

## MANDALA-COLORING AS A THERAPEUTIC INTERVENTION FOR ANXIETY REDUCTION IN UNIVERSITY STUDENTS

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### ABSTRACT

**Objective:** To study the effectiveness of mandala-coloring as a therapeutic intervention for reducing anxiety in university students.

**Study Design:** Quasi experimental study.

**Place and Duration of Study:** International Islamic University Islamabad, from Feb to Jun 2016.

**Material and Methods:** A sample of 100 university students of 13-18 years of education was taken (men=50, women=50) with the age range of 18 to 34 years. Convenience sampling technique was used. A pretest-posttest design was adopted in which State-Trait Anxiety Inventory was administered to measure the levels of State Anxiety and Trait Anxiety before and after coloring a pre-drawn mandala.

**Results:** Results were analyzed using t-test. They indicated that there was a significant difference in the levels of State and Trait Anxieties in the pretest and posttest measures in both men and women.

**Conclusion:** Using mandala-coloring as a therapeutic intervention can reduce State Anxiety and Trait Anxiety in university students.

**Keywords:** Anxiety, Art therapy students.

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### INTRODUCTION

University students have high levels of anxiety due to reasons such as academic stress, family problems, social disturbances, etc. This anxiety can have a negative impact on their lives and well-being. It has become necessary to decrease the anxiety levels among students to help them improve their academic performance.

The current study focuses on two types of anxiety: state anxiety and trait anxiety<sup>1</sup>. State anxiety is an individual's immediate emotional state that can be characterized by apprehension, fear and tension accompanied by physical arousal. Trait anxiety is a feature of an individual's personality which is a predisposition to perceive certain environmental stimuli as threatening. Individuals with trait anxiety are more likely to perceive situations as physiologically and psychologically threatening as compared to individuals with state anxiety<sup>2,3</sup>.

Color therapy is one of the methods to reduce anxiety. It can be defined as "the use of color to affect the body and its energy system in a way as to bring it back into balance"<sup>4-6</sup>. It is a combination of meditation and art therapy. Mandalas are circular geometric shapes considered to be universal symbols for spiritual growth or a form of visual meditation. Coloring the moderately complex, symmetrical and repeating patterns of the mandala helps in entering a meditation-like state that can lead to self-discovery and helps remove negative thoughts and emotions<sup>7</sup>. A major study conducted in the United States showed that coloring mandalas can be used to reduce anxiety in both children as well as adults<sup>8</sup>. Another study also reported the same results that anxiety can be reduced by coloring mandalas<sup>9</sup>.

The current research aimed to investigate mandalas as a therapeutic intervention for anxiety reduction in university students. A large literature gap with specific reference to Pakistan is present as mandalas have not been studied to a great extent. The present study attempts to study this therapeutic intervention in our own social

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milien of university. The present study will help to promote coloring mandalas as a therapeutic intervention. It will also spread awareness about state and trait anxiety and show how color therapy can also be used to overcome them. The therapeutic intervention being studied is not only limited to students and adults, but can be used for the illiterate and disabled and for people of all age groups. It can be used as a self-help activity or as a tool in various settings such as academic, clinical, work, etc. to help overcome anxiety and improve performance.

### MATERIAL AND METHODS

This Quasi Experimental study was conducted at International Islamic University Islamabad, from Feb to Jun 2016 after getting approval from Ethical Review Committee of the university. Written informed consent was also obtained from all the participants. Sample size was calculated using WHO sample size

participation was purely voluntary and they had the right to withdraw their participation from the research at any moment without any penalties.

Data collection tool was the 'State-Trait Anxiety Inventory for Adults' (STAI-AD) developed by Spielberger, Gorsuch, Lushene, Vagg, and Jacobs in 1983, to measure state trait anxiety<sup>10,11</sup>. A pre-drawn mandala was used in this study as intervention. It was retrieved from Printable Mandala & Abstract Colouring Pages for Meditation & Stress Relief<sup>12</sup>. After briefing the participants were given the State-Trait Anxiety Questionnaire (Pre-test) and instructions to fill it. Each participant was given ten minutes to complete the pre-test questionnaire. After filling the questionnaire, each participant was given a 5-minute break. During this break, participants were told to sit quietly and not to interact with other participants. After the 5-minute break, participants were given a pre-drawn mandala

**Table: Comparison between pretest and posttest values of state and trait anxiety.**

	Mean $\pm$ SD		t (99)	p-value
	Pretest	Posttest		
State Anxiety	39.67 $\pm$ 11.09	32.09 $\pm$ 9.32	8.91	<0.001*
Trait Anxiety	43.51 $\pm$ 10.04	39.92 $\pm$ 9.82	5.41	<0.001*

calculator. By keeping the values of alpha as 0.05, power of the test as 0.8, population standard deviation as 9 and difference between the two means as 5, a sample size of 50 for each group was determined making the total sample size of 100. For keeping the gender ratio, equal 50 male and 50 female students with the age range of 18 to 34 years were recruited through convenience sampling. Students from three different universities of Islamabad i.e. International Islamic University, Riphah University and Bahria University were included in this study. Special sessions were conducted to implement the intervention to measure the effect on anxiety. The participants were briefed about the nature, significance and purpose of the study. Each participant was assured of their privacy as well as the confidentiality of their information and identity. It was explained to them that their

along with twelve color pencils each. Each participant was given 30 minutes to color the given mandala. After coloring the mandala, the participants were again given 5-minute break. After the break, the participants were asked to fill the questionnaire for the post-test.

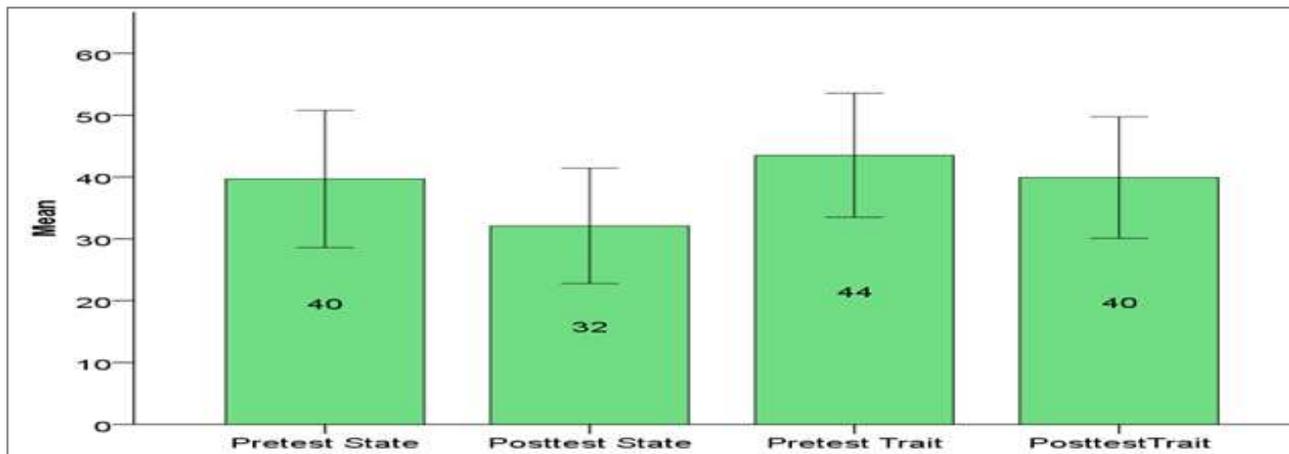
Data were analyzed using SPSS version 23. Mean and standard deviation were calculated for numerical variables whereas frequency and percentage for the categorical variables. To compare difference between means of anxiety before and after intervention, paired samples t-test was used. Alpha value was kept at 0.05.

### RESULTS

There were 50 male (50%) and 50 female (50%) participants with the mean age of 26  $\pm$  11.3 years. Pretest Cronbach's Alpha coefficients for state and trait anxiety scales were 0.89 and

0.87 respectively. Whereas, for posttest the Cronbach's Alpha coefficients of state and trait anxiety were 0.89 and 0.88 respectively. Table shows comparison between pretest and posttest mean values of state and trait anxiety along with  $t$  and  $p$ -values. The mean values for both the types of anxiety were significantly reduced after the intervention ( $p$ -value  $<0.001$ ), however the effect was almost double for state anxiety as compared to trait anxiety ( $t$ -value 8.91 versus 5.41).

Figure shows as bar charts the comparison between pretest and posttest values of state and trait anxiety. Error bars indicate one standard deviation.



**Figure: Bar charts showing comparison between pretest and posttest values of state and trait anxiety.**

## DISCUSSION

Art therapy had been present since ancient times. In the 1900's, researchers have been giving greater attention to the therapeutic use of art in treating illnesses and disorders. Recently in art therapy, color therapy has been of great interest. Mandala coloring is one of art therapy techniques to address anxiety states. Studies have shown that coloring mandalas can help in reducing anxiety. The current research aimed to study the effectiveness of coloring a mandala as a therapeutic intervention for reducing anxiety in university students.

The scale used for this research was the Spielberger State-Trait Anxiety Inventory Form

Y. In the pretest measures, the Cronbach Alpha Reliability of the State Anxiety subscale and the Trait Anxiety subscale were  $\alpha=0.89$  and  $\alpha=0.87$  respectively. In the posttest measures, the Cronbach Alpha Reliability of the State Anxiety subscale and the Trait Anxiety subscale were  $\alpha=0.89$  and  $\alpha=0.88$  respectively. This indicates the reliability of the study results found in the present study.

The hypothesis of this study was that there would be significant difference in anxiety before and after the therapeutic intervention of coloring a mandala. To test this hypothesis, the levels of State and Trait Anxiety before and after the coloring of a mandala were compared using a

paired sample  $t$ -test. The results indicated that coloring a mandala can reduce anxiety in university students. A significant difference was seen between the Pretest State Anxiety Scores and Posttest State Anxiety Scores among university students. This indicated that the level of State Anxiety reduced after the university students colored a pre-drawn mandala. A significant difference was also seen between the Pretest Trait Anxiety Scores and Posttest Trait Anxiety Scores. This indicated that the level of Trait Anxiety reduced after the university students colored a pre-drawn mandala. There are limited researches done on coloring mandalas. The findings of the present study are in line with the findings of the other studies that support that coloring mandala

reduces both state and trait anxiety<sup>13,14</sup>. Thus, Mandala coloring can be used as an effective intervention to manage anxiety with normal and clinical population.

The current research can be quite beneficial for society as it promotes mandala-coloring as a therapeutic intervention in Pakistan. Coloring mandalas can help in reducing anxiety which in turn can enhance their work outcomes, and improve their quality of life. This research promotes coloring mandalas as a relaxation method that can be used as a self-help activity or as a tool in various settings such as academic, clinical, work, etc. This research can spread awareness about anxiety among the society and show people how to reduce it. It can also promote color therapy and art therapy which are not well known in Pakistan.

### CONCLUSION

From this study, we can conclude that coloring a pre-drawn mandala can be an effective therapeutic intervention for anxiety reduction in university students and that may also be used and tested with other populations and settings.

### CONFLICT OF INTEREST

This study has no conflict of interest to

declare by any author.

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