

# Art Therapy

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## Abstract

In a world of rapid change, teenagers have been more stressed than ever. As a result, teenagers experience the detrimental mental and physical influences of stress. Thus, art therapy is a technique that has been increasingly utilized by professionals worldwide to combat this issue. Art therapy is a psychotherapy technique in which an individual uses different methods of art such as drawing, painting, or coloring in order to process their thoughts and emotions. To discover the most effective methods of art therapy in reducing stress, this experiment compares two art therapy methods separated by the amount of structure regarding the task's instructions. The respondents were divided into either the structured or non-structured group and were offered only five minutes to complete the task. Three hypotheses were tested in this study: 1) The majority of the studied population experience high levels of stress. 2) Art therapy will be effective in reducing the stress of this population. 3) Compared to structured art therapy, non-structured art therapy will be more effective in reducing stress. Since the purpose of art therapy is to process one's emotions through self-expression, it seemed most likely that when some of the self-expression was limited within the instructions of the task through the structured approach, it would be less effective in reducing stress. The results support the hypotheses that a majority of the participants had high stress levels and art therapy was effective in reducing stress. However, there was no difference between the scores of diminished stress between structured and non-structured groups. This study additionally supported that art therapy was effective in reducing stress within five minutes, and despite previous art experiences and abilities, all students experienced a decrease in stress. Henceforth, in spite of their busy schedules, art therapy has been shown to be effective, and many students may experience benefits by having art therapy practices being incorporated into their daily lives. Currently, there has been limited research on the most effective methods of art therapy, which is unfortunate because students require efficient methods of stress management that will fit into their schedules, while also, effectively reducing their stress levels before it becomes detrimental to their health. Therefore, this unique study was conducted to determine whether or not art therapy will diminish this population's acute stress under the limited time constraints of five minutes. Furthermore, the second goal of this study is to compare two art therapy methods based on the amount of structure each method requires by the nature of the techniques.

## Literature Review

### *Stress*

As asserted by the Mental Health Foundation, stress is the term commonly used to describe the natural sensation of immense mental or physical pressure an individual experiences (Stress, 2021). According to McEwen (2017) from the Laboratory of Neuroendocrinology, stress can exist in both the forms of chronic and acute stress. Acute stress is defined as short term stress: a quick rush of tension that dissipates just as fast. Chronic stress, however, requires more time to develop.

Unfortunately, due to education's current standards and society's high expectations, chronic stress is a sensation that many students come across.

### *Impacts of Stress on the Body*

Although both McEwen (2017) and Aschbacher et al. (2013) agree that small portions of stress are essential for motivation and productivity, stress can have many detrimental impacts on an individual's wellbeing (American Psychological Association [APA], 2018; Parikh et al., 2019). For example, acute stress can cause the body to undergo physical responses such as rapid

heart rate, taut muscles, and shortness of breath (APA, 2018). If the individual's short-term stress is not monitored, it can transition into chronic stress (Rohleder, 2019), which can impair rudimentary functions of the human body like the digestive system and the circulatory system. In addition to impaired bodily functions, chronic stress can alter the brain pathways, the hippocampus being a primary example (McEwen, 2017). These alterations are problematic, especially for the hippocampus, because it is the part of the brain that controls memory. If pathways that travel to the hippocampus are changed or blocked, memory retrieval will become more difficult for that individual. Similarly, other blocked pathways will prevent signals from reaching vital sections of the brain, impairing certain functions (McEwen, 2017).

Moreover, chronic stress can cause other negative impacts on an individual's wellbeing. For example, McEwen (2017) also mentions a phenomenon called allocastic overload or allostasis. This is a phenomenon where the body is required to respond to its changing environment, in this case, stress. Consequently, an individual changes their daily behaviors in response to this stress such as eating and sleeping habits. Not only may these habits further amplify the stress response in an individual, but they also tend to be addictive and unhealthy, likely leading to a overall decrease in health.

### *Teenagers and Stress*

As victims of the whirlwind of change, teenagers, often without means to combat their stress, are one of the groups who experience its most detrimental effects. Schulten (2021) and the APA (2014) state that a majority of teenagers' stress comes from academics. As a matter of fact, past data has stated that teenagers' stress levels were measured as 5.8 during the school year on a 10-point scale, 1.9 points higher than the standardized healthy level of stress (APA, 2014). Especially with all these changes that have occurred in the past few years due to the COVID-19 pandemic, teenagers' stress levels have become even more elevated. As a matter of fact, Generation Z was the most probable age group to declare a significant mental health decline as a result of stressors relating to the

COVID-19 pandemic, possibly due to the fact that adolescents' brains are not fully developed (APA, 2020). Henceforth, specifically when teenagers are stressed, their ability to make proper decisions is impaired because of their underdeveloped brains' reaction to elevated cortisol concentrations, a chemical produced when the brain experiences stress (Pabst et al., 2013). Similar to McEwen's (2017) claims about allostasis, teenagers' behaviors can change, causing them to make more unhealthy or reckless decisions; therefore, they tend to rely on alcohol or exacerbate their e-cigarette addictions as a coping mechanism (Chow et al., 2021; Pericot-Valverde et al., 2021). Instead of allowing students to rely on unhealthy addictions, we should determine how to alter common stress management strategies to become more impactful and efficient.

### *Art Therapy*

Art therapy is a renowned therapy technique utilized by esteemed therapists to improve mental health and reduce stress through different methods of art such as drawing, painting, or coloring in order to process patients' thoughts and emotions (Odle, 2021). Since art therapy is a broad topic, a variety of different methods can be implemented to reduce the stress level of the patient. In agreement with Odle (2021), Curl (2008) determined that art therapy is effective in reducing stress and improving mental well-being. Curl's experiment provided 40 participants with materials for drawing and making picture collages. Participants' short-term stress levels were measured before and after the art therapy through the quantitative State Trait Anxiety Inventory and through measures of physical indicators, such as heart rate. Similar to Curl's study, Malboeuf-Hurtubise et al. (2021) conducted an art therapy experiment, but the participants were elementary school students during the COVID-19 pandemic. Hence, contact between the proctor and the participants was enacted through a form of live video communications. The students participated in art therapy for 45-minute sessions for five weeks. The researchers measured student mental health through the Behavior Assessment Scale for Children 3rd edition and found that after the experiment was conducted, student mental health significantly improved

### *Structure*

Kamal et al. (2016) also determined that art therapy is successful in reducing stress. Their sample consisted of 39 adults who participated in 45-minute in-person sessions of art therapy for four months. The researchers reported that the participants had a significant decrease in cortisol levels after the experiment (Before:  $M = 17.9$ ,  $SD = 5.1$ ; After:  $M = 14.8$ ,  $SD = 5.1$ ). Cortisol levels were measured through saliva samples collected before and after the art therapy sessions. The participants in the study were given the opportunity of full creative freedom with the provided materials and were not required to complete any of their pieces.

On the other hand, researchers Yu et al. (2016), utilized a more structured method of art therapy in their study. In their experiment on prisoner pre-release anxiety, they employed the house-tree-person method (HTP) as their method of art therapy and measured anxiety through the Zung Self-rating Anxiety Scale (Before:  $M = 62.6$ ,  $SD = 9.5$ ; After:  $M = 56.8$ ,  $SD = 11.6$ ) and the Hamilton Anxiety Rating Scale (Before:  $M = 24.36$ ,  $SD = 9.11$ ; After:  $M = 17.4$ ,  $SD = 10.4$ ). The HTP method is a popular technique that consists of the participants drawing a house, tree, and a person (Yu et al., 2016). The HTP method allows for a certain amount of individuality, considering the participants can draw any type of house and person, but it is also structured as these elements are required as a part of their drawing. Although both Yu et al. (2016) and Kamal et al. (2016) had different amounts of structure required of the participants during their experiments, there has been no previous research comparing the effectiveness in reducing stress between two methods of art therapy that require different amounts of structure.

### **Method**

#### *Objectives*

The objective of conducting this research was to establish whether the amount of direction provided during art therapy would impact the efficiency of reducing high levels of stress in high school students. Consequently, this study

hypothesized that [1] The majority of the studied population experiences high levels of stress. [2] Art therapy will be effective in reducing the stress of this population. [3] Compared to structured art therapy, non-structured art therapy will be more effective in reducing stress than structured art therapy.

#### *Participants and Ethical Considerations*

Adolescents were selected as the demographic for this study because they consist of the generation that has been experiencing significantly harmful stress levels due to academics. This population is especially vulnerable to the negative impacts of stress because of their undeveloped brains. Rather than studying younger students who have to take art classes as part of a curriculum, studying the impact of art therapy on adolescents is what this research aims to do because it can be used for self-regulating one's own stress or possibly be implemented in a classroom environment.

To properly control environmental factors that may impact the results, the study had to be conducted in-person. To protect all individuals involved, only students from a northeastern high school were chosen to participate. Considering the need for in-person contact during this experiment, only students in grades nine through twelve from the northeastern high school participated in the study to prevent the transmission of Covid-19 as much as possible and guarantee the safety of the participants and the researcher. There were 50 participants in total with 18 students in Group A and 32 students in Group B. The collection process of the data was completely anonymous and only required basic information such as ethnicity and gender. Lastly, an in-school Institutional Review Board (IRB) reviewed the procedure to ensure ethicality and protection of human rights for this protected group beginning the study.

#### *Procedure*

The experiment was developed based upon the procedures of past research. First, it was established that two groups of participants were required: a group that participated in a structured (Group A) art therapy activity and another group

that participated in a non-structured (Group B) art therapy activity. Group A was asked to complete the house-tree-person (HTP) art therapy method, a method in which the participants were required at minimum to draw a house, person, and a tree. However, in an effort to produce better results, specific colors were required to be associated with different aspects of subjects' drawings to give more of a sense of structure. Contrarily, Group B was given full creative freedom with the provided materials (colored pencils and paper borrowed from the school's art department), meaning that they could use the materials during the five-minute art therapy session to their best interests.

Data was collected before and after the experiment using a self-made questionnaire that was based on questionnaires used in past research. The self-made questionnaire was influenced by reliable surveys such as The Perceived Stress Scale (PSS). As supported by Cohen et al. (1983), the PSS is effective in taking an overall diagnostic of perceived stress. Also, to certify the reliability of the survey questions, a Cronbach's Alpha was conducted. With slight alterations, the scores for all variables resulted as greater than 0.7, indicating that all variables were reliable.

Thirty-eight questions in total were included in the survey in which a 5-point Likert scale was utilized as a measure to receive analyzable data. Questions one through four and 28 through 30 of this questionnaire were demographic questions and were used to group and organize the data. Questions five through 17 were implemented to measure the perceived stress of this population. Questions 18 through 22 possibly induced stress in these students. Questions 23 through 27 and 31 through 35 are the same questions in a different order and were applied before and after the experiment to detect any changes in acute stress levels. Questions 36 through 38 were incorporated to document participants' personal reflections about their thoughts on the art therapy session.

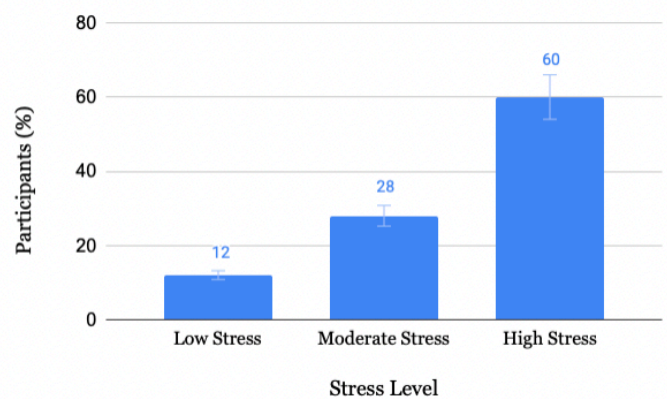
*Data Analysis*

First, the data was imported from an excel spreadsheet into SPSS for statistical analysis. The perceived stress variable was partitioned into three groups: low stress, moderate stress, and high stress

based on natural breaks in the data. In addition, the personal reflection variable was also separated into three questions, and the data of each question was separated in a similar manner. One paired-samples *t*-test was conducted to compare the overall acute stress levels before and after the art therapy. Two independent samples *t*-tests were conducted to determine if the type of art therapy affected the outcome of the amount of stress that was reduced and to see if the type of art therapy affected the participants' personal reflections about the art therapy. Lastly, a Pearson's correlation was conducted to determine if prior experiences with art therapy had any correlations with the amount of stress diminished.

**Results**

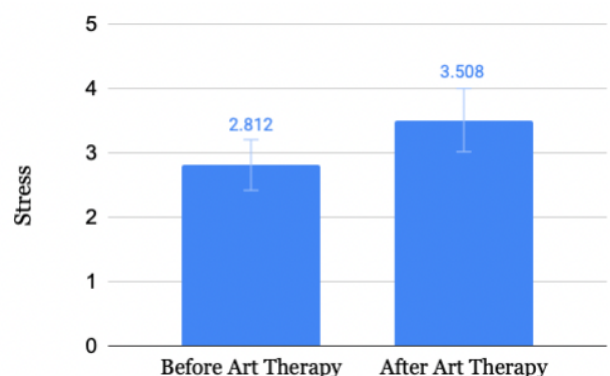
*Hypothesis 1: The majority of this population of students have high stress levels.*



The 50 participants were asked a series of questions in which the data would be analyzed to determine their general perceived level of stress. 30 students (60%) were evaluated to have high stress, 14 students (28%) were evaluated to have moderate stress, and 6 students (12%) were evaluated to have low stress. Therefore, the first hypothesis was accepted.

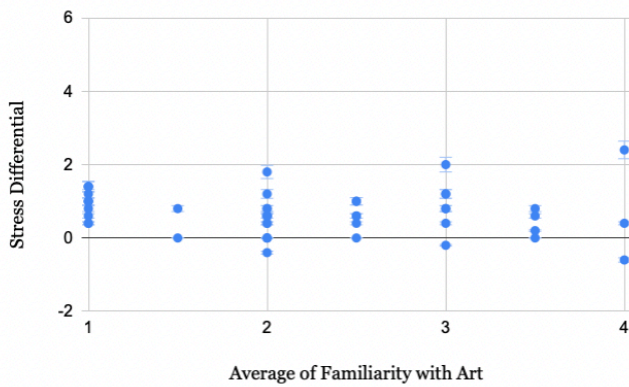
*Hypothesis 2: Art therapy will be effective in reducing the stress of this population.*

**Figure 2. Stress Levels Before and After Art Therapy**



A paired-samples *t*-test was conducted to compare the acute stress levels of all participants pre-art therapy and post-art therapy. There was a significant difference in the scores for pre-art therapy ( $M = 2.8, SD = 0.7$ ) and post-art therapy ( $M = 3.5, SD = 0.7$ ),  $t(49) = -8.13, p < .001$ . Therefore, the second hypothesis was accepted.

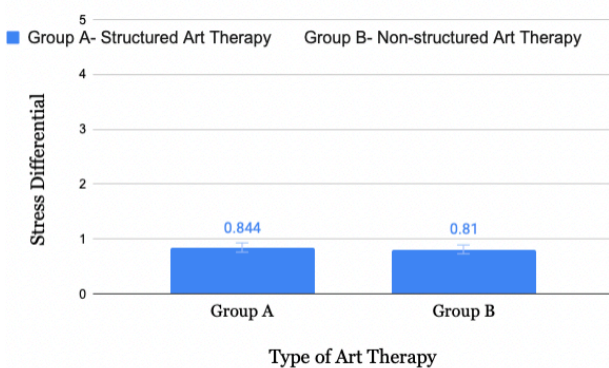
**Figure 3. Stress Differential vs. Average of Familiarity with Art**



A Pearson’s correlation was computed to assess the relationship between the stress differential of all participants and familiarity with art. Based on the results of the study, the stress differential of all participants has no relation with familiarity with art  $r = .09, p > .05$ . Thus, art therapy was effective no matter the participants’ previous experience with art.

*Hypothesis 3: Compared to structured art therapy, non-structured art therapy will be more effective in reducing stress.*

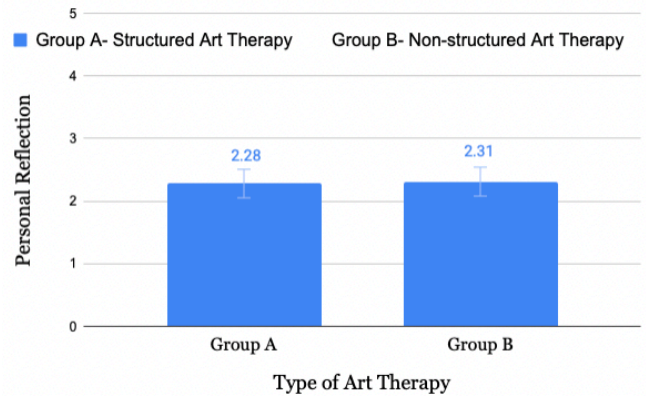
**Figure 4. Stress Differential vs. Type of Art Therapy**



An independent-samples *t*-test was conducted to compare the stress differential in non-structured and structured art therapy conditions.

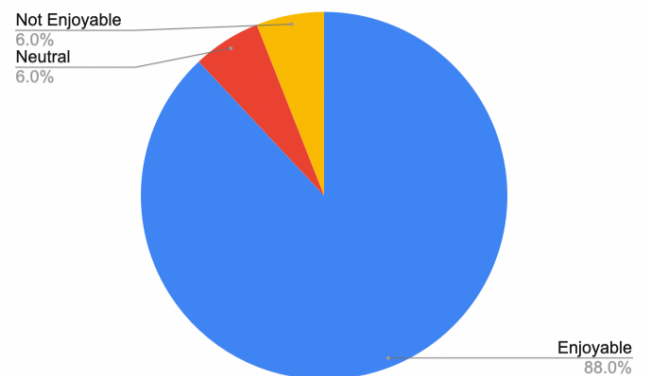
There was not a significant difference in the scores for non-structured ( $M = 0.6, SD = 0.6$ ) and structured art therapy ( $M = 0.9, SD = 0.7$ ) conditions,  $t(48) = 1.31, p > .05$ . Therefore, the third hypothesis was not supported.

**Figure 5. Personal Reflection vs. Type of Art Therapy**



An independent-samples *t*-test was conducted to compare the personal reflection variable in non-structured and structured art therapy conditions. There was not a significant difference in the scores for non-structured ( $M = 2.3, SD = 0.6$ ) and structured art therapy ( $M = 2.3, SD = 0.8$ ) conditions;  $t(48) = -0.16, p > .05$ . Therefore, the art therapy method did not affect the outcome of the enjoyableness of the art therapy, personal perception of the effectiveness of the art therapy, and likelihood to use art therapy to manage stress in the future.

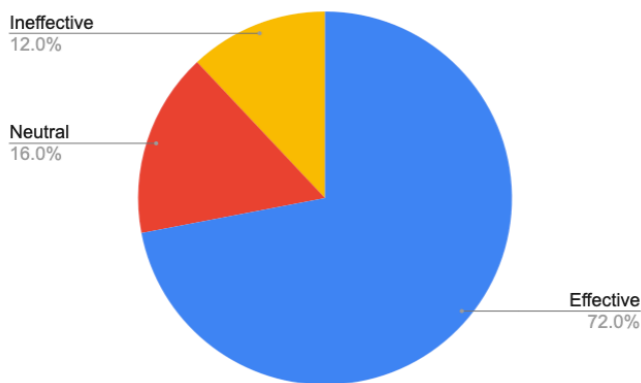
**Figure 6. Personal Reflection: Enjoyableness of Art Therapy**



The 50 participants were asked to reflect on how much they enjoyed the art therapy session. 88% of

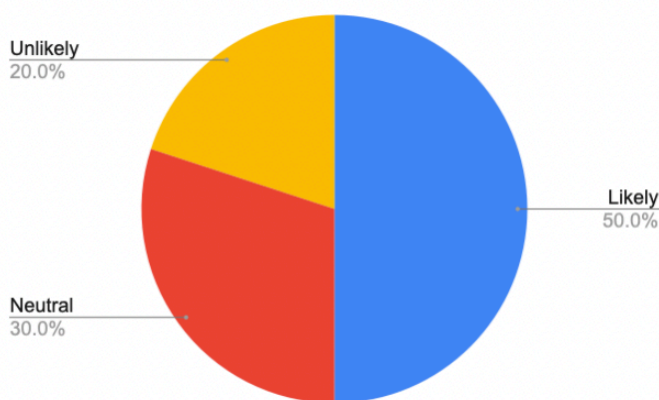
students enjoyed the art therapy, 6% had neutral opinions about the experience, and 6% did not enjoy the experience. Therefore, a majority of the participants enjoyed the art therapy, indicating that this population enjoys doing creative practices to manage their stress and are more likely to utilize it in the future.

**Figure 7. Personal Reflection: Perceptions on Effectiveness of Art Therapy**



The 50 participants were asked to reflect on whether they believed the art therapy was effective in reducing their stress. 72% of participants believed that art therapy was effective in reducing their stress, 16% had neutral opinions, and 12% believed that art therapy was ineffective in reducing their stress. Therefore, a majority of students believed that art therapy was effective in reducing their stress, indicating that their opinions agree with the statistical results of the experiment.

**Figure 8. Personal Reflection: Likelihood to Use Art Therapy to Manage Stress in the Future**



## Discussion

The first hypothesis of this study states that the majority of adolescents experience high levels of stress. As presented by Figure 1, hypothesis one was supported by this study probably because of students' busy schedules and the pressure that is forced on them to be successful. Furthermore, hypothesis three states that compared to structured art therapy, non-structured art therapy will be more effective in reducing stress. Figures 4 and 5 reveal that there was very little difference in the means when comparing the non-structured and structured art therapy's stress differentials and little difference in the responses of the participants for their personal reflection on the art therapy depending on their group. Therefore, hypothesis three was not supported likely because both experiences provided students with an opportunity to express and organize their innermost thoughts and emotions in a meditative way. However, hypothesis two was supported.

Hypothesis two states that art therapy will be effective in reducing the stress of the participants. These results remain in agreement with Curl (2008), Malboeuf-Hurtubise et al. (2021), and Kamal et al. (2016). According to Figure 2, there are significant results in the means of acute stress before and after the subjects participated in the art therapy within the five-minute time period. This is very important because it indicates that art therapy is effective within a short time period and can be incorporated into students' busy schedules unlike the research from past studies. To summarize, the art therapy sessions seemed to be effective in reducing stress because it offered students a safe space without any high stakes to thoroughly express themselves through a simple practice that did not greatly interfere with their schedules.

In addition to the time period, this study also discovered that previous art experiences had no impact on the amount of stress diminished by the art therapy, evidenced by Figure 3, indicating that art therapy was effective in diminishing stress among students despite whether they had artistic backgrounds or not. Ultimately, this study was equally effective in reducing the stress of participants no matter which art therapy method they participated in, the short amount of time, and

their familiarity with doing art. This study may have been effective for everyone because of the lack of judgement from others of artistic skills when asked to doodle either what they want to or a simple drawing.

Upon completion of the experiment, participants were asked to answer a series of personal reflection questions. Figure 6 reveals that a majority of participants enjoyed the art therapy session. Moreover, Figure 7 reveals that a majority of subjects believed that art therapy was effective in reducing their stress. These two factors would most likely indicate that a majority of the tested population would start implementing art therapy practices into their daily lives, but it seems that this is not the case. As supported by Figure 8, only half of the participants said that they were likely to use art therapy to manage their stress in the future, which is surprising because students generally had positive opinions about the art therapy.

From these results the ultimate conclusions we can come to are: [1] Art therapy is effective in reducing stress, [2] Art therapy is effective even within 5 minutes of time, and [3] art therapy is effective no matter previous art therapy experience. If students properly manage their stress levels, they likely won't undergo the many detrimental effects that stress has upon the human body. Furthermore, students will be less likely to make reckless decisions and experience allocastic overload (McEwen 2017), regarding eating, alcohol consumption, and sleeping habits.

### Limitations

This experiment required there to be two groups: Group A and Group B. When students first signed up to be part of the study, they were offered multiple time slots so each group could be tested separately. Since more students signed up for one time slot compared to another, it inevitably resulted in a non-randomized and unequal sample of participants in each group. Moreover, a majority of the participants identified as Asian and female and were from an affluent suburban high school, so this study may not apply to every high school student, gender, or ethnicity. Furthermore, the different times at which the groups were tested could have an impact on the results.

### Future Study

Since only 50% of students believed that they were likely to use art therapy in the future to manage their stress, researchers need to determine a method that will engrain art therapy practices in students' daily lives. If art therapy is incorporated into the school day and is reinforced throughout school districts, many students will be more likely to utilize art therapy and manage their stress levels before their acute stress transitions into chronic stress. Art therapy can be integrated into the education system by a variety of methods. For example, despite balancing the groups, testing a larger, more diverse sample of participants to address, utilizing more mediums of art during art therapy, or even conducting the experiment in a quieter environment, future research can look into the impact of doodling in class on academic performance and stress levels.

Another option for future research is testing if art students are less stressed than students who are not enrolled in any art courses, which can determine if schools should give art education more of an importance in today's society for schools that mainly focus on topics such as science and math. Future studies can also focus on implementing five-minute art therapy sessions throughout the day and determine its impacts on stress levels and academic performance. If these studies are soon tested, they will add more to the current body of knowledge and may provide solutions to an urgent long-term problem.

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