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Directed Ecological Mandala Coloring (DEMC): An Ecological Expressive Arts Approach to Understanding Childhood Emotional Trauma

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Abstract
Children with trauma often find it challenging to express themselves about their distress verbally. Their traumatic experience within a socio-emotional (SocEm) landscape is interwoven with three key factors: Personal, relational, and environmental. This paper examines how Directed Ecological Mandala Coloring (DEMC), an ecosystemic expressive arts approach, applies symbolic visual representation to understand childhood trauma. Grounded in the Bronfenbrennerian ecosystemic theory, the DEMC incorporates six concentric mandala rings (MRs), i.e., MR-1-Intrasystem, MR-2-Mmicrosystem, MR-3-Mesosystem, MR-4-Exosystem, MR-5-Macrosystem, and MR-6-Chronosystem), to support child-centered SocEm expression and reflection. Using a qualitative composite case study, this paper explores how a child externalizes stress and anxiety through colors, symbols, imagery, and written expressions across the six ecosystems. The DEMC technique can help a child to communicate difficult experiences, which may remain inaccessible through verbal methods. The Bronfenbrennerian ecosystemic framework highlights the multiple factors (i.e., family, school, environmental stressors, sociocultural expectations, and life events) that influence a child's coping mechanism to manage trauma, revealing resilience, adapting/adjusting processes, and therapeutic meaning-making. The author of this paper firmly believes that DEMC shows promise as both a trauma-informed intervention and ecosystemic assessment tool.

Keywords: Childhood Emotional Trauma, Directed Ecological Mandala Coloring (DEMC), Ecological Systems Theory, Expressive Arts Therapy, Resilience

1. Introduction

Childhood trauma (CHT) can significantly affect developmental functioning, emotional regulation, psychological wellness, and social interaction and relationships. The onset of traumatic experiences can emerge from varied adverse circumstances, e.g., abuse, bereavement, bullying, family conflict, neglect, parental separation, prolonged instability, or relocation. These detrimental life-related episodes can overwhelm a child's capacity to adapt to their immediate environment (Perry & Szalavitz, 2017) [20]. Often, these children frequently exposed to trauma experience concentration difficulties, sadness and social withdrawal, stress-anxiety-depression (SAD syndrome; Xie & Wang, 2021) [28], emotional dysregulation (Fossati, *et al*., 2016) [10], insecurity (Wrobel *et al*., 2022) [27], and interpersonal challenges that influence daily activity functioning both at home and in school (van der Kolk, 2014) [24]. However, the condition of CHT is rarely attributable to a single challenging episode or unforgettable event. It is more shaped through environmental, interpersonal, social relational, and sociocultural experiences across time.

Although CHT may be reflected through social-emotional and behavioural difficulties, these children often struggle to verbalize their distressing experiences directly or clearly. Neurobiological and psychological research (e.g., Chia, Wong, & Thang, 2026; Malchiodi, 2020; van der Kolk, 2014) [6, 19, 24] suggests that trauma may disrupt language processing, emotional organization, and autobiographical memory, making verbal disclosure difficult for some children. Consequently, there is a need for developmentally appropriate approaches that enable children to communicate emotional experiences beyond conventional verbal methods.

Despite the growing use of expressive arts (Wang *et al*., 2025; Sesar *et al*., 2022) [26, 21] and mandala-based interventions (Chia, Wong, & Thang, 2026; Henderson, Rosen, & Mascaro, 2007; Wang, 2024) [6, 12, 25], there are relatively few approaches that explicitly integrate symbolic emotional expression with ecosystemic understandings of child development. A structured

ecosystemic approach may be especially useful in supporting communication between traumatized children and their caregivers or healthcare workers. This approach acknowledges that emotional experiences are influenced by more than internal distress alone (Chia, 2026) [5]. Family relationships, school experiences, environmental stressors, sociocultural expectations, and life transitions all contribute to how children experience and express emotions. One such approach is the Directed Ecological Mandala Coloring (DEMC; Chia, 2026) [5]. It addresses this need by organizing emotional expression through six ecosystemic rings that resemble six concentric mandala rings (MRs), namely, the MR-1-Intrasystem, MR-2-Mmicrosystem, MR-3-Mesosystem, MR-4-Exosystem, MR-5-Macrosystem, and MR-6-Chronosystem (see Fig 1). Through structured drawing and colouring, children with CHT are encouraged to represent their emotions, relationships (with animate and/or inanimate objects), and experiences symbolically across interconnected ecological systems.

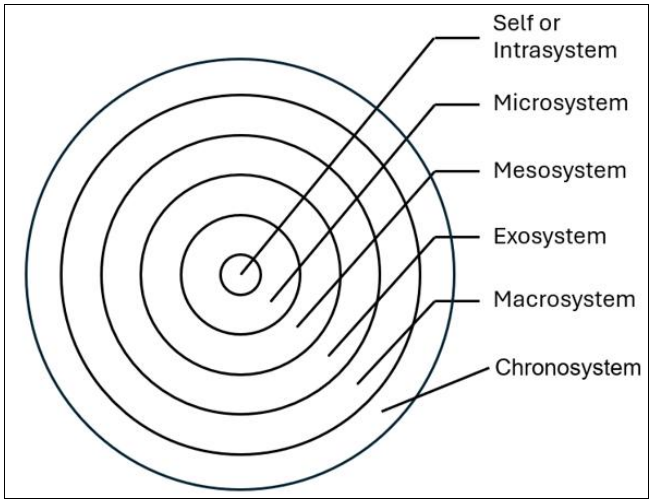

Fig 1: The Six Concentric Mandala Rings of DEMC (Chia, 2026, p. 1176) [5]

This short paper explores the application of DEMC as an ecological expressive arts approach for understanding CHT through a qualitative composite case study. The study examines how a traumatized child experiencing emotional distress communicates emotional experiences visually and symbolically across ecological systems while simultaneously revealing resilience, adaptive processes, and therapeutic meaning-making.

2. Literature Research

2.1 Ecological Perspectives on Childhood Trauma

An ecological understanding of CHT is crucial since children's social-emotional experiences are embedded within broader developmental systems. The Bronfenbrennerian ecological systems theory conceptualizes child development as occurring through dynamic interactions between the child and multiple environmental contexts, i.e., the microsystem, mesosystem, exosystem, macrosystem, and chronosystem (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006) [3, 4]. Immediate relationships within families, relatives, neighbors, peer groups, and schools influence social-emotional well-being directly, while indirect influences such as caregiver stress, socioeconomic conditions, and broader cultural beliefs also shape children's adaptation and resilience. This ecosystemic perspective is particularly relevant to trauma-informed intervention practice as it facilitates a holistic assessment by recognizing both risk and protective factors influencing developmental outcomes of a child with CHT (Ungar, 2021) [23].

2.2 Expressive Arts and Non-Verbal Communication in Trauma Work

Expressive arts approaches have gained increasing recognition as developmentally appropriate methods for working with children (Sesar *et al*., 2022; Wang *et al*., 2025) [21, 26]. These approaches allow children to externalize emotions through symbolic and non-verbal forms of communication. Such forms include drawing, storytelling, movement, and visual imagery (Malchiodi, 2020) [19]. Such creative therapeutic approaches can help to reduce social-emotional defensiveness. At the same time, they can create psychologically safe opportunities for children with CHT to communicate experiences that may otherwise stay affectively suppressed or mentally repressed (Klorer, 2017) [15].

2.3 Mandala-Based Approaches and Emotional Expression

Among expressive methods, mandala-based activities (Liu, 2023; Wang, 2024; Xie & Wang, 2021) [18, 25, 28] have been widely utilized to promote emotional regulation, reflection, and psychological healing. Mandalas provide a contained visual structure through which individuals may represent emotions, relationships, and lived experiences symbolically (Jung, 1964) [13]. Research (e.g., Curry & Kasser, 2005; Henderson *et al*., 2007; Wang, 2024) [8, 12, 25] indicates that mandala colouring and drawing may reduce anxiety, enhance social-emotional awareness, and support emotional organization among children and adults. For children with CHT, the structured and circular nature of mandalas may provide a sense of emotional safety while facilitating symbolic self-expression (Frame, 2006) [11].

3. Research Method

This study adopts a qualitative composite case study design to explore how a child with CHT expresses emotional experiences through Directed Ecological Mandala Coloring (DEMC). The qualitative approach is most appropriate since the study seeks to understand subjective social-emotional meanings, symbolic representations, and ecosystemic influences embedded within the traumatized child's visual expressions rather than quantify behavioral outcomes (Creswell & Poth, 2018) [7]. According to Yin (2018) [29], the case study design can further enable a healthcare professional (e.g., counsellor and psychotherapist) to probe the complex social-emotional experiences entrenched deeply within the child's repressed subconsciousness in the current real-life developmental context.

To protect confidentiality while maintaining ecosystemic and clinical authenticity, a hypothetical *composite* child (codenamed *Ayden*) is employed. This composite case construction enables the representation of recurring emotional, relational, and developmental patterns observed among children experiencing CHT without disclosing the identity of any individual child. This approach strengthens ethical integrity while allowing realistic discussion of CHT-

related experiences commonly encountered in clinical, psychoeducational, and therapeutic practice.

As mentioned earlier, Chia (2026) [25] has described DEMC as structured around six concentric mandala rings corresponding to the intrasystem, microsystem, mesosystem, exosystem, macrosystem, and chronosystem, informed by Bronfenbrenner's ecosystemic theory (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006) [3, 4]. During a normal DEMC session, a child with CHT is invited to draw, color, write words, and include symbols representing emotions, relationships, environmental influences, sociocultural beliefs, and significant life experiences within each ecosystemic ring. Gentle prompts may be applied to encourage the child to do self-reflection while preserving flexibility for spontaneous self-expression. Such arts-based projective techniques are considered especially valuable for children with CHT, who are still struggling to verbalize their past distressing experiences directly (Klorer, 2017; Malchiodi, 2020) [15, 19].

Data collection in DEMC includes the completed ecosystemic or mandala rings, observational field notes recorded during the process of coloring, and reflective conversations with the child, regarding the meanings associated with selected colors, symbols, and imagery. These multiple forms of data can help to strengthen contextual understanding and credibility through their triangulation (Creswell & Poth, 2018) [7]. Data are interpreted using thematic and visual narrative analysis, with special attention focusing on emotional, relational, ecological, and temporal themes, that are emerging across the six systems (Braun & Clarke, 2022) [2]. The Bronfenbrennerian ecosystemic theory serves as the interpretive framework through which the emotional experiences of the child with CHT are situated within interconnected developmental contexts.

It is important to take note that ethical considerations must remain central, given the vulnerability of children experiencing CHT. Informed parental consent, child assent, confidentiality procedures, emotional safeguarding, and CHT-sensitive facilitation are crucial to minimize distress and ensure participant well-being throughout the expressive intervention process (American Psychological Association [APA], 2020) [1].

4. Case Study: Ecological Understanding of CHT through DEMC

4.1 Background of the Composite Child

Ayden, a 10-year-old *composite* child, is presented to illustrate how emotional trauma may be expressed through DEMC. The use of a *composite* case safeguards confidentiality while reflecting realistic emotional and developmental experiences commonly observed among children experiencing adversity. Over the preceding year, Ayden demonstrated increasing emotional withdrawal, reduced classroom participation, crying episodes, irritability, concentration difficulties, and social isolation. Her caregiver also reported disrupted sleep, reduced communication at home, and recurring expressions of emotional distress, including statements such as "Nobody understands me" and "Everything feels wrong." Such social-emotional and behavioral manifestations frequently occur among children with CHT and are often associated with prolonged exposure to stress and social-emotional trauma, particularly when these experiences compromise social-emotional security, coping processes, and psychological defence mechanisms (Perry & Szalavitz, 2017; Silverman & Aafjes-van Doorn, 2023) [20, 22].

Ayden had experienced several significant adverse life events, including parental separation following prolonged conflict, relocation to a new neighbourhood, adjustment to a different school, bereavement following the death of a grandmother, and experiences of peer rejection and bullying. These cumulative stressors appeared to contribute to her emotional difficulties and challenges in adaptation. Because Ayden had difficulty verbalizing her emotions during conventional counselling sessions, DEMC was introduced as a developmentally appropriate expressive intervention to facilitate emotional communication, enhance self-expression, and support ecological reflection on the multiple systems influencing her experiences.

4.2 Ecological Findings Through DEMC

The completed DEMC (see Fig 1) provided a holistic ecological representation of Ayden's emotional experiences by illustrating how distress emerged through interconnected systems rather than existing solely within the child.

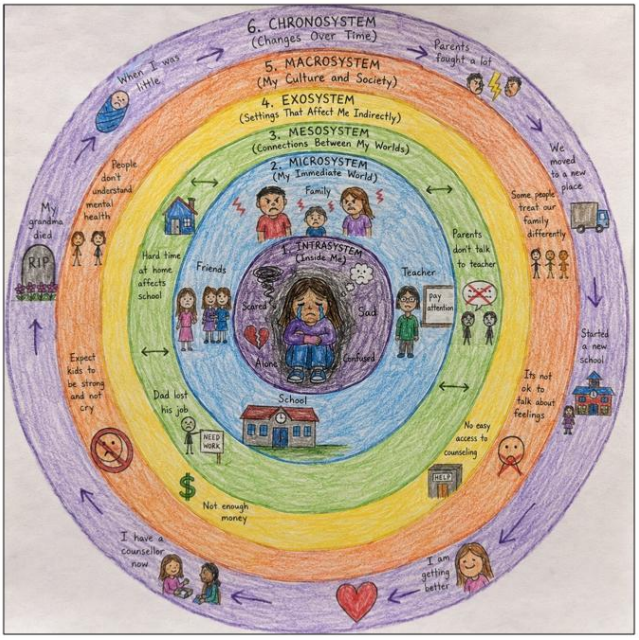

Fig 1: Ayden's DEMC

At the level of MR-1-Intrasystem, Ayden was noted to use darker colors for shading, fragmented lines were drawn, and an imagery of isolation to depict emotions of sadness, fear, anger, and confusion was added. The child drew herself sitting alone beneath a dark cloud and described her internal experience as feeling "messy and noisy." Such symbolic representations are consistent with research suggesting that trauma may disrupt emotional organization and create internal overwhelm that children struggle to communicate verbally (van der Kolk, 2014) [24]. This first central mandala ring, therefore, functioned as a psychologically safe medium through which internal distress could be externalized visually.

Within the MR-2-Microsystem, Ayden represented strained relationships involving family and peers. Family members were depicted standing apart with symbols of conflict. Her school-related drawings reflected the child's sense of loneliness and peer rejection. Ayden explained that her

parents "always shout" and that she "doesn't have friends anymore." Professionals working with children with CHT must take note that immediate relational environments strongly influence children's emotional development, especially when family conflict and social rejection reduce a child's feelings of safety and belonging (Bronfenbrenner & Morris, 2006) [4]. At the same time, the inclusion of a supportive teacher in this second mandala ring suggested the presence of a potential protective factor within the child's immediate environment.

The MR-3-Mesosystem revealed weak connections between home and school. Ayden crossed out arrows linking parents and teachers. She remarked that "school and home are different worlds." This imagery suggested fragmented communication between caregiving systems and inconsistent social-emotional support. The Bronfenbrennerian ecosystemic theory emphasizes that, on one hand, positive coordination between developmental contexts strengthens resilience. On the other hand, weak connections may intensify vulnerability and emotional isolation (Bronfenbrenner, 1979) [3].

Within the MR-4-Exosystem, Ayden illustrated broader family stressors that were indirectly impacting her social-emotional world, including financial strain, parental exhaustion, and long working hours. Although not directly involved in these circumstances, Ayden showed her awareness of environmental instability and caregiver stress.

Research (e.g., Evans *et al*., 2013; Lionetti & Nava, 2025; Lionetti & Pluess, 2024) [9, 16, 17] indicates that children are highly sensitive to indirect environmental pressures, which may significantly affect emotional security and developmental adjustment.

At the level of MR-5-Macrosystem, Ayden included statements, e.g., "boys don't cry," "be strong," and "don't talk about problems," reflecting sociocultural expectations surrounding emotional expression. She described feeling embarrassed when expressing sadness because others encouraged her to "just be brave." Such societal beliefs (especially in the Asian communities) may discourage emotional disclosure and reinforce emotional suppression, thereby limiting opportunities for help-seeking and emotional validation (Ungar, 2021) [23].

The MR-6-Chronosystem visually represented significant life transitions across time. This includes bereavement, parental separation, relocation, and school adjustment. Notably, Ayden gradually incorporated brighter colours and hopeful symbols toward the outer mandala ring, including counseling-related imagery. She remarked, "I still feel sad, but talking helps a little." This progression suggested emerging resilience and emotional adaptation despite continuing distress, reinforcing developmental perspectives that healing and vulnerability may coexist over time (Bronfenbrenner & Morris, 2006) [4].

4.3 Discussion and Implications

The DEMC activity enabled Ayden to communicate her unpleasant past experiences, which had remained difficult to express through conventional verbal counselling alone. By integrating social-emotional expression with ecosystemic reflection, the mandala rings in DEMC revealed how CHT was shaped through cumulative interactions among family relationships, school experiences, indirect environmental stressors, sociocultural expectations, and significant life transitions.

More importantly, DEMC shifted interpretation away from viewing Ayden's social-emotional distress as solely an individual problem. Instead, it situated her experiences within interconnected developmental systems. This ecosystemic viewpoint supports CHT-informed and strengths-based practice by identifying both sources of vulnerability and protective influences within the child's environment (Ungar, 2021) [23]. The presence of emerging emotional insight, increasing willingness to communicate distress, and supportive relationships constituted essential pillars for establishing resilience and promoting recovery (Khan & Sultan, 2023) [14].

For educational therapists, counsellors, psychologists, and educators, DEMC demonstrates its potential as both an expressive therapeutic intervention technique and an ecosystemic assessment tool. The structured six-ring mandala format in DEMC provides developmentally appropriate opportunities for children to externalize emotional experiences while simultaneously informing intervention planning grounded in the child's lived realities.

5. Limitations of DEMC Application

The application of DEMC has its limitations that should be acknowledged in spite of its therapeutic and assessment potential. Firstly, DEMC relies heavily on symbolic and subjective interpretation. This may result in interpretive bias among therapists, counsellors, or educational professionals. Since children with CHT communicate emotions through colors, symbols, drawings, and written expressions, meanings may differ significantly from one individual to next and also across contexts. For example, a child's use of dark colours, fragmented imagery, or symbolic objects does not always or necessarily have universal psychological meaning. Moreover, interpretations may become overly inferential if not triangulated with observation, interviews, developmental history, and collateral information from the child's caregivers or teachers. This limitation is especially relevant in expressive arts approaches where projective content is vulnerable to clinician bias (Malchiodi, 2020; Klorer, 2017) [19, 15]. Although DEMC incorporates reflective conversations to clarify meanings, interpretation remains partly dependent on practitioner competence and contextual sensitivity (Chia, 2026) [5].

Secondly, DEMC may not be equally suitable for all children due to developmental, cognitive, communicative, and neurodiversity-related differences. Children who are younger or those with significant intellectual and developmental disability (IDD), severe ASD, sensory integration disorder, poor fine motor coordination skills (e.g., dyspraxia), or limited symbolic thinking may experience difficulties participating meaningfully in structured mandala-based tasks. Similarly, some children with CHT may resist expressive activities or struggle to engage emotionally because of their emotional shutdown, avoidance, dissociation, or fear of revisiting painful experiences (van der Kolk, 2014) [24]. Hence, DEMC should not be regarded as a universally applicable intervention strategy, but rather as one component within a broader trauma-informed and individualized assessment framework (Sesar *et al*., 2022) [21].

Thirdly, the ecological comprehensiveness of DEMC may also create some practical challenges. The six-ring ecosystemic structure (intrasystem, microsystem, mesosystem, exosystem, macrosystem, and chronosystem)

requires children to reflect on multiple interconnected life domains. This task can be cognitively demanding and time-consuming, particularly for younger children or those with reduced attention, executive functioning difficulties, or trauma-related concentration problems (Perry & Szalavitz, 2017) [20]. In practice, therapists and counselors may need several sessions to adequately explore meanings embedded across ecological systems, reducing feasibility in high-demand clinical or school-based settings.

Fourthly, another limitation concerns the current lack of strong empirical validation for DEMC. It must be stressed here that this paper presents DEMC primarily through a qualitative composite case study and positions it as a promising trauma-informed intervention and ecosystemic assessment approach. It is not yet an evidence-established clinical tool. The author himself acknowledges the need for future research examining the reliability, therapeutic effectiveness, and applicability of DEMC across different age groups, developmental profiles, and cultural contexts (also see Chia, 2026) [5]. Without standardized scoring procedures, psychometric validation, normative benchmarks, or longitudinal outcome studies, DEMC presently functions more as a clinically informed exploratory framework than a standardized evidence-based assessment instrument.

Finally, sociocultural factors may limit interpretation and transferability. Generally, children's emotional symbolism, beliefs about emotional expression, family relationships, and meanings assigned to colors or imagery are often culturally embedded. For instance, emotional suppression norms, such as "boys don't cry" discussed in the paper, may shape how Asian children represent distress differently across cultural communities. Consequently, DEMC interpretations should be culturally responsive and avoid imposing universal assumptions about emotional symbolism or trauma expression (Ungar, 2021) [23].

6. Conclusion

The Directed Ecological Mandala Coloring (DEMC) shows its potential value of integrating the Bronfenbrennerian ecosystemic theory with expressive arts approaches to better understand childhood emotional trauma. Through a structured six-ring mandala format, children with CHT are provided with a developmentally appropriate and psychologically safe medium to communicate emotional experiences that may be difficult to articulate verbally. By organizing symbolic expression across ecological systems, DEMC enables emotional experiences to be understood not only as intrapersonal struggles but also as outcomes shaped by relationships, environmental stressors, sociocultural expectations, and significant life transitions.

The composite case of Ayden illustrates how DEMC may reveal the interconnected influences contributing to emotional distress while simultaneously identifying emerging strengths and resilience. Emotional trauma was represented through symbols of grief, family conflict, peer rejection, instability, and emotional suppression; however, hopeful imagery and increasing willingness to communicate distress suggested adaptive coping and therapeutic growth over time. These findings reinforce ecological perspectives emphasizing that vulnerability and resilience coexist within children's developmental experiences (Bronfenbrenner & Morris, 2006; Ungar, 2021) [4, 23].

For educational therapists, counsellors, psychologists, social workers, and educators, DEMC offers a child-centred and trauma-informed approach for facilitating emotional communication, ecological reflection, and strengths-based assessment. By situating emotional experiences within broader developmental systems, DEMC may support more holistic intervention planning that addresses both emotional needs and contextual influences affecting child well-being. Future research may further examine the reliability, therapeutic effectiveness, and applicability of DEMC across different age groups, developmental profiles, and cultural contexts.

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8. Conflict of interest

The author declares no conflict of interest.

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