength, elicits different neuropsychological responses in the brain. Such drawing significantly contributes to relaxation, creative expression, self-discovery, and emotional release (Žmukić, Kosec, Muck & Domljanin, 2025). These processes directly align with the needs of individuals in bereavement, enabling safe engagement with inner content and a gradual restoration of inner balance and meaning.

Aim and Research Question

The aim of this study is to analyse how the Intuitive Cycle of fractal drawing may be associated with changes in emotional well-being and subjectively or observationally perceived aspects of everyday cognitive efficiency in older adults following the loss of a partner.

Research question: How, and to what extent, does fractal drawing accompany changes in emotional state and everyday mental efficiency in two older adults who have experienced a similar life loss but participated in different contexts with different facilitators?

Rationale for the Design: Multiple Case Study and Analytic Replication

A multiple case study design allows for in-depth analysis of each case individually (within-case) and subsequent comparative analysis across cases (cross-case), thereby strengthening the credibility of findings through the logic of analytic replication. A particular strength of this study lies in the independent implementation of cases (different locations

and facilitators) using a harmonised protocol, which resulted in highly similar patterns of change.

Research Design

The study was conducted as a multiple qualitative case study (two-case multiple case study) with longitudinal monitoring throughout the intervention cycle and additional follow-up over the subsequent year through occasional contact. The design comprised:

Within-case analysis: each case (Olga; Klara) analysed separately;

Cross-case analysis: comparative examination of shared themes and divergences;

Analytic replication: interpretation of convergent results across independent contexts and facilitators.

Participants (Case Descriptions)

Case A – Olga (80): retired chemist. Prior to participation, she had experienced the loss of her life partner and reported a subjective decline in energy, lowered mood, and perceived difficulties with concentration and memory.

Case B – Klara (64): retired preschool teacher, also having experienced the loss of her husband. In the initial phase, she reported emotional sensitivity, fluctuations in everyday mental efficiency, and a need for stabilisation of daily rhythm.

Facilitators and Contextual Independence

The Intuitive Cycle was facilitated by two practitioners in two different locations, with no contact between participants. The facilitators pre-aligned the basic session structure, diary framework, and a minimal set of observational categories to ensure comparability of data in cross-case analysis.

Ethical Considerations

Participants were informed about the aim and course of the study, data collection procedures, and privacy protection. Pseudonyms and minimal identifying details were used. Participants had the right to withdraw at any time.

Instruments and Data Sources

Participant Diaries: Both participants kept brief notes after sessions, focusing on mood before and after drawing, perceived concentration, thoughts or memories arising during the process, and any changes in everyday activities.

Verbal Reflections and Facilitator Process Observations: Facilitators recorded engagement, pace, continuity of attention, emotional responses, participant comments, and changes in task approach over time.

Description of the Intervention: The Intuitive Cycle of Fractal Drawing

The cycle lasted several months, with one session per week (flexible). The structure included:

Introduction to the process and rhythm stabilisation;

Fractal compositions focusing on attention, visual-spatial organisation, and colour;
Brief reflections and diary entries after sessions;
Gradual fostering of participant autonomy in task execution.

Data Analysis

Thematic analysis was conducted following the approach of Braun and Clarke (2006), through phases of familiarisation with the data, initial coding, theme development and revision, and final naming of themes. Analysis was conducted at two levels: within-case and cross-case.

RESULTS

Case A – Olga

Theme A1: Immediate relief and emotional stabilisation during the process Olga described drawing as a time of calm, release, and “easier breathing,” accompanied by experiences of joy and tranquillity. A gradual reduction in tension, greater emotional stability after sessions, and an increased sense of meaning and satisfaction were observed.

Theme A2: Subjective strengthening of concentration and mental clarity in everyday situations

She reported improved ability to maintain focus and faster problem-solving in practical situations, noting increased “mental organisation” and quicker decision-making in daily activities.

Theme A3: Post-cycle period – reduced drawing with transfer to other activities

Over the following year, she did not continue drawing but reported that the changes persisted through redirected energy into other activities (e.g., handicrafts), frequently referring to the cycle as a reference point for returning to relaxation and focus.

Case B – Klara

Theme B1: Increase in positive affect and sense of meaning Klara reported increased joy, gratitude, and a sense of meaningful engagement. The process became a stable part of her weekly rhythm, with observable emotional regulation and calming occupation.

Theme B2: Strengthening of attention through rhythm, repetition, and visual organisation

Reflections highlighted prolonged task engagement and easier refocusing after distraction. The facilitator noted increasing independence in following the steps.

Theme B3: Post-cycle period – continued drawing and maintenance of effects

Unlike Olga, Klara continued drawing after the cycle. During the following year, she reported that drawing became a personal tool for mood stabilisation and thought organisation, consistently returning to it during stress as a familiar self-regulation pattern, stating she would never stop.

Cross-Case Analysis: Convergent Patterns and Key Divergence

Convergent patterns across both cases included:

Emotional stabilisation and increased positive affect (joy, gratitude, post-session relief);

Strengthened experience of attention and concentration during activities with transfer to everyday life (mental clarity, better organisation, practical efficiency);

Process value of structure: repetition and rhythm experienced as a safe framework supporting presence and regulation.

Divergence: Mode of maintaining effects post-cycle

The key difference lay in practice maintenance: Klara sustained drawing as an ongoing self-regulation tool, while Olga discontinued drawing but transferred the “echo” of effects into other activities. This suggests that maintaining benefits does not necessarily require continued engagement in the identical activity, but may involve functional transfer to other structurally similar, meaningful engagements.

DISCUSSION

The results of this multiple case study indicate that the Intuitive Cycle of fractal drawing may be associated with positive changes in emotional well-being and everyday cognitive efficiency in older adults following partner loss. In both cases, increased positive affect, reduced tension, and experiences of relief were observed, aligning with evidence that artistic engagement supports well-being and quality of life (Fancourt & Finn, 2019; Stuckey & Nobel, 2010) and broader findings on cognitive and general functioning in older age (Fioranelli *et al.*, 2023). In the context of bereavement, participants’ experiences of calm, regulation, and symbolic emotional processing correspond with systematic review findings on visual art modalities in grief work. Subjectively and observationally perceived strengthening of attention and everyday mental efficiency can be understood within broader evidence linking cultural engagement to favourable cognitive trajectories in older age (Fancourt & Steptoe, 2018) and demonstrating cognitive and affective effects of artistic interventions (Noice *et al.*, 2004). It is important to note that this study does not present quantitative cognitive outcomes but relies on qualitatively grounded indicators of process and everyday transfer. The difference in post-cycle practice maintenance may be viewed as two valid sustainability pathways: direct continuation of the same activity versus functional transfer into other meaningful engagements. This highlights the flexibility of the intervention model, suggesting that the preservation of a psychologically and cognitively “beneficial routine” may be achieved even when the form of activity changes.

Conclusion

This multiple case study demonstrates that fractal drawing, as a structured and accessible visual-motor activity, may be associated with positive changes in emotional well-being and subjectively or observationally perceived everyday cognitive efficiency in older adults following the loss of a partner. The convergent findings across two independent cases, facilitated

by different practitioners in different contexts, support interpretation through the logic of analytic replication while retaining the qualitative nature of conclusions. During the follow-up period of up to one year, although the form of practice varied (continued drawing in Klara's case versus transfer into handicrafts and other activities in Olga's case), both participants consistently referred to enduring changes that extended into other spheres of everyday life, suggesting that benefits do not necessarily end with the cycle but may leave a recognisable echo. Overall, fractal drawing emerges as a valuable and effective art-therapeutic tool in working with individuals experiencing bereavement. Its structured yet non-intrusive nature enables simultaneous emotional expression, regulation, and transformation, supporting adaptation to loss and fostering a return to functional and emotional stability.

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