

PROGRESS IN BRAIN RESEARCH

The Times They Are A-Changin': On Cannabinoids And Psychedelics' Therapeutic Potential And Social Impact

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Sergio Mota-Rolim
Renato Filev



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ELSEVIER



Expressive resource in a clinical psychedelic study: Art as an integration tool

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Abstract

Psychedelic experiences, especially those induced by substances such as *N,N*-Dimethyltryptamine (DMT), are often characterized by high subjective intensity, complex visual content, and notable ineffability—that is, the difficulty of being fully expressed in words. This expressive limitation poses a significant challenge to the integration of the experience, which is essential for the therapeutic processing of these experiences. In this context, clinical studies with psychedelics are increasingly demanding innovative approaches to facilitate the assimilation of such experiences into daily life. Art, as a form of nonverbal expression, has been proposed as a promising tool in this regard. Accordingly, this article discusses the use of the mandala as a complementary expressive resource in the process of psychedelic integration, based on a Phase I clinical trial with DMT. The analysis draws on the mandalas and narratives produced by participants. The findings suggest that the creation of mandalas facilitated the symbolic expression of subjective content that was difficult to verbalize, supporting the integration process. Despite its potential, the use of expressive tools remains underexplored and unsystematized in current psychedelic clinical protocols. We concluded that the inclusion of art may represent a valuable advancement in optimizing the therapeutic benefits of psychedelics, expanding the understanding and meaning of experience.

Keywords: *N,N*-Dimethyltryptamine (DMT), Therapeutic tool, Art, Psychedelic integration, Clinical trials, Expressive resource, Mandala.



1. Introduction

Psychedelic substances have gained increasing prominence in recent years due to their therapeutic potential in the treatment of mental disorders such as treatment-resistant depression (Falchi-Carvalho et al., 2025), anxiety (Davis et al., 2020), post-traumatic stress disorder (Averill and Abdallah, 2022), and substance use disorders (Sharma et al., 2023; Mendes et al., 2022). The renewed scientific interest in this field has been accompanied by a growing effort to develop safe and effective clinical protocols that address not only the administration of the substance but also the welcoming and symbolic processing of the subjective experiences that emerge during its use.

In this context, integration protocols have become essential components of clinical psychedelic interventions, serving both to ensure the safety and comfort of participants and to facilitate therapeutic processes (Pronovost-Morgan et al., 2025). These protocols provide structured support to help individuals make sense of the often complex, ineffable, or challenging experiences encountered during the sessions. Therefore, the development and standardization of integration frameworks are crucial to maximizing the clinical potential of psychedelics while safeguarding the well-being of patients undergoing treatment.

One of the characteristics of psychedelic experiences is ineffability—that is, the difficulty of being fully described in words. These experiences often involve non-ordinary states of consciousness, profound emotional insights, complex visual perceptions, and mystical experiences (Pahnke, 1963); Yaden et al., 2024). This subjective and sometimes transcendent nature of the experiences presents a challenge to traditional psychotherapy models, especially regarding integration, the process through which the lived content is understood, symbolized, and incorporated into everyday life (Earleywine et al., 2022). In this context, the need for innovative approaches to facilitate psychedelic integration is growing. Art, as a symbolic language, has emerged as a promising tool to access and express aspects of the experience that escape linear narrative.

The connection between art and non-ordinary states of consciousness dates back to ancestral practices, as illustrated by the figure known as the “shaman bee,” depicted in the rock paintings of Tassili n’Ajjér, Algeria, dated to over 6000 years ago (Mckenna, 1992). The image portrays an anthropomorphic figure with insect-like features, interpreted by some authors as a representation of a shaman in trance, possibly under the influence of entheogenic substances (Buxton, 2006). This figure suggests

that visionary experiences were already being symbolized through art since the earliest stages of human history. Artistic expressions such as drawing, painting, and specifically the creation of mandalas have been proposed as tools that support emotional processing and the integration of contents experienced during psychedelic sessions (Grof et al., 2019).

The term “mandala,” originating from Sanskrit, means “sacred circle” or “magic circle”. A mandala is a centered pattern image, usually circular, composed of smaller elements arranged symmetrically around a central point. It has been used throughout the centuries as a symbol of integration and wholeness in diverse cultures around the world, especially in artistic contexts and mystical experiences (Markwick, 2004). In Tibetan Buddhism, it represents the dwelling of deities; in Christianity, it appears in cathedral stained-glass windows; in Islam, it can be found in the domed ceilings of mosques; and among some Indigenous American nations, it is used as a protective circle. Moreover, from a psychological perspective, the emergence of mandalas may reflect symbolic aspects of the human psyche, functioning as spontaneous representations of integration, order, and transcendence (Jung, 1959). These images are related to archetypes: universal functions of thought, feeling, and behavior that make up the collective unconscious and manifest through myths, dreams, and symbols. In this context, the mandala represents a central archetypal expression of the quest for wholeness and psychic balance (Jung, 1972).

The phenomenological description of experiences induced by psychedelic substances such as N,N-Dimethyltryptamine (DMT) reveals that mandalas frequently appear during the acute effects of this class of substances (Cott and Rock, 2008). They are among the most common visual contents, often associated with kaleidoscopic patterns and fractal visions (Lawrence et al., 2022). These visual patterns often follow certain constant structures, such as tunnel and funnel shapes, spirals, lattices—including honeycombs and triangles—and webs (Klüver, 1942). Such formations seem to transcend cultural factors, suggesting a common evolutionary basis associated to neurobiological acute effect during the visualization of mandalas. The presence of these images may be related to underlying neurophysiological processes, such as the activation of specific neural networks in the primary visual cortex and neuronal synchronization induced by psychedelics (Bressloff et al., 2002). Thus, understanding the impact of these images on the psychedelic experience may contribute to a broader elucidation of the subjective effects of these substances and their therapeutic potential.

Ineffability, a hallmark of psychedelic experiences, can represent a challenge for therapeutic integration, as many of the experienced contents go beyond the limits of verbal language and conceptual understanding (Harris, 2019). In clinical contexts, volunteers commonly report difficulties in translating their experiences into words, which can hinder both emotional and cognitive assimilation and the effective integration of these experiences. Faced with this scenario, alternative methods such as art have shown promise in facilitating the expression and processing of these experiences (Maud, 2024). Based on data from a clinical study, this article proposes a theoretical discussion, aiming at exploring how art can be incorporated into protocols involving psychedelic substances, analyze its role in the integration process, and explore practical possibilities for its therapeutic application. By gathering evidence and reflections on the subject, this work seeks to contribute to the development of more comprehensive strategies sensitive to the complexity and transformative potential of the psychedelic experience.



2. Method

2.1 Clinical study

The data presented in this work originate from a Phase I clinical trial with DMT, conducted with healthy individuals (Falchi-Carvalho et al., 2024) and duly registered on the ClinicalTrials.gov platform (NCT05573568). We carried out the evaluation was carried out through qualitative analysis of participants' discourse, based on their subjective reports regarding the experience of creating a mandala as an expressive resource and psychedelic integration tool. The study was approved by the Research Ethics Committee of the Onofre Lopes University Hospital (HUOL), under protocol number 45532421.0.0000.5292.

2.2 Participants

The study included 27 healthy volunteers with an average age of 30 years (30.3 ± 6.5 ; 21–51). Of these, 25 (M: 13; F: 12) completed all phases of the protocol. All participants had prior experience with DMT or one of its preparations (such as ayahuasca). Recruitment was conducted through online advertisements. Before enrollment, all candidates underwent a psychiatric evaluation to assess their current mental health status and identify any potential contraindications, ensuring participant safety. Participation was formalized through the signing of an Informed Consent Form. Following this step, eligible individuals proceeded to the subsequent clinical phases.

2.3 Study design

The study followed an open-label, single-ascending-dose design, structured into one preparatory session, two substance administration sessions conducted on the same day, the first involving a safety dose (5–15 mg of DMT) and the second a full dose (20–60 mg of DMT), and four integration sessions (Falchi-Carvalho et al., 2024). Two of the integration sessions took place on the same day as DMT administration: the first, following the safety dose, focused on verbal expression of the experience; the second, after the full dose, initially involved verbal elaboration and subsequently included the optional creation of a mandala drawing as a tool for symbolic integration.

2.4 Procedures

During the acute effects of DMT, the participants were comfortably seated in a reclining armchair, wearing headphones to listen to tracks specifically created for the study.¹ They were instructed beforehand to keep their eyes closed throughout the experience, and no eye masks were used.

As part of the second integration session, following verbal elaboration of the experience, participants were invited to create a mandala drawing to facilitate the integration of non-verbal elements of the experience. All participants accepted the invitation. The mandalas were not subject to evaluative interpretation but were used as a means for participants to express and integrate their experiences.

For this purpose, the psychologist provided each participant with a collection of fifty crayons in different colors and a blank 180 g cardstock sheet, measuring 45 cm × 45 cm, with a graphite circle drawn at the center. Upon accepting the invitation, the participant was instructed by the psychologist to express themselves through strokes, colors, and symbols related to a specific aspect of the experience or the experience as a whole. It was emphasized that the mandala would not be judged aesthetically; the importance of the activity lay in the subjective process of expressing the experience. Participants were given approximately 30 min to complete the mandala. A neurophenomenological approach was then employed to explore the content that emerged. There was no interpretation of the mandala by the psychologist; the focus remained on supporting participants in constructing their own narratives about the

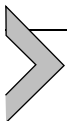
¹ The soundtrack, created by musician Raphael Egel, blended electronic, harmonic, ambient, and chill-out styles to support the experience and foster a sense of calm and security (www.rafael-egel.com)

mandala and the relationship of each expressed element to their psychedelic experience. After completing the mandala, a listening time was offered for reflection on the creation and its connection to the experience.

The analyzed material included iconographic records of the mandalas produced by participants, obtained through scanned images of the drawn sheets, as well as excerpts from verbal elaborations collected during a subsequent interview, aimed at illustrating the subjective processes involved in the meaning-making of psychedelic experiences. The images were digitized by the authors with the participants' prior consent.

The selection of records analyzed in this study was conducted through purposive sampling, aiming to deepen the understanding of the phenomena of interest (Patton, 2014), focusing on participants who provided more detailed descriptions of experiences related to the use of the expressive tool within the context of the intervention.

Thematic analysis, widely used in qualitative research, was applied in this study based on semi-structured interviews conducted 28 days after the dosing session, focusing on participants' perceptions of safety and comfort throughout the clinical protocol. The process included full transcription of the interviews by a specialized company, floating and active listening, generation of codes representing units of meaning, and grouping these codes into broader themes. We refined the themes through triangulation among three co-investigators, ensuring greater objectivity and clarity. The narratives presented pertain to the theme "Mandala". Finally, the study sought to understand the connections between the reported content and the psychedelic experience by presenting the results through illustrative excerpts. The complete set of themes, as well as a detailed description of the qualitative methodology employed, can be found in the study outlining the clinical protocol for physical and psychological support in intervention with DMT.



3. Results

The results are organized based on the qualitative analysis of the data, illustrated with excerpts from the participants' narratives and selected images of the mandalas, aiming to preserve the narrative and symbolic richness of the reported experiences.

3.1 Subject 05 (S05)

Sometimes I have difficulty putting things into words, so... even some of the questions on that day, I couldn't really explain. Because at the beginning, right after taking the substance, it's very intense, like a blow to the mind. Then, after it passes, some questions arise, but there were things I just couldn't verbalize. I also have trouble with that in writing — sometimes I think about things but can't manage to either say or write them. So maybe I need to find another path for expression, because some things just don't come out, not through speech nor through writing. (S05)

The difficulty in translating the psychedelic experience into verbal language was a constant theme in the participants' reports, as exemplified by S05's statement: *"Sometimes I have difficulty putting things into words [...] some things I think about but can't manage to either say or write, so maybe I need to find another way of expression."* This excerpt reveals the limits of verbal language in attempting to represent experiences of possibly high emotional and sensory intensity, described as *"a blow to the mind."* In this context, the mandala probably might have helped the participant access and communicate subjective contents that were not easily articulated verbally. Its mediating function enabled the expression of non-conceptual aspects of the experience and the subsequent construction of meaning, facilitating the integration process. Thus, the artistic resource proved especially powerful as a tool for elaborating the ineffable, functioning as a portal that connects the experience to discourse (Fig. 1).



Fig. 1 Mandala produced by subject 05 (S05) during the integration process after the DMT session.

3.2 Subject 13 (S13)

The experience with the mandala. So, in all of my experiences, when I tried mushrooms, ayahuasca tea, and LSD as well, I always saw a lot of mandalas, many of them, and they were always the ones I really enjoy drawing. This time was no different; during the experience with DMT, I saw a lot of mandalas, many mandalas. So, when I told the guys about it, the psychologist asked if I wanted to draw what I was seeing. It was so cool because, in addition to really enjoying drawing, I was able to represent in the mandala some of the points I had seen, the stronger colors I had seen. So, it was very expressive. (S13)

For some participants, like S13, the mandala not only served as an expressive tool after the psychedelic experience but also resonated directly with the visual content emerging during the non-ordinary state of consciousness. S13 reported having experienced recurring mandala images in different psychedelic contexts, including the use of mushrooms, ayahuasca, LSD, and DMT: *“I always saw many mandalas [...] and this time was no different.”* The opportunity to draw the mandala after the session was described as a meaningful and integrative experience, combining aesthetic pleasure, symbolic recognition, and emotional expression: *“It was so cool because, in addition to really enjoying drawing, I was able to represent in the mandala some points I had seen.”* The creation of the mandala allowed not only to record intense visual elements of the experience, such as *“the strongest colors”*, but also to translate them into understandable and shareable forms. In this case, the mandala operated as a link between what was lived and what was elaborated, facilitating the meaning-making of the experience and strengthening the therapeutic bond, mediated by the psychologist’s invitation for the participant to draw what they had seen (Fig. 2).

3.3 Subject 17 (S17)

Sometimes you talk about what you’ve experienced, and you don’t really know how to put it into words. Sometimes, through drawing, you can express yourself better. [...] It was great. I’m also a transpersonal psychologist, so it wasn’t something new to me; it’s something I’ve known for a while. So, for me, it was great because when I finished [the DMT session], I had this need to express myself, so it was wonderful to have used this tool. (S17)

Although verbalization is generally the preferred means for integrating psychedelic experiences, some participants pointed out difficulties in verbally expressing the contents they had experienced, especially in the initial moments after the experience. In these situations, the mandala proved to be a valuable complementary tool, capable of facilitating symbolic and emotional expression. S17 reported: *“Sometimes, through drawing, you can express yourself better,”*

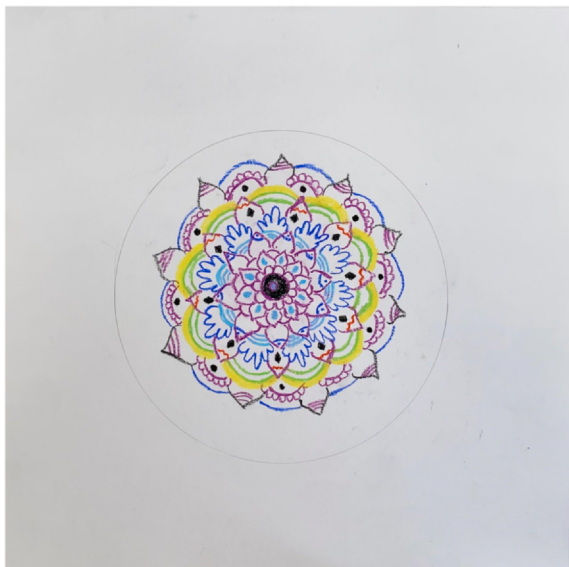


Fig. 2 Mandala produced by subject 13 (S13) during the integration process after the DMT session.

indicating that, in the face of the limitations of speech, the expressive resource provided an alternative form of internal and external communication. With prior training in transpersonal psychology, the participant was familiar with symbolic language and have emphasized the role of the mandala as a facilitator of a process that had already presented itself as necessary: *“When I finished, I had this need to get it out, so it was great for me to have used this tool.”* Thus, although it does not replace verbal integration, the mandala acted as an important expressive support, particularly effective in enabling the initial externalization of complex and subjective contents, creating conditions for a later, more structured elaboration through speech (Fig. 3).

3.4 Subject 25 (S25)

It was actually surprising, because it had been a long time since I last drew or painted anything. I used to have this habit when I was younger, but not anymore. I was curious to see what would come out of it. I work with creativity, I am an advertiser, so I was thinking, “How is the creative process going to work with this thing?” It was very surprising, it turned out to be something coherent and that made sense, if there’s even such a thing as not making sense in this case, because I don’t think there is, but it was in harmony with my experience during the second dose. I thought it was really cool, and a very creative way to help stitch together the experience after you’ve gone through it. (S25)

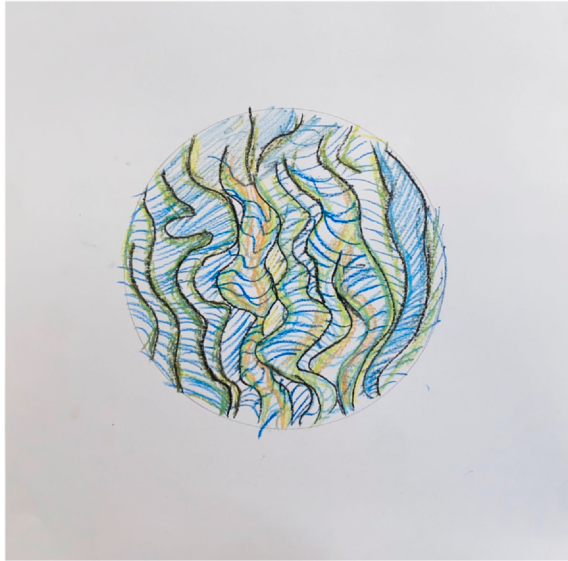


Fig. 3 Mandala produced by subject 17 (S17) during the integration process after the DMT session.

For some participants, the process of creating the mandala not only brought up memories and sensations related to the psychedelic experience but also personal elements tied to creativity and artistic expression. S25, a professional advertiser, expressed surprise at returning to drawing after a long period without practice: *"It had been a long time since I last drew, painted anything... I was curious to see what would come out of it."* The process was described as a rediscovery of the creative dimension, with the mandala functioning as an unexpectedly effective way to elaborate on and *"stitch together"* the psychedelic experience: *"It was very surprising, it came out coherent and made sense... it was in harmony with my experience during the second dose."* Notably, the participant also reflects on the very idea of *"making sense,"* questioning *"if there's even such a thing as not making sense in this case, because I don't think there is."* This reflection highlights how the mandala, by allowing the non-verbal expression of elements from the experience, acts as a facilitator for meaning-making: even in contexts where logical and verbal sense breaks down, the symbolic and aesthetic language of drawing enables a sensitive and coherent integration of the experience. Therefore, rather than simply representing an expressive activity, the creation of the mandala can be understood as a powerful strategy for accessing deep layers of meaning, mobilizing internal resources in an integrated and therapeutic way (Fig. 4).



Fig. 4 Mandala produced by subject 25 (S25) during the integration process after the DMT session.

4. Discussion

The main findings from the analysis of the participants' narratives from the clinical study were presented before in conjunction with the mandalas they created. The integration of verbal reports with artistic expressions allowed for a more comprehensive understanding of the subjective experiences encountered, revealing symbolic, emotional, and cognitive dimensions that are often difficult to capture through verbal language alone. The mandalas were used as expressive tools, serving both as catalysts for subjective reflection and as visual records of internal experiences. The combined analysis of the narratives and images provided an expanded understanding of how this tool supported the integration process.

The mandala emerged as a powerful resource in supporting the integration process within a clinical context involving DMT administration. One element reported by participants was the difficulty of verbally translating their experiences, especially during the initial phases of integration. This difficulty is directly related to the characteristic of ineffability, frequently mentioned in studies on psychedelic experiences (Braud, 2002; Neitzke-Spruill, 2019). Ineffability constitutes one of the core aspects of

mystical experiences triggered by psychedelics, being described as the inability to fully express the experience in words. This finding is supported by studies that identified ineffability as one of the predominant factors in mystical experience questionnaires (MacLean et al., 2012). In light of this limitation of verbal language, the mandala emerges as an alternative expressive channel, allowing participants to visually represent symbolic, emotional, cognitive, and sensory aspects of their experience.

Mandalas, as an expressive resource for the integration of psychedelic experiences, may be understood as manifestations of visionary art, insofar as they translate subjective content arising from non-ordinary states of consciousness into sensitive and symbolic forms. Through this practice, phenomenological aspects of the psychedelic experience—often described as transcendental, archetypal, or suprasensory—are transfigured into aesthetic compositions that become accessible to sensory perception (Costa de Freitas, 2024). In this way, the mandala functions as a vehicle for metaphysical translation, allowing deep inner experiences to be elaborated and integrated into the concrete realm of aesthetic and psychological experience.

The Swiss psychiatrist Carl Gustav Jung was one of the first to recognize the psychological value of mandalas as symbolic representations of processes of wholeness and inner transformation. In his studies, Jung observed that patients in analysis often spontaneously produced images with mandala-like structures, especially during times of transition, crisis, or psychic reorganization. For him, the mandala symbolized the “Self”, the psychic instance of totality, and its appearance indicated a movement toward the integration of the psyche (Jung, 1981). Jung not only analyzed mandalas created by his patients but also produced his own during periods of intense inner work, considering this practice a privileged path to contact deep unconscious content. In this sense, the use of mandalas as an integration tool in psychedelic contexts directly aligns with the Jungian conception that symbols emerging from subjective experience can guide therapeutic processes.

Stanislav Grof, a Czech psychiatrist and one of the pioneers of modern research on non-ordinary states of consciousness, also incorporated mandala work into his therapeutic model. In his holotropic breathwork sessions and early clinical studies with LSD, Grof observed that the spontaneous creation of mandalas by participants was common after intense experiences, serving as a way to integrate emotional, transpersonal, and archetypal content (Grof, 1988). He interpreted these images as visual expressions of psychic healing processes and internal reorganization, recognizing in them a symbolic language that often surpassed the capacities of verbalization.

Grof emphasized that the mandala could reflect not only personal unconscious content but also perinatal and transpersonal experiences, associated with deep levels of the psyche. In this way, the use of mandalas in clinical contexts involving DMT is supported by a well-established therapeutic tradition that values symbolic imagery as a central instrument in the process of integration and inner transformation.

This perspective resonates with the work of Brazilian psychiatrist Nise Da Silveira, who revolutionized mental health care by introducing art as a form of expression and psychic elaboration in clinical settings. Dra. Nise viewed drawing and painting as legitimate forms of symbolic communication of internal content, especially in cases where verbal language was ineffective or limited (Da Silveira, 1981). Her work at the Pedro II National Psychiatric Center in Rio de Janeiro suggested that images spontaneously produced, often with structures similar to mandalas, could reflect profound processes of psychic reorganization, reinforcing the therapeutic value of expressive resources.

Some participants also reported challenging experiences during the psychedelic effects, further emphasizing the need for effective strategies for integration. The literature suggests that expressive tools, such as drawing mandalas, can play a significant role in this context by providing an alternative symbolic path for processing difficult-to-verbalize content (Henderson et al., 2007). By enabling the externalization and organization of these contents through strokes, shapes, colors, symbols, and signs, the mandala may not only facilitates the subjective elaboration of experiences but also enhances its therapeutic potential, contributing to the re-signification and integration of emotionally intense experiences.

Another relevant point concerns the spontaneous recurrence of mandalas during the psychedelic experience itself, particularly in the context of DMT interventions. This pattern was reported by several participants in this study, perceived during the acute effects of the substance and later reflected upon during integration. Previous phenomenological research has identified the presence of complex geometric structures and symmetrical patterns as characteristic elements of the DMT experience, often described as “mandalas” or “fractals” (Sanders et al., 2024). Carl Jung already noted that the mandala may symbolically represents a process of psychic integration, functioning as an archetype of wholeness (Jung, 1964). Therefore, by allowing participants to visually represent content that emerges spontaneously during the psychedelic experience, the practice of drawing mandalas can resonate in a deep and therapeutic way, while also providing a systematized tool for clinical research.

Thus, considering ineffability as a characteristic of psychedelic experiences, the recurrence of mandalas during non-ordinary states of consciousness, and the symbolic value of the mandala, the use of this expressive resource should be explored further as a valuable complementary tool in clinical psychedelic protocols. Beyond serving as an artistic exercise, mandala creation can act as a meaningful symbolic mediator in the process of subjective elaboration, contributing to the fuller integration of these experiences, which implies greater safety, depth, and effectiveness in psychedelic therapeutic models. The appreciation of art as a means of expressing subjectivity, as proposed by Nise da Silveira, could provide a fundamental inspiration for contemporary models of expanded and humanized care in psychedelic contexts.

This study presents limitations that should be considered. The small sample size and qualitative design limit the generalizability of the results. Nevertheless, the findings point to the promising potential of the technique. It is therefore recommended that this resource be systematically incorporated into future research and clinical practice, respecting the diversity of forms of subjective expression and promoting approaches more attuned to the complexity of human experience in non-ordinary states of consciousness.



5. Conclusion

In summary, the findings of this study highlight the relevance of the mandala as a complementary expressive tool in clinical protocols involving psychedelics, especially in light of the recurring ineffability that characterizes such experiences. By offering an alternative means of symbolizing content that is difficult to verbalize, the mandala supported the integration process, facilitating both subjective elaboration and the re-signification of challenging or mystical experiences. The spontaneous presence of mandalic imagery during DMT experiences, as reported by several participants, may indicate the archetypal value of this symbol, as previously discussed by authors such as Carl Jung and Nise da Silveira. In this context, the use of the mandala transcends the objective realm of research, assuming a therapeutic and integrative role that can enrich contemporary models of care in clinical studies with psychedelics.

Acknowledgements

We would like to thank Raphael Egel for composing the music used in the study.

Conflict of interest

The authors declare no conflicts of interest. This study was funded by the CAPES Foundation, the Brazilian National Council for Scientific and Technological Development (CNPq), and the Financier of Studies and Projects (FINEP). The Federal University of Rio Grande do Norte (UFRN) and the Onofre Lopes University Hospital (HUOL) provided institutional support.

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ISBN 978-0-443-34767-2



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