

THE IMPACT OF MINDFULNESS BASED MANDALA COLORING ON MINDFULNESS, SOCIAL INTERACTION ANXIETY AND LIFE SATISFACTION EMERGING ADOLESCENTS

Nida Rasheed¹, Syeda Hafsa Shahid², Enara Siddiqui³, Aisha Qaism⁴, Anila Sohail⁵, Maria Majeed

¹Lecturer, Sir Syed University of Engineering and Technology; ^{2,3}Jinnah University for Women;
⁴Lecturer, Hamdard University; ⁵Psychologist, Pakistan Institute of Living and Learning; ⁶Student,
Jinnah University for Women

¹nidasasheed01@gmail.com; ²shahidhafsa812@gmail.com; ³enarasiddiqui@gmail.com;
⁴aishaqaasim2013@gmail.com; ⁵anilasohail36@gmail.com; ⁶mareeyahsaad80@gmail.com

Corresponding Author: *

Received: 01 March, 2024 Revised: 30 March, 2024 Accepted: 11 April, 2024 Published: 25 April, 2024

ABSTRACT

The aim of the study was to explore the impact of mindfulness based- mandala coloring on mindfulness, social interaction anxiety and life satisfaction in adolescents. Keeping in view the literature view. It was hypothesized i) there would be significant difference of mandala coloring on mindfulness, life satisfaction and social interaction anxiety in adolescents in pre-posttest. ii) There would be no score difference in control group in pretest and posttest iii) Adolescents who did mandala coloring would significant impact on mindfulness, life satisfaction, and social interaction anxiety than those who didn't do Mandala coloring. The sample size consist of total 50 participants from Bahadurabad foundation school which included 25 students in control group and 25 students in experimental group randomly. The age range of the participants 11-16. The study would receive a demographic form, and the interaction anxiety scale (SIAS), mindfulness Awareness attention scale (MAAS) and satisfaction with life scale (SWLS) as the pre-posttest, utilizing the quasi experimental research. Paired t test and independent sample t test were used to assess the difference between experimental and control group. The finding of the study showed, there was difference in mindfulness and life satisfaction before and after mandala coloring. Whereas, the scores of social anxiety interaction showed no significant difference. For future researches it was recommended that duration and number of mandalas should be increased and demonstration of breathing exercise would be help to strengthen the mood, maintain concentration and provides relaxation and reduces anxiety.

Keyword: Mandala Coloring, Mindfulness, Awareness attention, Social Interaction Anxiety, Life Satisfaction, Adolescents

INTRODUCTION

Anxiety disorders in children are prevalent, affecting 10% of school-aged children. Youth with anxiety disorders perform less well in school and on the academic front than their non-anxious classmates, with greater rates of school rejection, school dropout, and inferior academic success. In this research children who expressed feeling dissatisfied to be at school or as though they are not a part of it (feeling disconnected from their school) reported greater internalizing symptoms, anxieties, social anxiety, and school phobia. According to children and their

parents, this overall pattern was observed in older and younger youth. (Pikulski, P., et al, 2020)

With an estimated 8% global incidence rate, anxiety disorders are the most common psychiatric diagnosis in school-age children globally. The goal of the current study was to determine the prevalence of general anxiety symptoms, gender differences, and various anxiety subtypes. With class VIII children, high levels of anxiousness were present 11% of the time. According to the children, female gender and an authoritarian parenting style were substantially

connected with high anxiety among students. (Bakhla, A. K., et al, 2013).

Social interaction anxiety

According to Stephanos P. Vassilopoulos and Robin Banerjee (2010). Several studies have shown that social anxiety is linked to less good encounters and a resulting low positive affect. In order to better understand the relationship between social anxiety and low positive affect (PA), this paper address the effects of distorted interpretations of pleasant social situations. The current findings demonstrate how socially anxious people can interpret social threat in any interpersonal situation where they might experience either favorable or unfavorable social cues or feedback.

There are many maladaptive effects that might result from social anxiety and fear of negative evaluation (FNE). This research study examined how a teen's habit of intense emotional interactions surrounding their issues may be a sign that they lack self-assurance and need constant reinforcement, making them more prone to FNE and social anxiety. Findings from structural equation modelling indicate that while the emotional intensity of close peer connections predicts future implicit FNE, lack of perceived social acceptability predicts future explicit social anxiety and FNE. (Teachman, B. A., & Allen, J. P., 2007).

Factor of anxiety

Anxiety is a complex mental health condition that can be caused by a variety of factors. Some of the most common factors that contribute to anxiety include:

Genetics. Anxiety can be passed down through family members, making some people more prone to the condition than others.

Environmental factors. Stressful events or traumatic experiences, such as abuse or violence, can trigger anxiety.

Neurotransmitter imbalances. Chemical imbalances in the brain can lead to anxiety. For example, low levels of serotonin have been linked to anxiety.

Personality traits. People who are naturally more anxious or prone to worry may be more likely to develop anxiety disorders.

Medical conditions. Certain medical conditions, such as hyperthyroidism, can cause anxiety symptoms.

Substance abuse. Using drugs or alcohol can increase the risk of developing anxiety or exacerbate existing anxiety symptoms.

Medication. Some prescription medications can cause anxiety as a side effect.

It is important to note that anxiety is a complex condition and is often caused by a combination of these factors. Seeking professional help from a mental health provider is the best way to address anxiety and develop a personalized treatment plan.

Gross, C., Hen, R (2004) Anxiety disorders as well as normal anxiety characteristics are influenced by both genetic and environmental variables. Additionally, it is becoming more and more obvious that these variables combine to cause particular anxiety-related behaviors. For instance, when coupled with a stressful situation during development, mutations in the gene encoding for the serotonin transporter cause increased anxiety in adults in both humans and monkeys. Another recent example comes from twin studies, which indicate that having a small hippocampus may be a risk factor for developing post-traumatic stress disorder. Examples like these show how particular mutations that cause abnormal brain development may make people more susceptible to environmental insults, which may then result in particular anxiety conditions.

Coloring mandala to improve mental health and anxiety level;

Mandala coloring can be a down to earth mediation in schools due to the low cost and few required assets. Free coloring mandalas can be found online (see "Our Mandalas" in references), and understudies can utilize an assortment of utensils to color them. The results of this think about appear that coloring mandalas is a successful procedure to decrease test anxiety when compared to a free coloring action. In any case, mindfulness levels were not significantly expanded by the mandala coloring. Understudies who discover this to be a helpful strategy may be able to utilize it amid a free time in their day some time recently an anxiety-inducing test.

Curry & Kasser (2011) concluded a study on color therapy to investigate the structured coloring of a relatively complicated geometric pattern can generate a meditative state that is beneficial to

anxious people. The sample included 84 anxiety-induced college students, who were randomly allocated to paint a mandala, a plaid shape, or a blank piece of paper. This analysis indicated that anxiety levels decreased roughly equal for the mandala and plaid coloring groups, and that the two groups reported higher anxiety alleviation than the unstructured coloring group. (Curry, 2011). Hence, Lorentzsen (2019) reveals that the mandala art as a response art has unique characteristics that may be effective in several therapeutic situations. The usage of this technique provides more insight into unconscious mental processes and aid in cognitive organization in order to improve understanding of crucial relationships.

Estelle Campenni (2020) conducted study examined effects of mandala structured and unstructured) and instruction (directed expression and free expression) on state anxiety, mood, and state mindfulness. creating or coloring mandalas can be a wonderful way to reduce negative mood and promote a sense of well-being. This study suggests that coloring and creating mandalas yield different implications for addressing particular therapeutic goals.

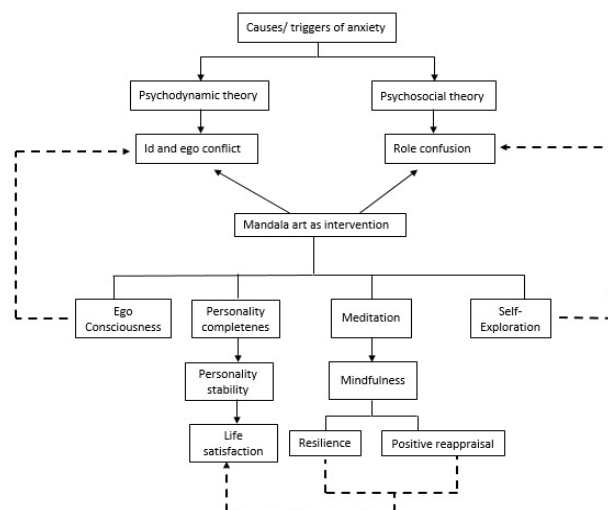
Judy Eaton & Christine Tieber (2017) conducted the research to determine the effectiveness of mindfulness-based structured versus unstructured coloring on test anxiety. The result revealed an overall decrease in anxiety for both pre-posttest groups. However, a significant gender by group interaction demonstrated that while both genders experienced anxiety reduction in the mandala condition, males reported a greater anxiety reduction in the free coloring condition while females only

benefited from the mandala condition. Possible explanations for these gender effects are explored and future directions discussed. Research suggests that coloring or creating mandalas can have a calming effect on the mind and body.

The paper focused, the creators have chosen to center on mandala coloring as a restorative instrument and presented the straightforward five-step strategy to actualize it.also -used as sacred meditation tools and symbols of consecrated prayer, especially Asian culture. They are in the long run joined into craftsmanship as treatment and counseling as portion of the collection of intercession apparatuses. Concurring to Jungian concept of a mandala, it alludes to the mental expression of the totality of the self, and subsequently, mandala craftsmanship treatment in whichever of its three shapes can offer assistance to set up the positive wholesomeness of self. (Xie, Guo-Hui & Wang, 2021)

Zeiger (1976) became convinced that art therapy, The sensitive application of artistic activities can prompt the recollection of forgotten or suppressed information, thereby promoting the life review process's personality reorganization"

- Mandala coloring will influence mindfulness among adolescents in experimental group
- Mandala coloring will have effect on life satisfaction among adolescents in experimental group.
- Mandala coloring will influence social interaction anxiety among adolescents in experimental group



Anxiety can be resulting from a significant wide variety of motives; above cited causes are associated with this research topic. Two noted theories present two distinctive views related to causes of tension. First, psychodynamic principle, given with the aid of Freud explains that anxiety is the end result of struggle between identification and ego. According

of Erik Erikson, consistent with him tension is the result of position confusion in adolescents. The mandala art is beneficial here as it additionally gives the man or woman possibility for self-exploration which lets in the man or woman to pick out their function and discover themselves to avoid confusion. Apart from tension mandala art also offers with life pleasure and mindfulness. According to pinnacle down principle, personality trends play a first-rate role in lifestyles delight. Therefore, mandala artwork is used as intervention because it presents character completeness which results in personality stability ensuing in enhancing life satisfaction. Mandala artwork also calls for interest and attention which acts as meditation, and meditation is a outstanding thing in the process of mindfulness which ends up in resilience and nice reappraisal of poor events consistent with mindfulness to that means theory. Both of these resulted elements of mindfulness also can play a function in existence delight.

Participants

This study had a sample of 50 adolescents with the age group 10-16 girls and boys both. The participants were the students of Bahadurabad foundation school and divided into two groups of twenty five in each. Group one comprises 25 participants considered as a control group and the other was an experimental group.

Inclusion and Exclusion Criteria:

Following was the exclusion and inclusion criteria for the participation

- Adolescents should be aged 10-16 years,
- Must be enrolled in school.

Researchers did not included participants with suicidal ideation, color blindness and with physical or mental limitations

Material

Demographic Information. For this research purpose we used demographic information of students which include name of students, their age, their gender, no. of siblings, name of school, their socio-economic status and their family structure details.

Measures

to this concept anxiety is due to suppressed urges present in unconscious. By making use of mandala artwork as intervention this cause of anxiety may be treated as mandala artwork permits ego recognition as it defines the middle of persona. Second, psychodynamic idea changed into offered by means

Social Interaction anxiety scale (SIAS). The social interaction anxiety scale is developed to measure level of stress and anxiety in individuals during any social gathering which involve interaction with different individuals. This scale is constructed to measure social anxiety and developed by mattick and clarke. This scale is widely used by clinical psychologists and researchers as a diagnostic tool. In the case of reliability and validity this scale has a high level of consistency and test reliability but this scale also has some limitations as this is self-report inventory that can be falsified by individuals to be shown as desirable. This scale has 20 items which are rated on 0-4 points of likert scale. 0 (Not at all characteristic or true of me), 1 (Slightly characteristic or true of me), 2 (Moderately characteristic or true of me), 3 (Very characteristic or true of me), 4 (Extremely characteristic or true of me). To measure the results summed up the points of chosen answers.

Satisfaction with life scale (SWLS). The satisfaction with life scale is also a self-report inventory which is developed by Ed Diener and colleagues (Diener et al, 1985; Pavot & Diener, 1993). to measure an individual's judgment of satisfaction with his life. This is a simple short scale converted to 5 item likert scale which are rated on 1-7. 1 (Strongly disagree), 2 (disagree), 3 (slightly disagree), 4 (neither agree nor disagree), 5 (slightly agree), 6 (agree), 7 (Strongly agree). This scale is designed to measure the judgment of satisfaction of an individual with his life and this scale has proven validity and reliability to measure what it tends to be measured. Scoring range of this scale consists of 5-35. Score level represents the satisfaction level that is divided into six categories.

Mindful Awareness Attention Scale (MAAS). Mindful attention awareness scale is self-report inventory which is used to check an individual's level of mindfulness in his daily life. Mindfulness is important in day to day life decisions and it can affect an individual's daily life. This scale helps us to keep check on our mindfulness. This scale is developed by

Kirk Warren Brown Ph.D. Who is a professor of social psychology and Richard Ryan Ph.D. Who is a professor of psychology. This scale not only measures the level of mindfulness but also the level of attention and awareness in day to day life. This scale has 15 items which are rated on 1-6 on likert scale, 1 (Almost Always), 2 (Very Frequently), 3 (Somewhat Frequently), 4 (Somewhat Infrequently), 5 (Very Infrequently), and 6 (Almost Never). For calculating results we have to total their rating and divide it by 15.

Procedure and intervention

This was a four hours long experimental study converted to two sessions of tests that were pre and posttests. It took 7 settings for data collection, one setting per week. The study enrolled 50 students of Bahadurabad foundation school from age range 10-16 years. The goal of this study was to measure the efficiency of mandala coloring on mindfulness, life satisfaction & social-interaction anxiety among emerging adolescents. For pre and posttests questionnaire researchers used social interaction anxiety scale (SIAS) to check the social interaction anxiety in adolescents, mindful awareness attention scale (MAAS) to measure the mindfulness level of

adolescents and Satisfaction with life Scale (SWLS) to check Satisfaction of adolescents with life. This was an intervention based study for which researchers tried to engage students in healing mandala coloring to see the effects, if mandalas are really helpful in regulating emotions and with social anxiety. We selected five different healing mandalas as mandala therapy for the intervention group. One mandala drawing every week for intervention group students. First week we gave pre-test to both groups, control and intervention. Then from the second to seventh week we gave mandalas to intervention group students for coloring as an intervention and then after that on eight and the last week we took posttest of both groups to measure the effects as if it's effective on mindfulness, social interaction anxiety and life satisfaction of adolescents.

Result

This chapter includes the statistical analysis of the experimental group and control group and determine the variable difference in control and experimental group and evaluate the effectiveness of mandala coloring on social interaction anxiety and improved mindfulness & life satisfaction in emerging adolescents.

Analysis of Distribution of Data

Table 5.1.1. frequency & percentage of the demographic of participants (N=50)

Variables	F	%
Age 11-16	27	78.1
Gender		
Male	18	56.3
Female	7	21.9
Grade		
6th	5	15.6
7 th	10	31.3
8 th	3	9.4
9 th	3	9.4
10 th	4	12.5
No. of siblings		
0	1	3.1
1	2	6.3
2	4	12.5
3	10	31.3

4	1	3.1
5	4	3.1
6	1	3.1
7	1	3.1
8	1	3.1
Birth order		
Eldest	4	12.5
youngest	9	28.1
Only child	1	3.3
Middle child	6	18.8
Others	5	15.6
Socio economic status		
Middle socio-economic status	22	68.8
Upper middle socio economics status	3	9.4
Family structure		
Joint family	16	50
Nuclear family	9	28.1

Table 5.1 shows descriptive statistics, frequency and percentage of age-related characteristics of participants. A total of 25 adolescent were including in experimental group and 25 adolescents were including in control group from 11 to 16. Table 5.1

is also showing the descriptive statistics, frequency and percentage of grade, no. of siblings, gender and birth order. It also shows the socio-economic status and family structure.

Table 5.2. Paired Sample t test showing the comparison of social anxiety interaction among adolescents between pretest and posttest scores of both experimental groups (N=25).

Pre-test		Post-test		t	p	Df	95% CI	
M	SD	M	SD				LL	UL
34.42	14.26	31.37	14.13	1.10	0.28	25	-2.743	8.84

Note: M=Mean, SD= Standard Deviation, LL=Lower Limit, UL= Upper Limit, t= T Statistics, df= Degree of Freedom, p= Significant Value
 Table 5.3 shows descriptive statistics and paired sample t test statistics of social anxiety interaction before and after interventions. On average, perceived social anxiety interaction after intervention was

(M=31.37, S. D=14.13) than before intervention (M=34.42, SD=14.26). This indicates that there is no difference after interventions. Findings of the table supports mandala coloring do not indicate much difference in social interaction anxiety among adolescent.

Table 5.3. Paired Sample t test showing the comparison of life satisfaction among adolescents between pretest and posttest scores of both experimental groups (N=25)

Pre-test		Post-test		t	p	Df	95% CI	
M	SD	M	SD				LL	UL
23.0	4.03	24.5	4.15	-1.94	0.05	25	-3.06	0.12

Note: M=Mean, SD= Standard Deviation, LL=Lower Limit, UL= Upper Limit, t= T Statistics, df= Degree of Freedom, p= Significant Value
 Table 5.4 shows descriptive statistics and paired t test statistics of perceived life satisfaction before and after interventions. On average, perceived life satisfaction after intervention (M=24.5, SD=4.15)

than before intervention (M=23.0, SD=4.03). This indicates that the perceived life satisfaction among adolescent improved after interventions. Findings of this table supports second hypothesis which focused on difference between pre and posttest of life satisfaction which indicates the minor differences after intervention.

Table 5.4. Paired Sample t test showing the comparison of mindfulness among adolescents between pretest and posttest scores of both experimental groups (N=)

Pre-test		Post-test		t	p	Df	95% CI	
M	SD	M	SD				LL	UL
3.86	0.69	3.76	1.00	0.45	0.65	25	-0.37	0.58

Note: M=Mean, SD= Standard Deviation, LL=Lower Limit, UL= Upper Limit, t= T Statistics, df= Degree of Freedom, p= Significant Value
 Table 5.5. Shows descriptive statistics and paired sample t test statistics of mindfulness among adolescent before and after interventions. On

average, perceived mindfulness after intervention was (M=3.76, S. D=1.00) than before intervention (M=3.86, SD=0.69). This indicates that there is no difference after interventions. Findings of the table supports mandala coloring do not indicate much difference in mindfulness among adolescent.

Table 5.5. Paired Sample t test showing the comparison of mindfulness among adolescents between pretest and posttest scores of control groups (N=25)

Pre-test		Post-test		t	p	Df	95% CI	
M	SD	M	SD				LL	UL
4.18	0.66	4.46	0.83	-1.55	0.13		-0.66	0.09

Note: M=Mean, SD= Standard Deviation, LL=Lower Limit, UL= Upper Limit, t= T Statistics, df= Degree of Freedom, p= Significant Value.

Table 5.6 shows descriptive statistics and paired sample t test statistics of mindfulness among adolescent before and after interventions. On average, perceived mindfulness after intervention

was (M=4.46, S. D=0.83) than before intervention (M=4.18, SD=0.66). This indicates that there is no difference after interventions. Findings of this table supports forth hypothesis which focused on not difference between pre and posttest of mindfulness indicate that there is not much difference in before and after interventions.

Table 5.6. Paired Sample t test showing the comparison of social interaction anxiety among adolescents between pretest and posttest scores of control groups (N=25)

Pre-test		Post-test		t	p	Df	95% CI	
M	SD	M	SD				LL	UL
32.0	14.6	27.0	10.9	1.52	0.14	25	-1.76	11.76

Note: M=Mean, SD= Standard Deviation, LL=Lower Limit, UL= Upper Limit, t= T Statistics, df= Degree of Freedom, p= Significant Value

Table 5.7 shows descriptive statistics and paired sample t test statistics of social interaction among adolescent before and after interventions. On average, perceived social interaction after

intervention was (M=27.0, S. D=10.9) than before intervention (M=32.0, SD=14.6). This indicates that there is no difference after interventions. Findings of this table supports forth hypothesis which focused on not difference between pre and posttest of social interaction indicate that there is not much difference in before and after interventions.

Table 5.7. Paired Sample t test showing the comparison of life satisfaction among adolescents between pretest and posttest scores of control groups (N=25)

Pre-test		Post-test		t	p	Df	95% CI	
M	SD	M	SD				LL	UL
24.8	5.55	25.6	5.17	-0.676	0.50	25	-3.24	1.64

Note: M=Mean, SD= Standard Deviation, LL=Lower Limit, UL= Upper Limit, t= T Statistics, df= Degree of Freedom, p= Significant Value

Table 5.8 shows descriptive statistics and paired sample t test statistics of life satisfaction among adolescent before and after interventions. On average, perceived life satisfaction after intervention

was (M=25.6, S. D=5.17) than before intervention (M=24.8, SD=5.55). This indicates that there is no difference after interventions. Findings of this table supports forth hypothesis which focused on not difference between pre and posttest of life satisfaction indicate that there is not much difference in before and after interventions.

Table 5.8. Independent Sample T test showing the comparison of mindfulness among adolescent between experimental and control groups. (N=50)

Variables	F	M	t	df	p	LL	UL	SD
Experimental group	1.29	4.46	-3.05	25	0.004	-1.38	-0.28	0.83
Control group		3.62	-3.05	25	0.004	-1.38	-0.28	1.07

Note: M=Mean, LL=Lower Limit, UL= Upper Limit, t= T Statistics, df= Degree of Freedom, p= Significant Value F=Frequency

Table 5.8 shows that there is minor difference of mindfulness among adolescent between experimental and control group.

Table 5.9. Independent Sample T test showing the comparison of life satisfaction among adolescent between experimental and control groups. (N=50)



Variables	F	M	t	df	p	LL	UL	SD
Control group	0	23	-1.6	25	0.11	-5.8	0.64	6.06
Experimental group		25.6	-1.6	25	0.11	-5.8	0.64	6.06

Table 5.9 shows that there is not much difference of life satisfaction among adolescent between experimental and control group.

Table 06. Independent Sample T test showing the comparison of social interaction anxiety among adolescent between experimental and control groups. (N=50)

variables	F	M	SD	t	df	p	LL
Control group	2.62	31.28	15.21	1.14	25	0.25	-3.24
Experimental group		27	10.9	1.14	25	0.25	-3.24

Table 0.6 shows that there is not much difference of social interaction anxiety among adolescent between experimental and control group.

Discussions

The purpose of the study did not conclusively support the hypothesis, noteworthy effect of mandala coloring on life satisfaction and mindfulness were reported among adolescents. The primary objective of the research was to determine the effect of the mandala on the social interactive anxiety. The result does not reveal significant impact of mandala coloring. Previous research, include a study with the college students who participants in a 30- minutes coloring session and experienced reduction in anxiety (Ashlock, et al., 2018). Study engaged a weeklong 10 minutes' intervention with university students revealed significant explored ways to improve mood and found that engaging in art can have a calming effect after just 10 minutes of coloring per day on individuals. Our Study sought to extend the finding to the adolescent population. Despite does not achieve statistical significance, the positive effects on the life satisfaction and mindfulness suggested potential value of incorporating mandala coloring into day-to day school psychological services. The findings can serve as a further exploration and integration of creative intervention. Such as mandala coloring adoption, within school based mental health practices. The incorporation of regular mindfulness sessions and group session within school counseling services emerges as a promise strategy, particular for the students grappling with emotional deregulations and other challenges related to mindfulness and life satisfaction. Despite of this, Collaboration with teachers to embed brief mindfulness activities within class room setting hold immense potential. The integration of the activities not only aligns with educational objectives but also establishes a school-wide initiative to promote mindfulness and notions to emphasis that the mindfulness-based interventions can contribute significantly impact to the development of adolescent. Establish collaborative framework to establish positive impact of mindfulness in school and home setting among adolescent is essential step. Reinforcing the benefits of mindfulness in the holistic development of the students. Establishing student-led mindfulness clubs and mindfulness society to provides an avenue for peer support and the sharing of mindfulness techniques. The clubs contribute a culture of mindfulness within the student body, fostering a sense of belonging and emotional support.

Alignment with Existing Theories and Research

The current study's exploration of the impact of the mindfulness on social anxiety, mindfulness and life satisfaction among adolescent aligns with the several established theories and existing research in the field of psychology.

Social anxiety and mindfulness

The finding statistical finding of the research doesn't resonate with Anxiety Maintenance theory (Clark & Wells,1995) reveals a contradiction in the expected impact of mindfulness based mandala coloring on social interaction anxiety among the adolescent. Despite of the theory suggesting that cognitive process perpetuate anxiety, our finding doesn't demonstrate a significant reduction in the social interaction anxiety. The discrepancy highlights the dynamic nature of the anxiety and highlight the need of the special intervention tailored to the different school setting. Simultaneously, exiting research suggests that the practice of mandala has a calm effects on anxiety, promoting mindfulness over time. Research indicates that engaging in the art such as creating mandala has a therapeutic effect (Favara, Sacco, Smime, Schilirio, & Di Cataldo, 2001). Furthermore, existing research comparing mindfulness-based structure and unstructured coloring for the test anxiety found an overall reduction in anxiety for both groups. Consistent the coloring and mandala creation are recognized for their calming effect on the mind and body (Eaton & Tieber, 2017). Adult coloring books, particularly those with mandalas and repetitive designs, can be effective in reducing stress and increasing mindfulness. It has even been suggested that the meditative practice of coloring in mandalas may tap into a spiritual connection for some individuals. Overall, incorporating creativity through art can have a positive impact on mental health and promote mindfulness in adults. (정은주,2012).

Mindfulness and life satisfaction

The research finding align with the principle of positive psychology, a framework that emphasis that the subjective well-being and life satisfaction. The observed improvement in mindfulness and life satisfaction are correlated and guided by the Broaden-and Build theory posit positive emotions serve to broaden individual's thinking and behavior

and contributes creativity, promote emotional resilience and fostering mental well-being. Brown & Ryan (2003) supports the association between the mindfulness and life satisfaction. The study highlights the align finding that the engaging in the mindfulness practice can contribute to an overall sense of life satisfaction. Bu fostering mindfulness, the intervention has the potential positive impact on the overall life experience and satisfaction

Cognitive-behavioral framework

In the line Beck (1976) cognitive behavioral framework focus on the impact of mandala coloring as the intervention aligns with the cognitive-behavioral framework that reflects the interplay between cognitive processes, behaviors and emotional state. As mandala coloring operating as a form of expressive art therapy and engagement of the behavioral activation techniques encouraging individuals to involve in the non-judgmental and present focused activity, where the modification of cognitive processes is targeted to alleviate emotional distress and has potential positively influence emotional well-being.

Adolescent Development Theories

The application of mindfulness based intervention in the adolescent population is align with the Erickson psychosocial stage's adolescence period that is crucial for the identity formulation and emotional regulation. Coloring based mindfulness activity may provide valuable for navigating the challenges of the developmental stage, fostering self-awareness and emotional well-being

Limitations

The present study has few shortcomings that should be addressed by future studies. Firstly, social economic diversity, as well as religion, were limited. Because this study focuses on adolescents, it cannot be expected that other populations will have the same effect.

To achieve the desired result, one should have a diverse sample with a variety of ages, ethnicity, and religious diversity. The research was influenced by the fact that the students were having their preparation classes in school and those were being interrupted.

Implications

This study has both theoretical and practical implications. The findings of the research provide practical implications for those who work with adolescents in education, counseling, and mental health. Adolescents can benefit from using mandala coloring as a quick, low-cost, and non-intrusive technique to encourage mindfulness and elevate mood. It is simple to incorporate into educational activities, extracurricular activities, or counseling sessions. In the light of findings of this study, it is recommended that educators and mental health providers employ mandala coloring as a supplemental intervention for lowering stress and enhancing well-being in adolescents. In order to increase the effectiveness of other mindfulness-based interventions like breathing exercises or meditation, mandala coloring can be used in conjunction with them. Additionally, mandala coloring can assist teenagers in verbally expressing their emotions in a non-verbal manner, which can be especially beneficial for those who face difficulty in verbally expressing themselves.

Recommendations

Future research should work to explore to know the nature of mandalas. More studies can be conducted to see if the mandala pattern can decrease stress and anxiety and improve mindfulness and mood. Mandala art is an abstract art that can increase thoughtfulness, focus and lead to more positive psychological benefits in an individual when the one is coloring. More studies can be conducted to see which design helps more.

Further studies can be conducted to discover the long-term benefits of coloring mandalas and how long the effect of mandala stay is, we can also see how mandala promotes well-being resilience, and happiness and can also show a person's creative expressions of their emotions.

Statement of Conflict of interest and Consent Statement

Research conducted at Bahadurabad Foundation School adheres to ethical principles and guidelines.

The researchers involved in this study declare that there are no conflicts of interest that could influence the impartiality or integrity of the research findings presented in this manuscript.

Additionally, this study involving human participants has obtained ethical approval from the appropriate

institutional review board at Bahadurabad Foundation School. The research conforms to recognized ethical standards, ensuring the protection of participants' rights, privacy, and confidentiality.

All individuals participating in this study provided voluntary and informed consent before their involvement. Their rights, welfare, and confidentiality have been safeguarded in accordance with the guidelines set forth by Bahadurabad Foundation School's ethics committee."

It's crucial to review and follow the specific guidelines, templates, or requirements provided by Bahadurabad Foundation School's ethics committee or institutional review board when crafting the Conflict of Interest and Informed Consent Statement for research conducted within that institution. This helps ensure that the statement aligns accurately with the school's policies and ethical standards.

Reference

- Ashlock, L. E., Miller-Perrin, C., & Krumrei-Mancuso, E. (2018). The Effectiveness of Structured Coloring Activities for Anxiety Reduction. *Art Therapy, 35*(4), 195–201. <https://doi.org/10.1080/07421656.2018.1540823>
- Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice, 10*(2), 125–143
- Bakhla, A. K., Sinha, P., Sharan, R., Binay, Y., Verma, V., & Chaudhury, S. (2013). Anxiety in school students: Role of parenting and gender. *Industrial psychiatry journal, 22*(2), 131–137.
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*(4), 822–848. doi: 10.1037/0022-3514.84.4.822 <https://doi.org/10.4103/0972-6748.132927>
- Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment, and treatment* (pp. 69-93). Guilford Press.
- Curry, N. A., & Kasser, T. (2011). Can Coloring Mandalas Reduce Anxiety? <http://Dx.Doi.Org/10.1080/07421656.2005.10129441>, 22(2), 81–85. <https://doi.org/10.1080/07421656.2005.10129441>
- Diener, E. (1984). Subjective well-being. *Psychol. Bull.* 95, 542–575.
- doi: 10.1037/0033-2909.95.3.542
- Eaton, J., & Tieber, C. (2017). The Effects of Coloring on Anxiety, Mood, and Perseverance. *Art Therapy, 34*(1), 42–46. <https://doi.org/10.1080/07421656.2016.1277113>
- Estelle Campenni & Ashley Hartman (2020) The Effects of Completing Mandalas on Mood, Anxiety, and State Mindfulness, *Art Therapy, 37*:1, 25-33, DOI: 10.1080/07421656.2019.1669980
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*(3), 218–226.
- Gross, C., Hen, R. Genetic and environmental factors interact to influence anxiety. *neurotox res* 6, 493–501 (2004). <https://doi.org/10.1007/BF03033286>
- Lorentzsen, K. (2019). The Mandala as Response Art: A Method for Centering, Containing, and Exploring. *Expressive Therapies Capstone Theses. https://digitalcommons.lesley.edu/expressive_theses/130*
- Pikulski, P., Pella, J., Casline, E., Hale, A., Drake, K., & Ginsburg, G. (2020). School connectedness and child anxiety. *Journal of Psychologists and Counsellors in Schools, 30*(1), 13-24. doi:10.1017/jgc.2020.3
- Stephanos P. Vassilopoulos and Robin Banerjee (2010). Social Interaction Anxiety and the Discounting of Positive Interpersonal Events. *Behavioural and Cognitive Psychotherapy, 38*, pp 597609 Doi: 10.1017/S1352465810000433
- Teachman, B. A., & Allen, J. P. (2007). Development of social anxiety: social interaction predictors of implicit and explicit fear of negative evaluation. *Journal of abnormal child psychology, 35*(1), 63–78. <https://doi.org/10.1007/s10802-006-9084-1>
- Xie, Guo-Hui & Wang, Qi. (2021). Mandala Coloring as a Therapeutic Tool in Treating Stress-Anxiety-Depression Syndrome. *Asian Journal of Interdisciplinary Research. 4.* 30-36. 10.54392/ajir2144.
- Zeiger, B. L. Life review in art therapy with the aged. *American Journal of Art Therapy, 1976, 15,* 47-50.
- 정은주. (2012). Mandala Associative Drawing for Reducing Depression & Anxiety of the Middle Aged Woman. *Korean Journal of Art Therapy, 19*(6), 1455–1480. <https://doi.org/10.35594/kata.2012.19.6.008>