

A comparative study on the effects of clay art therapy & coloring of mandalas on positive-negative affective states, hope, and resilience for senior secondary school students — A randomized controlled trial

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Abstract

This research intends to examine and compare the therapeutic efficacy of clay art therapy (CAT) and mandala coloring (COM) in regulating emotion of Hong Kong senior secondary school students. 100 participants were recruited from 4 local schools and were randomized into either the CAT group or the COM group, which each received six 2-hour treatment sessions. Outcome effectiveness was determined using the Positive and Negative Affectivity Schedule (PANAS), Hospital Anxiety and Depression Scale (HADS), Adult Trait Hope Scale (AHS) and Connor-Davidson Resilience Scale (CD-RISC). Repeated measures ANOVA analysis results illustrated a more compelling time×group interaction for CAT than for COM on positive affect, total hope and its subscales (all $p < .05$; partial $\eta^2 = .32-.44$). Significant within-group improvements were found in CAT group for anxiety and depression at T1 (all $p < .05$), and positive affect, agency of hope, total hope and resilience at T2 (all $p < .01$). Significant changes were indicated for COM group in positive affect, agency of hope, total hope, and resilience at T1 (all $p < .01$), but the changes declined at T2, with only positive affect marked significant ($p < .05$). Generally, COM demonstrated an immediate effect for treatment and CAT demonstrated a relatively slow but long-lasting effect.

Keywords: Art therapy, Clay Art Therapy, Mandala Coloring, Emotional Regulation, Resilience, Hope, Positive Affect, Negative Affect

Background

Hong Kong (HK) youths face tremendous stress as a result of extremely heavy academic work, inadequate family support, and different values (Shek & Li, 2016). A local cohort study discovered the rate of probable depression of young people rose from 1.3% in 2011 to 9.1% in 2019 and the rate of potential suicidal ideation rose from 1.1% to 4.6% (HKUMed, 2019). The widespread but hidden emotional problems of youths have alerted society and professionals from multiple disciplines of the need to adopt more effective preventive initiatives to strengthen the resilience of young people in facing the adversities of life and to provide early interventions for those who exhibit signs of emotional distress.

Emotional Regulation: Affective States, Interactions in Physiological-Emotional Components, and Emotion-Cognition Connections

Competence in regulating emotion is a vital component in pubertal psychological development (Compas et al., 2017; Kushner, 2015). Emotional regulation (ER) has three major constituents, the first of which addresses the effects and interactions of the positive and negative affective states with emotional status (Joormann & Stanton, 2016; Nan et al., 2017). The second constituent of the ER construct is the mutual influence of the brain's physiological arousal system and their emotions (Cooney et al., 2007). Long-term depressed or anxious mental inclinations may alter responses in the automatic nervous system (ANS) and limbic system as states of hypo-arousal and hyper-arousal, infusing the possible development of clinical depression and anxiety disorders, respectively (Schore, 2009; Werner-Seidler et al., 2013). The last constituent of ER is the interplay of cognitive and emotional processes by which a shortfall of cognitive functions (e.g., cognitive inelasticity) alters emotion and vice versa (Joormann & Stanton, 2016; Trivedi & Greer, 2014). For instance, Alexithymia, the difficulty in understanding one's own and other's emotions, is related to a cognitive dysfunction in articulating feeling (Karlsson et al., 2008; Nan & Ho, 2017)

According to the recent synthesis of the neurological frameworks of emotions, emotions are generated when interoceptive or somatosensory stimulations are attributed to emotional meanings (Smith & Lane, 2015). Making art involves rich tactile and visual experiences; these sensory experiences and interactions with art materials activate rich sensory responses to texture, temperature, pressure, weight, and shape that can induce bodily sensations and attune sensational processes with emotional processes (Czamanski-Cohen & Weihs, 2016). With high level sensory stimulations, the amygdala will be activated through the somatosensory primary cortex that shares the same neurological pathway as emotional cognitive processing (Lusebrink, 2004; Smith & Lane, 2015).

Positive/Negative Emotions, Resilience, and Hope

Recent research has shown a dampening experience in positive affect can contribute to a depressed mood, which may gradually result in emotional disorders, such

as depression, in the long-term (Joormann & Stanton, 2016; Nan, 2019; Werner-Seidler et al., 2013).

The feeling of positive emotions can also result in the demonstration of resilience (Hu et al., 2015). Psychological resilience refers to the mental elasticity of the individual adopting effective coping strategies in the face of adversity and negative emotions (Tugade & Fredrickson, 2004). Engaging in behaviors that sustain and enhance positive emotions encourages the discovery of creative and innovative behaviors, which eventually turn into personal resources that help overturn the effects of negative emotions, and hence, enhance outcomes of resilience (Tugade & Fredrickson, 2007). Previous research has illustrated evidence that resilience can moderate the presence of depressive symptoms and has suggested that interventions with a focus on enhancing resilience could be a feasible approach in depression treatment (Anyan & Hjemdal, 2016; Wingo et al., 2010).

Hope is described as the cognitive idea that is grounded in the mutually influencing senses of successful agency and pathways (Snyder et al., 1991; Taysi et al., 2015). Hope was found to have a positive correlation to positive affect and a negative correlation to negative affect (Demirli et al., 2015; Satici, 2016). Research has suggested hope as a possible mediator for resilience and subjective psychological wellbeing (Magaletta & Oliver, 1999; Satici, 2016) since hope promotes a positive orientation toward life events, experiences of positive emotions, and motivation (McCullough, 2002).

Art Therapy's Effect on Emotional Regulation

Visual art has been largely neglected by the neurosciences (Liu & Miller, 2008). The neurological processes embedded in the various processes of visual art-making (e.g., sensory, kinesthetic, perceptual, affective, and cognitive) can potentially achieve different therapeutic effects in regulating emotion via strengthening the cortical-subcortical connections of the brain (Czamanski-Cohen & Weihs, 2016).

Existing art therapy research indicates that art-making reduces stress levels, anxiety, and depressive symptoms among children and adolescents that have behavioral-emotional issues (Bell & Robbins, 2007; Irvin, 2014; Sandmire et al., 2012; Slayton, 2012). Art-based group work can encourage one to become more attentive to their emotions and to express them under a mutually supportive and unthreatening environment; furthermore, it promotes self-awareness and enhances self-esteem in children, and likewise builds a sense of self-efficacy and creativeness (Coholic, 2009; Nan et al., 2017).

Mandala Art Coloring and its Emotional Soothing Effects

Mandala art-making is a typical art therapy intervention for art therapists

(Babouchkina & Robbins, 2015; Curry & Kasser, 2005; Tronsky & Kaiser, 2011) as coloring is one of the methods found to be effective in alleviating both acute and chronic anxiety reactions (Noor et al., 2017). Mandalas are circular geometric shapes that are considered to be universal symbols for spiritual growth or a form of visual meditation. Curry and Kasser (2005) stated that the structured coloring of moderately complex, geometric, and repeating mandala patterns helps in entering a highly-focused meditation state that can lead to self-discovery and helps remove negative thoughts and emotions; it was also found to reduce the levels of anxiety in students.

Mandala coloring as an art therapy directive stresses the use of color with its colorful and sophisticated features stimulating the visual senses, and thus has a possible emotion stabilizing effect (Czamanski-Cohen & Weihs, 2016). Research suggests that coloring can reduce negative emotions and anxiety, yet it is not regarded as a beneficial long-term intervention (Drake & Hodge, 2015); it is only suitable for a short-term distraction and release of negative emotions (Dalebroux et al., 2008; Drake & Winner, 2012).

Clay Art Therapy

The use of clay among the many different art therapy media allows for excessive physical movement. The highly malleable tactile quality of clay provokes intensified haptic sensory experiences. Skillful interaction with clay can optimize and attune the arousal responses in regulating the autonomic nervous system; thus, aiding in monitoring emotional expression and emotion-cognitive interactions (Bratton & Ferebee, 1999; Nan & Ho, 2014). Repetitive physical interactions with the clay can induce a sense of inner rhythm while the creation of the clay product acts as a perceptible object that forms a visual and psychological feedback loop. The art product is, at the same time, the stimulation and the outcome of an affective experience in which the artist “concretizes” the expression of abstract feelings and thoughts into the clay product that verbal expression cannot achieve. This process is like an emotional learning process (Bastos et al., 2013; Karlsson, 2012).

Clay work has been found effective for improving depressive signs and symptoms (de Morais et al., 2014; Nan & Ho, 2017), raising the reflective ability to understand complex thoughts and feelings for youths (Or, 2010), and strengthening mental and emotional resilience (Jang & Choi, 2012). Clay art therapy (CAT) as a specific approach of using clay to integrate with the Expressive Therapies Continuum (ETC) in the treatment framework (Hinz, 2009; Lusebrink, 1990) is rare except for the study of 120 adults outpatients with depression in a randomized controlled trial (RCT; (Nan, 2015;2017).

Objectives

This is one of the pioneer studies applying CAT as a treatment for teenagers, investigating therapeutic art of coloring (COM) using mandalas, and comparing the effects of the two interventions. The results examined the empirical status of these two

interventions in the aspects of:

1. Increasing the positive affective experience;
2. Reducing the negative affective experience;
3. Reducing signs of emotional problems;
4. Instilling hope; and
5. Enhancing resilience to adversities in life.

Hypotheses

1. Both the CAT and the COM groups would report improvements in symptoms of affective status, signs of anxiety and depression, hope, and resilience, and at post-intervention.
2. For all positive changes reported, it was hypothesized that the CAT group will demonstrate a more significant and long-lasting effect on the symptoms at post-intervention than the COM group (Nan & Ho, 2015).

Methods

Design

This study adopted a mixed-method approach by randomly assigning 100 local senior secondary students (S.4-5) into either a CAT or COM group, for six weekly 2-hour art therapy sessions, to engage with the specific art form and create artwork. For quantitative measurements, the participants were required to complete a set of questionnaires at three different time-points (T0- baseline; T1- immediately after the intervention; T2- 6 weeks after the intervention) to allow for the comparison of the interventions' effectiveness. The intervention and the data collection process were conducted in the participants' schools.

Ethical approval (ID: FRG1/17-18/039) was acquired from the Research Ethics Committee of Hong Kong Baptist University before the study commenced, and all participants provided informed consent before becoming involved in this study.

Participants

The inclusion and exclusion criteria for recruitment is listed below:

Inclusion criteria:

1. Age within 15–18 years old
2. Ability to understand and communicate in Cantonese

Exclusion criteria:

1. Diagnosed with a mood disorder, an anxiety disorder, or any other psychiatric disorder that required medical treatment, or a professional intervention during the past 12 months
2. Other medical conditions that are likely to limit group participation during the course of the 6-week program

Sampling

Based on a previous RCT study conducted by the Principal Investigator (PI) (Nan & Ho, 2017), a small to medium effect size was anticipated. Given an expected moderate effect size of 0.2, a statistical power of 0.8, and a significance level of 0.05, an analysis with GLIMMPSE, a sample size calculation platform, suggested that a sample size of at least 80 was needed. To allow for an attrition rate of 20% (some might drop out due to busy schedules), a minimum of 96 participants was required. Upon confirmation of the participants' eligibility, they were randomized to either the CAT or COM groups on a 1:1 basis. The allocation sequence was generated by a computer randomization program. The workflow of the group allocation process is illustrated in Figure 1.

Interventions

The clay art therapy group (CAT). The CAT group was composed of six 2-hour weekly sessions that were conducted by art therapists who were competent in clay art-making. One of them has a track record of applying CAT to clinical population groups such as depression outpatients (Nan & Ho, 2017).

The coloring of mandala group (COM). The COM group was also composed of six 2-hour sessions conducted by a group of expressive arts therapy (EXAT) student-therapists from the University of Hong Kong. During the intervention period, the EXAT student-therapists were supervised by the PI of this study.

While in the later stage of the CAT group the participants could freely create clay works, the participants in the COM group were limited coloring mandalas. The freedom to create images on the mandalas in the COM group was under control.

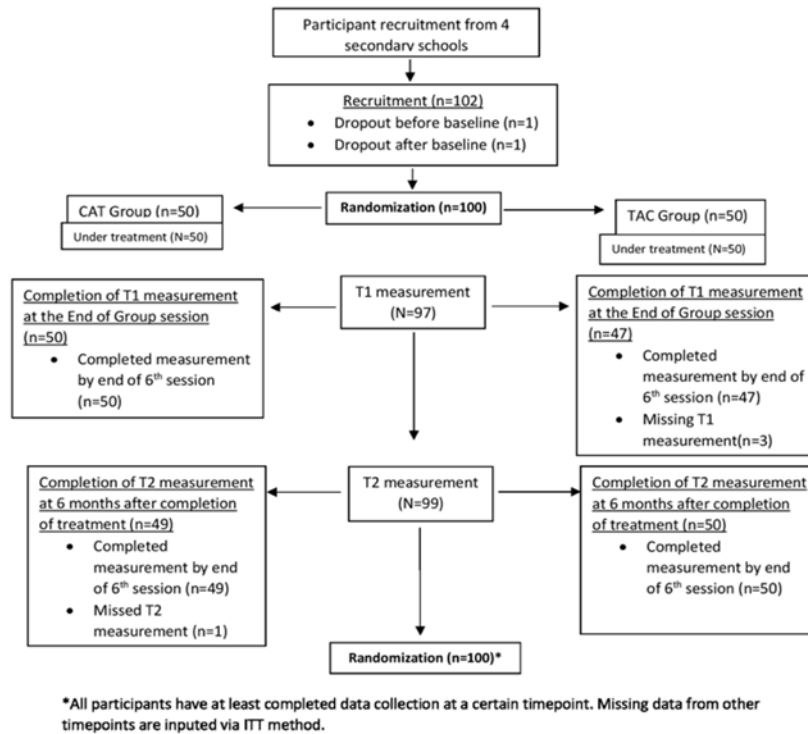


Figure 1. Stages of recruitment and group allocation of participants

Measures

The following measures were adopted to investigate and compare the effectiveness of two art intervention programs:

The Positive and Negative Affectivity Schedule (PANAS) is a 5-point Likert scale that consists of two subscales that measure the positive and negative affect on the participant. A higher score indicates which affective state one subjectively experienced to a greater degree. The scale was validated in the Chinese population including teenagers and young adults (Weidong, Jing, & Schick, 2004).

The 12-item Adult Trait Hope Scale is an 8-point Likert scale used to measure hope (Snyder et al., 1991) and is a reliable scale for measuring Chinese-speaking populations (Ho, et al., 2012). The scale yields a Hope Total score, by summing up all 12 items and two subscales scores of Hope Pathway and Hope Agency by adding up the score of the relevant items of the subscales.

The 14-item Hospital Anxiety and Depression Scale (HADS) measures an individual's current anxiety and depressive symptoms. This 4-point Likert scale consists of the anxiety and depression subscales; the scores of each subscale are calculated by adding up all relevant individual items. A higher score implies a higher severity of distress. The Cantonese/Chinese version that was validated in the Chinese population

(Leung, Ho, Kan, Hung, & Chen, 1993; Zigmond & Snaith, 1983).

The 25-item Connor–Davidson Resilience Scale (CD-RISC), a 5-point Likert scale, was used to measure the resilience of the participants. The scale was commonly used in both adult and youth populations and has been validated in the Chinese populations (Yu et al., 2017).

Data Analysis

All interpretations of data were determined using the SPSS Version 23 (SPSS Inc., Chicago, IL). Intervention efficacy was assessed by both between-groups and within-groups contrasts. Repeated measure ANOVA was used for analyzing the intervention effect by comparing the results of the outcome measures between the CAT group and the COM group across baseline, post-intervention, and 6 weeks after intervention (T0 vs T1 vs T2). The effect size of the between-group comparisons was determined using partial eta square (η^2). The within-groups changes were assessed through a paired t-test for each group. The effect size was determined using Cohen's d. Missing data was treated with the Intention-to-Treat (ITT) method, where the missing data was replaced by the final observed values. It is an accepted research method to treat nonresponse/missing data and has been adopted in previous studies (Nan & Ho, 2017).

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