

# Assessing Stress Reduction as a Function of Artistic Creation and Cognitive Focus

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## Abstract

*In this outcomes study (N=40), changes in stress levels were compared across two participant conditions for a period of artistic activity with a cognitive focus on either a personally stressful or positive situation. Results indicated that participants in the positive-focus condition demonstrated a significant decrease in stress, whereas participants in the negative-focus condition demonstrated a slight increase in stress ( $p < .05$ ). These findings on stress reduction give strength to the hypothesis that art making is a means of receiving a "creative high" (Foster, 1992), although long-term follow-up is necessary to adequately assess this phenomenon as it may pertain to art therapy.*

## Introduction

Art therapy has a firmly established history as a profession, yet many researchers have documented a relative lack of quantitative data attesting to the reliability and validity of art therapy (Betts & Lalage, 2000; Malchiodi, 1995). This study addresses the need for data on the effectiveness of art therapy by looking at the effect of creativity on an emotional process. In order to be conducive to a quantitative study, and to narrow the research focus, stress reduction was identified as a quantitative measure that could be assessed as a function of artistic activity. In reviewing the existing literature on art therapy and stress reduction, the different facets of art therapy and the importance of creativity to mental health are discussed first. Active and passive methods of stress reduction within art therapy are then compared, followed by consideration of the relationship between cognitive focus and artistic creation.

Art therapy is described as a kind of psychological therapy that uses art as a tool for facilitating therapeutic growth (Moon, 1994). Art is a flexible medium for this purpose due to the wide range of methods that qualify as art, including writing, dancing, music, painting, wood-working, or collage making. There are a variety of sources that contributed to the historical development of the field. For example, McConeghy (2003) identified art therapy's roots in art education with its emphasis on the nature of

the relationship between a person and the works that person creates. By leading "students to an appreciation of the living God within," (p. v), some teachers stepped beyond the field of education to help pioneer the practice of art therapy. Both artwork and the process of making art require self-reflection, the cornerstone of psychotherapy.

## Art Therapy as Catharsis

One benefit of art therapy may be the positive effect it can have on mood. Grodner, Braff, Janowsky, and Clopton (1982) assessed the effects of a combined program of movement therapy and art therapy on individuals' self-perceived moods. Participants were placed in one of three treatment groups: a directed art/movement activity group, a non-directed art activity group, and a no-treatment group. In the directed art/movement treatment group, participants were asked to complete an art project in dyads without verbal communication. Needs had to be expressed through body language and gestures only. In the non-directed art treatment group, participants were given art materials and were simply asked to experiment with the materials. The non-treatment group did not engage in any art or movement. The Profile of Mood States was used to assess mood and stress levels before and after treatment; this instrument has six different scales that measure various aspects of personality and mood. The participants in the combined art/movement therapy group demonstrated a significant improvement in mood on all six scales. The non-directed art treatment group showed an improvement only on the depression-dejection scale, and the control group showed no significant changes on any of the mood scales.

Anecdotally, these authors reported that some participants lingered after the art/movement treatment condition, during which time they were urged by their peers to discuss their fantasies and feelings. The authors speculated that using other modes of communication to express practical needs allowed the participants to reveal more information about personal issues. That is, by experiencing the therapeutic benefits of art and movement, these individuals may have felt more confident to express thoughts that they were uncomfortable expressing prior to the experience. The findings of this study support the hypothesis that a primary effect of art therapy is cathartic; the expression of emotions by creating something unique is empowering and may boost mood and self-esteem (Grodner et al., 1982; Moon, 1994; Foster, 1992).

In their early study, Grodner et al. (1982) emphasized the process of art creation as opposed to the finished prod-

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uct alone. In a later study investigating the therapeutic benefits of artistic creation, Foster (1992) assessed the value of collage in a program for institutionalized elders. Through qualitative analyses of interviews conducted by Foster and the statements of the elders themselves, the program appeared to engender a sense of power and inner locus of control for individuals who were physically reliant on others. The opportunity to create art about subjects of their own choosing helped to restore the participants' sense of personal control and to achieve happier, healthier lives (Foster, 1992). Foster posited, "I make a decision therefore I exist," (p. 37) as one of the ways in which his collage program enhanced mental health. This idea, that artistic expression is ultimately a form of self-validation, also was expressed by Moon (1994):

Every paint streak, each chalk line, every slab of color—harmonious and dissonant [alike]—declares to the artist themselves, to the beholders of their work and to all humankind that "I am, I am here and I have something to express." (p. 30)

The very nature of art creation can provide an individual with choice, freedom and power, which are experiences of agency often lacking in individuals in mental health settings. According to Moon (1994), these benefits of artistic creation make creativity an important component of a person's overall mental health. Unfortunately, as noted by McConeghy (2003), modern Western societies have become disenchanting with artistic endeavors simply because artistic creation rarely has significant financial value. A focus on the monetary value of art clearly overlooks the myriad other psychological and social benefits that can arise from the creative process.

### Art as a Method for Problem Solving

Other artistic methods of stress reduction may be more active and cognitive in nature. Mental imagery and guided imagery are often used in therapy. Once taught, either technique can be used outside the therapy room. The focus of both these techniques is to reorganize one's thoughts or shift one's focus for the purpose of stress reduction or better mental health. Organizing one's thoughts to help process stressful situations can be helpful both for the problem solving situation at hand and for stress reduction with overall mental health as a by-product (Leviton & Leviton, 2004; Pinkard, 1990).

The organization of thoughts and feelings into a coherent narrative is particularly useful in dealing with traumatic incidents (Pennebaker & Francis, 1996). Journaling and diary writing have a long history of serving this function and also have been employed in the form of writing therapy. The use of journaling in therapeutic environments has been shown to be effective among college students in promoting health and coping skills; participants engaging in journaling had fewer visits to campus medical clinics than those in control groups, thus showing a direct physiological effect of making inner emotions coherent (Pizarro, 2004).

Indeed, the act of cognitively processing traumatic events has been shown to be important in stress reduction (Collie, Backos, Malchiodi, & Spiegel, 2006; Pennebaker & Francis, 1996). In Pennebaker and Francis's (1996) study, incoming college freshmen were asked to write about either their first year on campus or about superficial topics. Using information from long-term hospital records and grade reports one month after the study, the researchers found that study participants who delved deeply into the subject matter and truly processed stressful situations had fewer hospital visits and better overall grades. In other words, the processing of stressful incidents through journaling led to better mental and physical health. The authors proposed that once a stressful situation is put into language, a schema can be developed, reinforced, and assimilated into a person's overall self-concept. Integrating a stressful situation into one's overall schema may make it less stressful and allow for better coping with the problem in question.

This notion of problem solving through journaling or art creation is not new. Arnheim (1969) examined mental processes used in art making that art therapists believe may be involved in art therapy and discussed how visual perception corresponds to visual thinking. Cognitive operations are not divorced from perception. Knowledge is built from the environment through the senses; the act of perceiving things visually is directly tied to the way one thinks about them. Exploring, abstracting, and problem solving are all processes of higher level thinking that depend heavily on perception. Given art's reliance on perception and the senses, Arnheim postulated that art could be used to facilitate problem solving if it is true that visual perception is equivalent to visual thinking. Carnes (1979) explored several theories concerning the cognitive processes that also are presumed to underlie art therapy. She supported Arnheim's notion of visual thinking and added that the nature of art creation is itself a process of problem solving. The artist is constantly making choices and deciding how best to create an artwork; therefore, it might follow that this process of problem solving through art can be beneficially applied to any life problems, not just those of an artistic nature.

Suwa (2003) revisited this idea in a study wherein architects were required to problem solve by generating various artistic drafts for a particular project. The findings demonstrated that each draft was essential because it contributed not only to problem solving, but also to "problem finding" in the search for the best possible layout. It is the act of problem finding as well as problem solving that helped the architects create their best outcomes. These findings support the value of the creative process in art therapy and, specifically, the importance of focusing on a particular problem during art making.

The auxiliary benefit of problem finding found in Suwa's (2003) study is comparable to a similar finding in a photo-collage program for young girls, where art therapy was used for the purposes of problem solving and conflict resolution (Katz, 1987). The participants were 8-year-old girls who displayed problems socializing and had mood swings ranging from fearfulness to aggression. Katz's pro-

gram was designed to alleviate anxiety, thereby reducing immediate stress levels, as well as to teach social skills by having the group use magazines, photos, and paper as tools for conflict resolution. As it was a qualitative study, no quantitative data were collected, but the overall impact of the program upon the individual girls was reported to be an increase in self-esteem as well as a reduction in anxiety. The process of creating collages together allowed these socially isolated participants to learn to work together and to become friends. The ability of the participants in this program to go back and forth from group discussion to collage in order to solve real world problems suggests that Suwa's (2003) demonstration of problem-focus and problem-finding in art could be supported in therapeutic settings as well.

Riley (1997) led a group in which art therapists explored and expressed the themes and issues that arose in working with their clients. The group focused on situations that were causing stress, and the participants sought to express those stressful themes in their artwork. The final product described by Riley was a melee of scribbles and nonsensical images; the work of one crowded the work of another on a single, large sheet of paper, but the outcome of what was gained could be seen from one session to another. Participants reported feeling freer and more confident as the weeks passed and the images changed from depressing and box-like scribbles to more colorful, freely flowing images (Riley, 1997). The results of the therapists' work in this study were self-reported decreases in stress levels. Although this was a case study with no quantitative data to support the findings, the responses give strength to the claim that problem-focused art therapy can be used for the specific purpose of stress reduction.

Research on the effectiveness of art therapy described here has tended to view the benefits of art either as catharsis or as a process of problem solving. Pizarro (2004) compared these two possible foci in a study on the effects of writing therapy versus art therapy on stress and anxiety. Participants were placed into a group with one of three conditions: writing about a stressful situation, creating a drawing about a stressful situation, or drawing a still-life unrelated to a stressful situation. Immediately after the experiment, the writing group reported higher stress and anxiety levels and lower participant satisfaction than the drawing groups. In contrast, participants in both the art-stress group and the control still-life drawing group reported high overall satisfaction with the study and the experience. Differences in stress scores of the Profile of Mood States for the art-stress and control still-life groups were not significant. Thus, the level of stress appeared to differ as a function of artistic exercise and not cognitive focus. Pizarro speculated that the level of cognitive organization required during the period of problem-focused writing was greater than that required during the period of artistic creation and that this cognitive organization might result in better overall mental health in the long term. The process of writing about stress may have worsened mood states immediately following participation, but the author hypothesized that there may have been long-term benefits not accounted for in the study (Pizarro, 2004).

These studies demonstrate the importance of considering measurement time points in assessing the effectiveness of art therapy. The effects of art therapy may be measured in either the short term or the long term. Both time points have merit; however, short-term assessment may be heavily influenced by difficult emotions brought up during the process of artistic creation and thus may not demonstrate expected positive effects on mental health. Over time, positive effects on mental health may emerge as the individual further processes and comes to terms with the negative emotions involved.

## Goals and Hypotheses of the Current Study

The current study assessed short-term stress reduction as a function of positive versus negative cognitive focus during artistic creation. Participants were randomly assigned to one of four treatment groups; the type of artistic creation (collage or drawing) was crossed with cognitive focus (focus on a negative event versus focus on a positive event). Participants were either asked to focus specifically on a personally stressful situation while they created their artwork (negative focus) or to focus on a positive situation (positive focus). The goal was to determine which cognitive focus would engender a greater short-term reduction in stress. This study built upon the work of Pizarro (2004) by including both a positive and negative focus for two types of art, and also by incorporating only nonverbal artistic media.

Although this study was exploratory in nature, it sought to support one of two possible hypotheses. If focusing on the stressful situation facilitated problem finding and problem solving as shown in the research of Suwa (2003), then participants in the stress focus group (negative focus) should have greater short-term reductions in stress than those in the positive-focus group. Conversely, if focusing on the stressful event led to greater short-term rumination and activation of the feelings of stress, as shown by Pizarro (2004), then participants in the positive-focus group should have greater short-term stress reduction. Members of the positive-focus group also would have greater stress reduction if these participants gained from the cathartic benefits of the positive-focus art making. Under this latter hypothesis, participants in the negative-focus group would show either no change or possibly a potential increase in stress.

## Methods

### Participants

Participants were recruited from an introductory psychology course participant pool in a medium sized university in the U.S. Midwest. The participants, 30 women and 10 men, were randomly and equally distributed into the four treatment groups: a negative-focus condition that involved drawing, a positive-focus condition that involved drawing, a negative-focus condition that involved collage-

making, and a positive-focus condition that involved collage. Collage and drawing were used in this study because they are media that beginning artists can use to express feelings with ease (Landgarten, 1993). The mean age of participants was 19.65 years ( $S.D. = 1.86$ ; range 17-27). First-year students made up 58% of the participants, 23% were sophomores, 15% were juniors, and 3% were seniors. Participants received course credit for their participation; no other inducement was provided. All participants were treated in accordance with American Psychological Association (APA) ethical guidelines for research with human subjects (2001).

## Measures

**State Trait Anxiety Inventory.** A self-report assessment, the State-Trait Anxiety Inventory (STAI), was administered to measure the participants' perceived stress levels before and after the experimental manipulation (Spielberger, Sydeman, Owen, & Marsh, 1999). Spielberger et al. created two versions of the STAI, one assessing anxiety as a trait and one assessing anxiety as a state. The current study focused on anxiety as a state (S-Anxiety) because of its temporary nature and the fact that it is highly sensitive to changes in the environment. The internal consistency for the STAI S-Anxiety scale is in the acceptable range ( $\alpha = .90$  or higher). The STAI-S requires participants to respond to a series of 20 statements reflecting how they feel in the present moment. Participants rated an equal number of anxiety-present statements (e.g., I am tense, I am worried) and anxiety-absent statements (e.g., I feel calm, I feel secure) on a 4-point Likert scale. For scoring, the anxiety-absent statements were reverse scored; responses to the 20 items were then tallied and averaged, such that higher scores indicated greater perceived stress.

**Heart Rate.** Stress was also assessed through changes in the participants' heart rates. The experimenter measured participant heart rates for a period of 30 seconds both before and after the experimental manipulation. This physiological measure of stress was used to corroborate self-reported stress levels on the STAI.

**Manipulation Check.** Finally, for the purposes of assessing how successfully participants were able to focus on a positive versus a negative event, participants also completed a manipulation check, which rated the extent of their focus during the period of artistic activity on a 4-point Likert scale, such that higher scores indicated a greater degree of focus.

## Materials

The experimenter provided the participants in the drawing group with drawing pencils and erasers. Participants in the collage group were given magazines, glue, and scissors. The magazines were varied and selected based on the availability of pictures in them. All participants were given blank sheets of white paper (13" x 24") on which to create their artwork.

## Procedure

Participants completed the experiment individually. Following consent procedures, they filled out a demographic questionnaire and the first STAI. The experimenter requested participants' permission to hold their wrists for 30 seconds to assess their heart rates. Participants were then randomly assigned into one of the four art-focus conditions and asked to create either a collage or a drawing. Those in the negative-focus condition were asked to focus on something that happened to them within the past 2 weeks that was highly stressful. Those in the positive-focus condition were asked to focus on something positive that happened to them within the past 2 weeks. In all conditions, participants were asked to try to maintain their respective foci throughout the entire art creation process.

The time allotted for collage or drawing was 25 minutes for all participants. Participants received a 5-minute warning after 20 minutes had passed. During the period of creative expression, the experimenter remained in the room with the participants in order to be available for questions or help, but faced away from the participants to avoid causing them to feel judged or evaluated. Collages and drawings were not collected; instead, participants were instructed to put their artistic creation away in a bag or purse to take home.

Following the artistically active period, the STAI was re-administered and heart rates were measured for a second time. Participants then completed the manipulation check, wherein they rated how well they were able to focus on the positive or negative event. Lastly, all participants were debriefed. The entire process lasted approximately 45 minutes for each participant.

## Results

Of the 40 participants, 3 had missing data for one of the heart rate assessments and 4 others missed one question in the STAI. Rather than drop the 4 participants missing STAI data, within-participant means were inputted for the missing data. Participants missing heart rate data were excluded from any analyses concerning heart rate.

The manipulation check initially determined how successfully participants were able to maintain their cognitive focus during the period of artistic creation. On the 4-point Likert scale, participants reported a mean level of focus of 3.05 ( $SD = 0.96$ ) with 12.5% of the participants responding that they were able to focus "not at all," 5% "somewhat," 47.5% "moderately," and 35% "very much." An independent sample  $t$ -test revealed that the mean score of the manipulation check for the positive-focus group was 3.15 ( $SD = 0.88$ ) whereas the mean score for the negative-focus group was 2.95 ( $SD = 1.05$ ). These scores were not significantly different [ $F(38) = 0.75, p > .05$ ]; therefore, participants' ability to stay focused did not differ according to positive or negative cognitive focus.

The average baseline heart rate across all four conditions was 37.05 beats within 30 seconds ( $SD = 5.51$ ); mean heart rate following the treatment manipulation was 37.16

beats per 30 seconds ( $SD = 5.29$ ). The mean STAI score at baseline was 34.10 ( $SD = 9.35$ ) and 32.28 ( $SD = 10.28$ ) following the experimental manipulation. STAI scores and heart rates were not significantly correlated at baseline ( $r = -0.13, p > .05$ ) or following the experimental manipulation ( $r = -0.17, p > .05$ ).

### Cognitive Focus Versus Form of Artistic Activity

A 2 (negative focus vs. positive focus) by 2 (drawing vs. collage) ANOVA was conducted on changes in STAI scores and changes in heart rate from baseline to post-manipulation. See Table 1 for marginal means for difference scores in the STAI and heart rates by cognitive focus and artistic activity. There was a main effect of cognitive focus on STAI scores [ $F(1) = 13.76, p < .01$ ] such that participants in the positive-focus group across both artistic activities experienced a greater reduction in stress than participants in the stress focus group. In fact, consistent with Pizarro's (2004) findings, participants in the negative-focus group demonstrated a slight increase in stress following the experimental manipulation. There was no main effect of artistic activity on STAI, nor was there an interaction between cognitive focus and artistic activity. In contrast to the results for STAI, there were no main effects of cognitive focus or artistic activity on heart rate, nor were there any interactions.

### Discussion

This study assessed short-term stress reduction as a function of cognitive focus during artistic creation. The goal was to determine which cognitive focus, positive or negative, would engender greater short-term reduction in stress. It was hypothesized that if participants in the negative-focus group demonstrated greater short-term reductions in stress than those in the positive-focus group, then focusing on a stressful situation may facilitate greater problem finding and problem solving as shown in Suwa's (2003) study. However, it should be noted that Suwa's theory of problem solving through art creation relied on the artist's ability to work the problem through a series of drafts. Given the one-shot nature of the current study, this condition was not possible to replicate. Nonetheless, a decrease in stress for this group can point to a start along this path of problem solving. In contrast, if participants in the positive-focus group demonstrated greater short-term stress reduction, then perhaps therapeutic gains from artistic creation in art therapy could be derived from art therapy's cathartic benefits.

Findings from this study support the second hypothesis, namely that art activity involves emotional catharsis, which then helps facilitate stress reduction. Participants in the positive-focus condition experienced significant reductions in stress regardless of the type of artistic activity they engaged in. Foster (1992) explained the lightened atmosphere of the retirement home as being a product of the "creative high" engendered by the collage making program he created for its elderly residents. The same theory could account for the stress reduction experienced by participants

**Table 1**  
Marginal Mean Changes in STAI Scores and Heart Rates from Baseline to Post-Manipulation According to Cognitive Focus and Artistic Activity

Condition		<i>M</i>	<i>SD</i>
Cognitive Focus			
STAI	Positive	7.00 <sup>a</sup>	6.07
	Negative	-3.35 <sup>a</sup>	10.6
Heart Rate	Positive	-0.21	3.61
	Negative	0.28	2.97
Artistic Activity			
STAI	Drawing	1.10	8.37
	Collage	2.55	11.64
Heart Rate	Drawing	0.44	2.73
	Collage	-0.04	3.76
Note: All means represent marginal means; <sup>a</sup> = indicates that the marginal means are significantly different ( $p < .01$ ).			

in this study. The cathartic release of positive emotion combined with the satisfaction of creating something new and unique may have given the participants the same "creative high," which presented itself as an immediate reduction of stress.

In contrast to the positive-focus group, participants in the negative-focus group showed a slight, non-significant increase in stress following the period of artistic activity. This slight increase in stress may have resulted from the focus on stress, leading to greater short-term rumination and activation of stressful feelings, as identified by Pizarro (2004). Pizarro also found a short-term increase in stress among some participants, but suggested that there may have been long-term benefits that were not assessed. In the current study, participants in the negative-focus condition may have gone on to experience significant long-term stress reduction, despite the short-term activation of their stress levels. Unfortunately, the scope of this study did not include a long-term follow-up.

Finally, in contrast to Pizarro's (2004) study, there was no main effect of artistic medium; engaging in drawing versus collage making did not produce a differential effect. Pizarro (2004) used drawing and writing as the two art media and found short-term increases in stress in the writing condition. She identified the heightened cognitive organization required to put thoughts and emotions into words in the writing condition, and speculated that this may have resulted in greater short-term rumination and an increase in stress. Participants in Pizarro's negative-focus drawing group experienced significant stress reduction, whereas in this study, the group of participants with a negative focus experienced a slight, non-significant *increase* in stress. The reason for this discrepancy is unclear. To more directly compare with Pizarro's work, future research would need to incorporate a writing condition along with the

other artistic media and cross all art conditions with cognitive focus to further clarify this issue.

## Limitations and Suggestions for Future Research

One limitation of this study was the lack of a long-term follow up with participants to further assess changes in stress levels. As a result, the relationship between cognitive focus and stress reduction is limited to stress as a temporary mood state. Given the brevity of the current study, neither can one expect lasting changes to come about from a single exposure to art making. This could be remedied by instilling a longer period of time for artistic creation in the research design. By assessing changes in stress levels over longer periods of time or several sessions, the therapeutic benefits of art making on stress and anxiety could be examined as more enduring traits. As a next step, replication of the study with a population of clients being treated for an anxiety-related condition such as trauma, chronic stress, or life-threatening illness would help to address the limitation of a single encounter with creative expression and more closely examine these results in the context of a therapeutic relationship.

Another limitation of this study was the method of assigning participants to each artistic condition. Although random assignment is ideal from a research perspective, giving the participants a choice about the particular artistic medium they would like to utilize could facilitate greater therapeutic benefits. For example, someone not inclined towards drawing may have had an increase in stress that was unrelated to that person's cognitive focus, yet this same person might experience therapeutic benefits from some other type of artistic medium. Allowing participants to express themselves in a medium they are comfortable in could be considered for future studies.

This study has identified one of many facets of cognitive processes that could be examined through the lens of art therapy. Research on the function of creativity in such processes as stress reduction, mood management, or other aspects related to art therapy is important in understanding the use of art making in the field. An empirically-based examination of the various forms of art therapy and the mechanisms by which art therapy is effective will further the field of art therapy and further validate the use of art in psychotherapy.

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