

# Art Making In Stress Reduction Among Undergraduate Students

Nur Kamarina Binti Tajuddin<sup>1</sup>, Ooi Boon Keat<sup>2</sup>

<sup>1,2</sup>School of Education and Social Sciences, Management and Science University, Shah Alam, 40100 Selangor, Malaysia.

Corresponding Author: bkooi@msu.edu.my

## ABSTRACT

A quasi-experimental study was conducted to explore the effects of art making sessions on stress among undergraduate students in a Malaysian private university. 16 students were randomly divided into two groups which are an experimental group and a control group. The experimental group participated in six art making sessions. Each art making sessions used different art medium: (1) Coloring; (2) Painting; (3) Drawing; (4) Modeling Clay; (5) Collage Making; and (6) Mask-Making. The art making sessions were conducted twice a week for three consecutive weeks. The research instrument chosen for the study was the "Depression Anxiety Stress Scale (DASS)". For the experimental group, the stress scale of "Depression Anxiety Stress Scale (DASS)" was given before and after each art making session, and another instrument "Stress Symptoms Checklist" and the participant's reflection was recorded to support the data of DASS. The control group does not participate in any art making sessions. For the control group, the research instruments were only given during the first session and second session of data collection. Post-intervention stress scores indicated the participants in experimental group experienced stress reduction following the art making sessions in comparison to the stress level of participants in the control group. These results provide confirmatory evidence that art making resulted stress reduction, which was further supported by the participant's written responses. Besides that, another interesting finding of this study was that painting had been selected as the most favored medium of art compared to others. In conclusion, art making activities may provide an alternate means for university students to manage their stress.

## Keywords

Arts making, stress, stress reduction

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## 1. Introduction

There are various views on how one defines stress. The Oxford English Dictionary defined stress as a state of mental or emotional strain or tension resulting from adverse or demanding circumstances. According to National Institute of Mental Health in United States (U.S.), stress is viewed as the response from the brain toward demands. Many things can trigger those responses, including change of daily routine. Kshirsagar & Seema [1] regarded stress as the conscious or unconscious feeling of an individual which can affect the individual physically or

mentally either in positive or in negative ways. It is a common outcome after dealing our daily routine and other contributing factors. The World Health Organization (WHO) considered stress to be the "Health Epidemic of the 21st Century", with support from previous research findings [2]. In Malaysia, Menon [3] stated that the investigation done by Malaysian Psychiatric Association on the prevalence of stress among Malaysians illustrate a 50% increase from 2011 to 2015. The statistics showed a drastic increase of stress prevalence within a five-year gap. It is a serious indicator for a developing country to obtain such state of stress compared to a developed nation whereby American Institute of

Stress stated 77% American regularly experience the physical symptoms of stress meanwhile 73% of them usually experience the psychological symptoms of stress. Based on the “Stress Symptom Checklist”, headaches, insomnia, teeth grinding, and fatigue are the examples of physical symptoms of stress. On the contrary, the psychological symptoms of stress include frequent guilt, irritability, restlessness, apathy and temper flare-up. The increasing prevalence of stress should not be taken for granted, or else the numbers will be heightening under one’s nose. Although everyone will undergo stressful period, however, research findings highlight that tertiary education considered as highly stressful time and stressful environment which can negatively affect the student [4].

University students are more likely to experience stress since there are multiple stressors in their surroundings. Sun & Zorah [5] reported that the common factors of stress among undergraduate pharmacy students in one of the public universities in Malaysia whereby students perceived academic-related stress (92.7%) as the highest percentage followed by personal life matters (62.4%), environmental factors (39.1%) and financial issues (16.8%). These results provide confirmatory evidence that the leading causes of stress among undergraduate students was academic-related. The academic-related stressors include academic workload, long hours of academic work, performance in examinations, competition for marks and frequency of examinations [6]. Tripathi [7] emphasized that stress and anxiety among students could affect them psychologically, emotionally, physically and academically. Norshafarina et al. [8] found that among the causes of psychological distress among university students is also significantly associated with caffeinated energy drink. Current medical studies suggested that exposure to stress negatively impacts health [9]. Seaward [10] addressed that 70% to 80% of all diseases and illnesses are stress related. There is overwhelming

evidence for the notion that untreated stress has a potential to affect one's overall health negatively. Thus, there is indeed a serious need to explore more strategies to combat stress effectively as stress could impair one’s physical health.

According to Hashmi & Ahmad [11], many students perceived college environment as stressful because they face difficulties in adjusting to the new educational and social environment. Hence, these students become vulnerable in using “shortcuts” to cope with their college environment. The study by Sinha [12] found that individuals who experience stress are vulnerable in the development of addiction. Stallman & Hurst [13] suggested that university students whom experienced excessive stress and did not have effective stress management techniques would have higher risk associating with mental health problems. According to Zivin et al. [14], students who had a mental health problem continue to have at least one mental health problem 2 years later. Therefore, it is necessary for university students to manage their stress effectively and cope it right before their symptoms are develop into mental health problems.

Stewart et al. [15] demonstrated that students who have active coping strategies would experience lower levels of psychological distress. Kshirsagar & Seema [1] found that the standard method of overcoming stress involves identification of the source of stress, avoiding alcohol, smoking and drugs, increase sleeping hours, interact with close ones, and time management. Exercising, listening to music and maintaining a healthy diet are also listed as the common way to reduce stress. Similarly, Pratap, Acharya, Deepak & Rao [6] found that “listening to music or dancing” and “playing sports or games or physical exercises” were selected as the most common technique among students in reducing stress. The students also chose “receiving emotional support from family or friends,” “going to a place of worship,” and “watching a movie” for stress relief. Despite

that, it is observable that students rarely engage in creative activities or art making activities as means for stress relief.

Without a doubt, it is critical for one to know effective stress management techniques. From psychological points of view, taking a break from the stressor, smile and laughing, social support and exercising can offer immediate relief in stressful situations. For some, they begin to turn to arts for stress relief. Previous researches demonstrated that creative activities or art could improve one's coping skill and alleviate stress while increasing self-awareness and self-esteem [16-18]. Rowley & Comisari [19] suggested that art is a medium which may assist people to manage their stress and the process of creating art itself are therapeutic. When an individual is creating artwork, the entire attention will shift into the art creation as this would allow the individual to stay in the here-and-now moment whereby individuals can become disentangled from the preoccupation with their problem or mental state [19]. The thoughts of what do they want to create, the selection of colors or art materials occupy the minds of the creator. Hence, they are less likely to think about others matters. Thus, the process of art making will help loosen up the psychological and physical state of an individual.

There is indeed different positive feedback on the use of coloring book for stress reduction. A neuropsychologist, Dr. Stan Rodski mentioned that coloring would result in a relaxing mind set as the process of coloring will allow us to switch off our brains from other thoughts and focus on the present moment. Hence, the act of coloring is considered to have the elements of healing and meditation. In fact, all art promotes creative expression and release of emotions [17]. Besides, the process of creating a piece of art can be soothing and engulfing [20]. The visual elements of emotion are the movement, gesture, shape and action conveyed in the artwork [21]. A longitudinal multiple case study was conducted to

develop a deeper understanding of the role of art making in the mental health recovery process in Australia.

Van Lith [22] found that the art making bring various beneficial outcome to the participants. The participants experienced enhanced mood, sense of achievement, skills development, ignited spirituality, and motivation as a result of the art making. According to Buchalter [17], the artwork serves as a compilation of feelings, problems, concerns and solutions that are exclusively the individual's own. Shanahan, & Neufeld [23] view art making as the process of producing art through creative and physical manipulation of materials in activities such as drawing, painting, and clay sculpting. Art making can also be a fun and rewarding way for people to express themselves and to learn a broad range of skills and concepts. Drake, Coleman & Winner [24] perceived art making as an avenue to regulate one's emotions. Art provides a platform for us to draw from within and express ourselves in our unique manner.

To date, empirical research on the use of art for stress relief in the university setting in Malaysia is still limited. As the prevalence of stress among Malaysians are increasing rapidly each year, there is a need to conduct a study on finding new method to cope with stress. Therefore, the present study aimed to explore the effectiveness of art making in managing stress amongst university students. In this study, stress is defined as the individual's reaction when he/she faces any unfamiliar or overwhelming situation or environment that is beyond one's control. The term art making is used to describe the usage of art to be a medium for self-expression that could sooth one's current psychological state. The means of art making in this study consist of drawing, painting, coloring, modelling clay, collage making and mask making.

## 2. Research Methods

This quasi-experimental study was designed in non-equivalent control group format. The

framework of the present study begins with the recruitment of samples through the use of poster. The interested participants went through the screening sessions to assess the eligibility of participants. The finalized participants were divided into experimental group or control group with extra caution. All participants attended a brief informational meeting to explain about the session structure and collect the informed consent. The experimental group will be undergoing an intervention, which is the art making session, whereas the control group does not have any intervention. A series of art making sessions was conducted for the experimental group as the intervention. The research instrument was distributed during pre-intervention and post-intervention for each session of art making.

For the control group, the participants also completed the pre-intervention instrument and post-intervention instrument even though they didn't undergo any interventions. The control group had a gap in between pre-intervention and post-intervention which was equivalent to the period of intervention. The pre-intervention assessment for the control group was the same day with the first art making session for the experimental group. During the period of interventions, the control group participants would need to carry on with their daily activities as usual. After three weeks, the post-intervention assessment for the control group was administered on the same day with the experimental group's final art making session. The data recorded from the control group was analyzed to observe the treatment effect of experimental group. The participants in the control group were given opportunities to participate in the art making session after the data collection and debriefing as an after-study services.

Purposive sampling was utilized to consider inclusion and exclusion criteria for participation in this study. The inclusion criteria were as follows: (1) Participants must be a current

undergraduate student; (2) Participants need to score "severe" and "extremely severe" index of Depression Anxiety Stress Scale (DASS) during the screening session; (3) Participants are willing and be able to participate in the study. On the other hand, the exclusion criteria for the participants as: (1) Participants have previous professional experience and qualification in art; (2) Participants have been diagnosed with anxiety or other history of mental illness; (3) Participants are currently on medication for mental illness. The experimental group was given intervention sessions of art making, whereas the control group without intervention. The total number of sixteen samples were classified according to the severity of scores obtained from the screening instrument. Those who obtained "severe" and "extremely severe" stress index of DASS were then recruited equally into both experimental and control groups respectively. The participants were limited to a recommended group size of eight members per group. This essential criteria is crucial for the intervention of art making sessions.

In the present study, there were 16 university students who shared similar characteristic involved in this study in which they were equally grouped into experimental group and control group. The students in the experimental group participated in the art making sessions. There was a total of six art making sessions over a period of three weeks, and the duration of each art making sessions was set at 90 minutes. During each sessions of the art making, the participants were briefed on the structure of the sessions based on the lesson plan. The participants were not permitted to use any electronic devices during the session. Besides that, the participants could interact with other participants, but the topic must remain neutral. After the participants completed the pre-intervention instruments, they were given 60 minutes to complete the art work individually. The participants were invited to share their art work or experiences verbally, before they answered the post-intervention instruments. Each

art making session requires participants working on different approaches of art making. The first session was coloring a pre-drawn mandala. The second session was free-form painting. The third session was drawing. The fourth session was playing with modeling clay. The fifth session was creating a collage. The sixth session was mask making. Those were not art therapy session as each art activities didn't not engage any therapeutic approaches. The objective was to allow participants to express their creativity, relax, and socialize with other participants during the art making activities [25].

Data collection involved several measures comprised of Demographic Information Sheet, Depression Anxiety Stress Scale (DASS), Stress Symptoms Checklist (SSC), Reflection Sheet, Feedback Sheet and Observation Checklist. The "Demographic Information Sheet" which consisted of 11 items was developed to collect the demographic information of the respondent. It was also used to screen the inclusion and exclusion criteria such as participants' previous training and experiences in art. Depression Anxiety Stress Scale (DASS), a self-administered questionnaire that includes 42 items was utilized. However, DASS stress sub-scale which has 14 items of 4-point Likert Scale was used for the present study. There were no reverse items provided in this instrument. All item scores were added to calculate the total scale score. The severity-rating index could be represented using the total score ranging from 0 to 56. The participants who had scored the level of "Severe" stress with the score "26-33" and "Extremely Severe" with the score "34 and above" were the entry benchmark. Besides the level of stress, Stress Symptoms Checklist (SSC) was deployed to measure 29 items for physical and 23 items for psychological symptoms of stress. There were no time restrictions for the participants to complete each instrument. Data were collected from pre-intervention and post-intervention assessment for each art making session using "DASS-Stress

Scale", Stress Symptoms Checklist" and "Reflection Sheet". The "Feedback Sheet" were only given to the experimental group participants during the final post-intervention to understand the participant's progress and feedback on their involvement in the art making session. The instruments used for the control group participants were only "DASS-Stress Scale" and "Stress Symptoms Checklist". The control group was not given "Reflection Sheet" and "Feedback Sheet" because they did not participate in the art making activities.

This study aimed to determine several objectives which are the effect of art making in reducing stress; the impact of art making tasks and the experiences of participants towards the art making sessions. Some participants were required to give written responses to express their experiences and insights on a reflection sheet. It was an open-ended response sheet distributed after each art making session, which enable the participants to reflect on what they did during the art making session.

Independent t-test was performed to understand the differences in stress level between experimental group and control group. Besides, paired-sample t-test was employed in this study to measure the differences in stress between pre-intervention and post-intervention respectively for both experimental and control groups. Further analysis of Kruskal-Wallis ANOVA was used for the purpose of comparing means of the stress level across all art mediums by using the Post hoc procedure test. Content analysis was used to analyze the narrations of participants from side to side with the quantitative results.

### 3.Results

**Table 1.** The Stress Level among the participants based on DASS-S and SSC

Participant (N=16)	Experimental Group (n=8)				Control Group (n=8)			
	“DASS-S”		“SSC”		“DASS-S”		“SSC”	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Subject 1	34	15	16	14	35	38	18	20
Subject 2	31	18	23	12	33	33	16	25
Subject 3	33	18	16	8	36	36	26	28
Subject 4	41	27	31	2	29	31	23	25
Subject 5	29	18	25	12	28	30	27	20
Subject 6	31	23	35	30	29	27	18	22
Subject 7	33	18	28	15	40	42	37	37
Subject 8	32	20	32	21	32	35	17	17
Average	33	20	26	14	33	33	23	24

Note: Depression Anxiety Stress Scale – DASS-S (Normal: 1-14, Mild: 15-18, Moderate: 19-25, Severe: 26-33, Extremely Severe: 34+); Stress Symptoms Checklist – SSC (Low: 0-7, Moderate: 8-17, High: 15-21, Very High: 22+)

Table 1 illustrates the first pre and post scores among the participants in both experimental and control groups. The data was obtained before and after the of art making session. The scores of “DASS-S” and “SSC” indicated similar level of stress among the participants in this experiment. Both tests had verified one another with the average stress level of the participants at the severe and very high levels for both experimental and control groups, respectively. The scores obtained by the participants for DASS-S were ranging from 28-41 which is between severe and extremely severe level of stress. While SSC was scored from 16-37 which is between high and very high stress levels.

**Table 2.** The differences of stress among experimental group and control group at post-intervention.

	Group Experimental			Control			t	p	Mean Difference
	M	SD	n	M	SD	n			
DASS-S Pre	19.63	3.74	8	34.00	4.78	8	-6.699	.000*	-14.36
DASS-S Post	19.37	3.40	8	34.00	4.78	8	-6.699	.000*	-14.36

	Score	Checklist	Score	Checklist
Pre	14	8	24	6
Post	2	4	2	8
Score	5	0	5	3
Checklist				
Score				
Checklist				

Note. DASS-S= Depression Anxiety Stress Scale – Stress; Checklist= Stress Symptom Checklist  
\* = p<.05; \*\*= p<.01

An independent t-test was conducted to compare the participant’s stress among experimental group and control group. The results of the independent t-test show that mean for “DASS-Stress Scale” differs between experimental group (M= 19.63, SD= 3.74, n=8) and control group (M=34.00, SD= 4.78, n=8) at the .05 level of significance,  $t(14) = -6.699, p < .001$ . Since the critical significance level of .05 is larger than  $p < .001$ , we must reject the null hypothesis according to the table. We conclude that there is an extremely significant differences of stress between experimental group and control group.

To further support this finding, we also run an analysis towards the data obtained from “Stress Symptom Checklist”. The results of the independent t-test show that mean for “Stress Symptom Checklist” differs between experimental group (M= 14.25, SD= 8.40, n=8) and control

group (M=24.25, SD= 6.23, n=8) at the .05 level of significance,  $t(14) = -2.706, p = .017$ .

There is a significance differences of stress between the participants in both groups. The mean differences value of -14.735 (DASS-S) and -10.000 (Checklist) shows that the participants who are in experimental group have lower stress than the participants in the control group after undergoing intervention.

**Table 3.** The paired-sample t-test results on the differences in stress between pre-intervention and post-intervention in the experimental group.

	Pre-Intervention		Post-Intervention		n	t	d	p
	M	SD	M	SD				
Experimental								
DASS-S	33.00	3.59	19.63	3.74	8	11.645	7	.000**
Checklist	25.75	7.13	14.25	8.40	8	4.030	7	.005**

Note. DASS-S= Depression Anxiety Stress Scale – Stress; Checklist= Stress Symptom Checklist  
 \* =  $p < .05$ ; \*\* =  $p < .01$

A paired-sample t-test was conducted to analyze the differences in stress of experimental group before and after art making sessions. Results show a statistically significant difference in mean stress before and after intervention. For DASS, there was an extremely significant difference in the scores of stress for experimental group before intervention (M= 33.00, SD= 3.59) and after intervention (M= 19.63, SD= 3.74);  $t(7) = 11.645, p < .001$ . Since the critical significance level of .05 is bigger than the  $p < .001$ , we must reject the null hypothesis according to the table above.

For Checklist, there was also a highly significant difference in the scores of stress for experimental group before intervention (M= 25.75, SD= 7.12) and after intervention (M= 14.25, SD= 8.40);  $t(7) = 4.03, p = .005$ . Since the critical significance level of .05 is bigger than the  $p$  value of .005, we must reject the null hypothesis according to the table above. These results suggest that the intervention or art making session really does

have an effect of stress. Specifically, our results suggest that when the individual undergo the intervention, they will have reduced stress.

**Table 4.** The preferences towards art making tasks

Art Medium	f	Percentage (%)
Coloring	6	75.0
Painting	7	87.5
Drawing	5	62.5
Modelling Clay	5	62.5
Collage	6	75.0
Mask Making	5	62.5

Descriptive analysis was used to identify the participant’s preference on the use of art. Table 4, painting was the most favored art making activity which was rated by 87.5% (N=7) of the participants. On the other hand, drawing, modeling clay, and mask-making were the least favored art making activities with a rate of 62.5% (N=5). The most preferred medium of art was painting, followed by coloring, collage and mask making. On the other hand, the least preferred art medium was drawing and modeling clay. Apart from that, the results also indicated that the participants preferred unstructured activities compared to structured activities. Unstructured activities were the art making activities which allowed the participants to do anything they want for their artwork. There were no specific guidelines when it comes to unstructured activities. On the other hand, structured activities had guidelines. The participants preferred unstructured activities because they have control over their artwork. They were free to create any images, objects, and others according to their preferences. Nonetheless, structured activities are suitable for individuals that like structures and guidelines in other wise.

**Table 5.** The reasons for liking art making activities

Reasons of Liking	N=8	Percentage of cases
Response		
It is stress relieving	6	75.0
It makes me calm and peaceful	5	62.5
I will feel happy and cheerful	5	62.5
It expresses my feelings and what I cannot express verbally	3	37.5
It is comforting	3	37.5
It allows me to escape reality	3	37.5
It is a good distraction	3	37.5
It is fun and enjoyable	2	25.0
It allows me to appreciate beauty	2	25.0
It reminds me of my childhood era	2	25.0

Table 5 represents the responses provided in the Feedback Sheet, in which the participants were required to select one to five reasons for liking art activities. Based on the results of multiple responses analysis, there were seven main reasons why the participants (N=8) like art activities. The first reason was that 75% (N=6) of the respondent considered art activities as a form of stress reliever. Majority of the written responses of participants reported they felt relax and relieved after the art making sessions. The following reason was that 62.5% (N=5) of the respondents perceived that art activities could make them calm and peaceful. One participant stated, *“At the start, I felt a bit rush. However, after doing the art activities, I started to feel calm and enjoying the moment.”*

Aside from that, 37.5% (N=3) of participants also supported the statement that art activities make them happy. *“I feel happy and excited because I manage to complete my art beautifully,”* was a response from one of the participants. Following that, 37.5% (N=3) of respondents agreed that they could express what they could not express verbally through art. The participant mentioned, *“This is a chance for me to reveal my real feeling*

*without talking about it”* and *“I let out my deepest thought in the decoration.”* A tool for distraction was the following reason stated by 37.5% (N=3) of the participants, this was followed by the means to escape the reality with a rate of 37.5% (N=3), and then 37.5% (N=3) viewed art activities as comforting. There were indeed multiple reasons for liking art activities. However, the finding suggested that majority of the participants viewed art activities to be stress relieving.

#### 4. Discussion

The results reported that there was significance difference in stress level scores between the experimental group and control group for DASS-S and SCC. Abbott, Shanahan, & Neufeld [23] had a similar finding that there is significant association between art making and stress reduction. The research employed drawing activities which had the greatest stress reduction for both research instruments as well. Sandmire, Gorham, Rankin, & Grimm [26] revealed that engaging in art making activities, even for a short period, may significantly reduce anxiety. While Grossman [18] stated that creative activities have the potential to alleviate emotional stress.

In line with stress reduction, Thomas [27] has categorized 100 ways to relieve stress into nine main stress management strategies, which consist of environmental, cognitive, creative, physical, humorous, spirituality, management, relational, and outdoor. He added that creative activities are a great way to channel stress into beauty. Out of the 13 suggestion of creative strategies, drawing, painting, and working with clay are included, which is the art making tasks for the present study. This finding seems supporting Hashemian & Jarahi [28] whom studied the effect of painting therapy in reducing aggression among educable intellectually disabled students in Iran using a randomized pretest-posttest control group research. The therapy session was conducted for 12 sessions within two months. The findings identified that the experimental and control group have a significant difference in terms of the therapeutic effect of the intervention. Similarly, Yount, Rachlin, & Siegel [29] conducted a randomized comparison between expressive arts therapy and no therapy for reducing salivary cortisol levels in hospitalized children between the ages 4-16 years. The staff observed an apparent reduction of stress and improved sleep for patients



as a result of the therapy sessions. The results also revealed reductions in salivary cortisol among the patients following the sessions, although the differences were not statistically different.

Another recent study has recognized that impact of art making towards the learners and practitioners includes escaping constraints, expressing self-identity and discovering professional identity, healing self and others, and advocating change [30]. Art is a medium which may assist people to cope better with stress, improve judgment and have healthy relationships [19]. Another study found that art making is viewed as a powerful tool to cope with stress [31]. Therefore, if the individual encounters stressful situations, they may engage in the art making activities to cope with stress.

One interesting finding for the preference of art making tasks was seven out of eight participants selected painting as one of the art media they like. This finding is in line with that of Sharma [32] which suggest that painting can become a tool for expression of emotions. Painting conveys a story, idea or incident or the event of a time in a very particular manner. Furthermore, Devlin [33] revealed that painting is a great way to express oneself. The individual does not need to talk to people about things; instead, they can put it all on a piece of paper.

Coloring pre-drawn mandala is the second most favored art making task, which is in the same rank with the collage. This finding agrees with the study of Curry & Kasser [34] that supported the hypothesis that coloring a mandala for 20 minutes is more effective at reducing anxiety than free-form coloring for 20 minutes. The same author identified that coloring the symmetrical form of the mandala with its repeating patterns and complexity purportedly helps to draw individuals into a state like meditation [34].

The third most preferred task was collage. Many scholars have found that collage could reduce depression, lessen the anxiety of expectation, release repressed feelings, and resolve emotional issues. Previous research has recognized that collage activities provided "another layer of vision," allowing collage portraits to convey stories by weaving together words and images [35]. This finding is in agreement with the study of Soper [36] which reported that the participants have strongly positive experiences with the collage activity. Overall, the collage activity

provided visual prompts to free participants' thinking, helping them consolidate and conceptualize their scholarly ideas. The collage allowed for movement, thought, reflection, and awareness to be experienced.

On the other hand, drawing was selected as the least favored medium of art. Unlike findings from previous studies, we did not find the reason why individual dislike a form of art. The previous research mainly discussed on the therapeutic nature of drawing. For instances, a study by Henderson, Rosen, & Mascaro [37] assessed the psychological healing of mandala creation among those who have post-traumatic stress disorder (PTSD). They reported that the mandala group had less severe symptoms of trauma than the control group even after a one-month follow-up. Research by Tripathi [7] indicated that free drawing is a useful technique as the images created often reflect the person's present problems, strengths, and weaknesses.

## 5. Conclusions

This study was enhanced by the evidence suggests that creative activities can have a healing and protective effect on mental well-being. The creative activities are therapeutic as it could promote relaxation, reduce stress, and reduce blood pressure while boosting the immune system [38]. This is noteworthy given that art can be helpful for stress because the act itself brings us to the present moment [20]. This finding is also in agreement with the study of Kaimal, Ray, & Muniz [16] which identified that artistic expression is related to reduced stress, anxiety, and negative emotions.

There are some limitations associated with the present study. One of the limitations is the methodology of the study. A quasi-experimental design was employed as the research design. Hence the samples were not selected through randomization. Therefore, the future study should replicate this study by employing a true experimental design. Besides that, the following limitation of the present study is the generalization of sample. The samples could not provide a general representation of the population because of the relatively small sample size. Another limitation of the present study was that the samples were limited to the undergraduate students of MSU. Hence, the results could not be generalized to other university population because

each university has different culture, environment, and different academic course. Therefore, it is recommended to include more samples from other universities or faculties to strengthen the generalization of findings. Also, further research should be conducted to examine the different effect of art making across the student's demographic, namely age, race, ethnic, religion, and socioeconomic status. The demographic factors may influence the findings of the future study. On top of that, the population for the present study is undergraduate university students. Hence the future study can replicate the study across all age groups, ranging from children, adolescent, adult, and elderly populations.

Majority of the participants mentioned that they use art making for expression of feelings, inner self, experiences, and the things they love. Buchalter [17] mentioned that self-expression becomes the most important aspect of creative work. Therefore, further study may want to examine the function of expression in art making activities. The researchers should also explore why drawing and modeling clay are less likely to be preferred. In addition, it is recommended for the future study to explore the influence of different art making activities such as origami folding and print-making on stress. Future research needs to be completed to explore the effectiveness of art making for stress reduction, especially incorporating larger sample size and other university populations to increase the generalization of findings. The reported study can inform future research as well as clinical practice.

In conclusion, art making activities are found to be effective in reducing stress. Undergraduate students are at heightening risk associating with stress. Teh and colleagues [39] reported that stress would bring adverse effect to the individual and society. Therefore, we identified a need to determine the effectiveness of stress management techniques among undergraduate students. Thomas [28] listed the creative strategies of stress management, upon which art making activities were included. Art can be considered as a stress management activity. Art can help reach a state of relaxation that is close to that of meditation. Art can be a medium of counselling tool to assist clients by offering an alternative focus. At times, clients can become entangled into their thoughts and have a preoccupation with their problem or mental state [19]. Art making activities may

provide an alternate means for undergraduate students to manage their stress.

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