

CREATIVITY, EXPRESSION, AND HEALING:
AN EMPIRICAL STUDY USING MANDALAS WITHIN THE WRITTEN
DISCLOSURE PARADIGM

A Thesis

by

PATTI GAIL HENDERSON

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 2007

Major Subject: Psychology

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Approved by:

Chair of Committee, David H. Rosen
Committee Members, Michael Duffy
Daniel A. Newman
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ABSTRACT

Creativity, Expression, and Healing: An Empirical Study Using
Mandalas within the Written Disclosure Paradigm. (August 2007)

Patti Gail Henderson, B.S., Texas A&M University

Chair of Advisory Committee: Dr. David H. Rosen

Empirical research regarding the therapeutic value of creative artistic expression in dealing with symptoms from traumatic events is lacking. James Pennebaker has studied the efficacy of written expression regarding traumatic events in promoting mental well-being. Individuals who have difficulties with cognitive processing (e.g., learning disorders) often lack the faculties necessary to form a cohesive written narrative. There are also individuals who lack a strong enough command of written language to engage in a written disclosure task, such as children and those who are illiterate or undereducated. These populations are unlikely to benefit from written disclosure simply because they lack the capacity to write at such a sophisticated level. Disclosure of trauma by such individuals might be better accomplished symbolically through a creative artistic task rather than through written or verbal channels. Furthermore, because the task is symbolic in nature, it may be a safer and more comfortable means of disclosing trauma for individuals who are reluctant to divulge such information out of fear or shame surrounding the event. The primary purpose of this study was to examine the healing aspects of creativity; specifically the usefulness of

creating a mandala. It was theorized that mandala drawing may provide the cognitive integration and organization to complex emotional experiences that yield a sense of personal meaning as well as serving as a mechanism of therapeutic exposure, as does the written disclosure task. By reviewing research in this field and attempting to duplicate previous research, this study used undergraduate college students as participants who met the criteria for Post Traumatic Stress Disorder (PTSD). The benefits were measured in terms of changes in PTSD symptom severity, depression, anxiety, spiritual meaning, affect, and the frequency of occurrence of physical symptoms and illness. Contrary to expectation, the current study failed to replicate previous results revealing statistically significant outcome differences for the mandala group. In fact, the finding was reversed in that the control group (drawing three objects or a kind of art therapy) showed a significant drop in PTSD symptoms at one-month follow up. Explanations for these differences are explored and future avenues of research outlined.

DEDICATION

To Greg, for always believing in me
and to Jesus who makes all things possible.

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INTRODUCTION

A large body of research (see Pennebaker, 1997a, 1997b for a review) has supported the healing effects of the written disclosure paradigm. There is also literature that reports mixed results (see Sloan & Marx, 2004b for a review). According to this theory set forth by James Pennebaker, writing about traumatic stressful events in an emotional way for as little as 15 minutes for 3 or 4 consecutive days brings about improvements in physical and mental health (Esterling, L'Abate, Murray, & Pennebaker, 1999; Pennebaker & Seagal, 1999, Smyth & Helm, 2003).

Written Disclosure Paradigm

The principle of therapeutic exposure posits that repeated contact to aversive conditioned stimuli leads to the extinction of negative emotions associated with such stimuli, resulting in beneficial outcomes (Foa & Rothbaum, 1998). Some researchers contend that written disclosure serves as a context in which individuals are repeatedly exposed to traumatic memories (i.e., exposure to aversive stimuli and the negative emotions associated with it), which allows for the gradual resolution of negative emotional associations across sessions (Kloss & Lisman, 2002; Pennebaker, 1997b; Sloan & Marx, 2004a, 2004b). This is theorized to be one of the mechanisms underlying the overall effectiveness of the written disclosure paradigm.

Another theory regarding the effectiveness of written disclosure on physical and mental health is the cognitive changes associated with this type of writing. Research has

This thesis follows the style of *Psychology of Aesthetics, Creativity, and the Arts*.

suggested (e.g., Esterling et al., 1999; Park & Blumberg, 2002; Pennebaker, 1997b) that the formation of a narrative incorporating the details of a traumatic event with the thoughts and emotions surrounding the experience can facilitate a cognitive integration of the experience. This cognitive restructuring serves to resolve the traumatic experience as well as bring a sense of meaning to the event as insights are gained through the process of writing. Once a meaningful and integrated narrative is formed, it is hypothesized that the traumatic event can then be summarized, stored, and allowed to become a non-threatening memory rather than a traumatic reminder that chronically enters consciousness, subsequently leading to a decrease in psychological distress (Smyth, True, & Souto, 2001).

Schoutrop, Lange, Brosschot, & Everaerd (1997) examined the effects of written disclosure on a group of college subjects who were selected based on the presence of previous traumatic experiences that continued to affect them. Asked to write about the same trauma for three days, results indicated that structured writing about stressful life events led to consistent and clinically significant decreases of trauma-specific symptoms, hostility, and depression when measured six weeks after the completion of the study. Although both groups improved, it was found that participants with 'high-severe' trauma did benefit more than those classified as 'low-severe' trauma, especially regarding decreases in depression both immediately following and 6 weeks subsequent to the completion of the study. This partially supports a previous study by Greenberg & Stone (1992) in which it was reported that more improvement in physical health was seen

among 'high-severe' trauma participants than 'low-severe' participants who wrote about their traumas.

Although the innovative work of Pennebaker and other researchers has supported the utility of the written disclosure paradigm and the numerous benefits associated with the disclosure of trauma, this model has been found to be ineffective among individuals with disordered cognitive processes or relatively severe depression (Gidron, Peri, Connolly, & Shalev, 1996; Stroebe, Stroebe, Schut, Zech, E., & van den Bout, 2002). Individuals who have difficulties with cognitive processing (e.g., those with schizophrenia, autism, learning disorders, mental retardation, or dementia) often lack the cognitive faculties necessary to form a cohesive written narrative. There are also individuals who lack a strong enough command of written language to engage in a written disclosure task, such as children, adolescents and adults who are illiterate or undereducated. And of course there are those who simply prefer visual-spatial exercises and experiences to verbal ones. Disclosure of trauma by such individuals might be more effectively accomplished through a creative artistic task in which one can visually symbolically depict and focus on a traumatic event.

The vast majority of written disclosure studies involve only written expression; however, Judith Pizarro (2004) performed a recent study that examined whether art therapy was as effective as writing therapy in improving the outcomes of psychological and health measures. Pizarro sampled 41 participants using two experimental groups (expressive art therapy or writing therapy) and a control art condition. Consistent with Pennebaker's findings, there was a significant decrease in social dysfunction within the

writing group yet the participants in the art groups did not have similar health benefits. Although the art groups did show a greater enjoyment of the experience, the researcher surmised, “generating art...may not provide sufficient cognitive organization, and, therefore may not be able to provide the same positive health benefits” as writing therapy (Pizarro, p. 10). A combination of the two was suggested in which writing could heal while art could make the process more enjoyable thus increasing therapy compliance.

Creativity, Expression, and Healing

An artistic task that lends itself particularly well to the symbolic expression and disclosure of a traumatic event is mandala drawing. A mandala, used as a meditative tool in various religions, but most famously in Tibetan Buddhism, is a circle (with inner symbolic patterns) that is thought to promote psychological healing, integration, and a peaceful state of mind when created by an individual. The use of the mandala as a therapeutic tool was first introduced by Carl Jung, who suggested that the act of drawing mandalas had a calming and healing effect on its creator while at the same time facilitating psychic integration and personal meaning in life (Jung, 1973). The mandala functions as a symbolic representation of emotionally laden and conflicting material, yet at the same time provides a sense of order and integration to this material. In this manner, drawing a mandala may be similar to a written disclosure in that it provides cognitive organization to complex emotional experiences, as well as provides an avenue for therapeutic exposure.

Art psychotherapists use the mandala as a basic tool for self-awareness, self-expression, conflict resolution, and healing (Cornell, 1994; Fincher, 1991; Kellogg, 1978; Slegelis, 1987). Within the realm of art therapy, the mandala generally refers to any art form that is executed within a circular context. Although most research into the healing aspects of mandala drawing has been limited to case studies and clinical observations (Couch, 1997; Cox & Cohen, 2000; Kellogg, 1978; Smitherman-Brown & Church, 1996), these studies argue for employing mandalas therapeutically within numerous populations and settings, including: schizophrenia and psychotic disorders, PTSD and dissociative disorders (Cox & Cohen, 2000), Attention-Deficit Hyperactivity Disorder (Smitherman-Brown & Church, 1996), and dementia patients (Couch, 1997). Cox and Cohen note that, particularly for individuals who have been shamed into secrecy by childhood abusers and find they are unable to discuss sensitive information regarding abuse, illustrative coding of traumatic events in drawings allows clients the ability to maintain secrecy (both from their therapists and from themselves) while at the same time symbolically communicating and resolving traumatic material (Cohen & Cox, 1989, 1995).

To date, empirical research on the use of mandalas as a therapeutic tool is limited. In one of the first attempts undertaken to examine scientifically Jung's theory that mandala creation promotes psychological health, Slegelis (1987) found that those who drew inside a circle experienced more positive affect than those who drew within a square. Although the results of the Slegelis study lend support to the argument that

mandalas have calming and healing properties, the experimental design and data were limited, and inhibit the inferences that can be drawn from the results.

A recent study by Curry and Kasser (2005) evaluated the effectiveness of mandala drawing in the reduction of anxiety. Anxiety levels were measured before and after an anxiety induction exercise, and after one of three coloring conditions (free-form, mandala-drawing, or plaid-form). Decreases in anxiety were experienced for those only in the mandala and plaid-form conditions. While these results show potential, the design of the research used pre-drawn mandala forms and pre-drawn plaid patterns, so the results could be interpreted in various ways, such as the calming effects of art therapy in general versus the effects of actually creating a mandala.

Another study which extended the written disclosure model to the use of creativity has found that the act of drawing mandalas had positive effects for individuals with symptoms of post traumatic stress disorder (PTSD) (Henderson, Rosen & Mascaro, 2007). The study found those who were in the mandala drawing condition had significantly lower levels of PTSD symptom severity at a one-month follow up compared to the control group. The current study sought to replicate this research on mandala drawing and the body of research that uses creativity to extend the written disclosure paradigm.

PURPOSE

The current research project proposed to test in a controlled manner, the psychological and physical health benefits of mandala drawing within a trauma population. In choosing a research design and methodology that would adequately achieve this goal, the author drew upon the techniques and methodology employed in a body of research by James Pennebaker and colleagues that examines the physical and psychological health benefits of disclosure of traumatic events through writing (Esterling, L'Abate, Murray, & Pennebaker, 1999; Pennebaker, 1997a, 1997b; Pennebaker & Seagal, 1999; Pennebaker & Susman, 1988; Smyth & Helm, 2003). The current study design was modeled closely after the recent studies conducted by Sloan and Marx (2004a) and Henderson et al. (2007). It sought to apply a creative variation of the disclosure paradigm, and this sort of creative extension has been encouraged (King, 2004).

The primary purpose of the current investigation was to replicate a recent study by Henderson et al. (2007) and further examine the healing aspects of drawing mandalas. Specifically, the psychological and physical health benefits of drawing mandalas were examined and creating mandalas was viewed as a therapeutic means of traumatic disclosure that symbolically organizes and integrates emotions and experiences, while serving the same function as writing a narrative. It was theorized that mandala drawing may provide the cognitive integration and organization to complex emotional experiences that yield a sense of personal meaning as well as serving as a mechanism of

therapeutic exposure, as does the written disclosure task. It may also provide a more relaxing and enjoyable experience than does the written disclosure of trauma which we examined in the current project.

Hypotheses

The first hypothesis was that individuals assigned to a mandala drawing condition would show a significant increase in psychological and physical health relative to control group participants both immediately following the intervention and at a one-month follow up. These benefits were measured in terms of changes in the variables of self-reported trauma symptom severity, depression, anxiety, spiritual meaning, affect, and decreases in the self-reported frequency of occurrence of physical health problems.

A secondary hypothesis examined whether decreased anxiety in the mandala condition served as a mediator to improvement, if any, in self-reported trauma severity.

A third hypothesis investigated whether affect within the mandala condition served as a mediator to improvement, if any, in self-reported trauma severity.

METHODS

Participants

Participants were prescreened for both the experience of trauma and trauma symptom severity using the Posttraumatic Stress Disorder Scale (PDS; Foa, 1995). Those who reported experiencing one or more traumatic stressor(s) (determined by responses drawn from a checklist contained in the PDS) and who showed at least mild-to-moderate levels of Post Traumatic Stress Disorder (PTSD) symptom severity (i.e., greater than 5 out of 48 on the PDS) were regarded as potential participants for the study. Potential participants were excluded from the study if they reported being currently in psychotherapy or currently taking psychotropic medication. These exclusion criteria were included to ensure that changes in outcome measures were due to experimental manipulation and not the effects of therapy or medication. These criteria were modeled after the Sloan and Marx study on written disclosure (see Sloan & Marx, 2004a) and utilized in a previous study (see Henderson et al., 2007).

The qualified participants were contacted and, if interested, randomly assigned to either a mandala or control condition. The results of the prescreen test were discarded, and new PDS assessments were given at the first group meetings. The participants consisted of 50 undergraduate students participating for course credit, recruited from Introduction to Psychology classes at a large southwestern university. There were both male (n=21) and female (n=29) students ranging in age from 18 to 22 (mean age =18.9, SD = .838). The types of trauma (Table A-1) included death or suicide of a family

member or close friend, physical abuse, serious health concern of family or self, verbal abuse, friend kidnapped, adoption or abortion, and witness to a traumatic event. The severity of the trauma ranged from 5 to 46 (mean trauma severity = 18.62, SD = 9.65). There were no significant differences in the trauma severity means between the mandala and control groups at pre-test.

Measures

Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1995) is a 49-item self-report measure to aid in the detection and diagnosis of PTSD. Participants report on PTSD symptoms that they have experienced within the last month. This measure not only yields PTSD diagnostic information but also provides an index of PTSD symptom severity. Items are rated with regard to presence (i.e., yes or no) and with regard to symptom severity. Symptom severity (questions 22 through 38) scores are rated from below 10 (mild), 10-20 (moderate), 21-35 (moderate-to-severe), to above 35 (severe) (Foa, 1995). The items on the PDS closely correspond to the DSM-IV posttraumatic stress disorder criteria (American Psychiatric Association, 1994). The symptom severity scores were used as the primary means of indicating changes in the severity of participants' traumatic symptoms from baseline (time 1) to completion of the intervention (time 2) to one-month follow-up (time 3). The coefficient alpha for the PTSD symptom severity score was .86 in the current study.

Beck Depression Inventory, second version (BDI-II; Beck, Steer, & Brown, 1996) is a 21-item self-report measure that assesses the symptoms of depression. Each item consists of four statements reflecting symptom severity levels. Individuals are

requested to select the statement that best describes their recent feelings (i.e., past two weeks) and experiences. This instrument was used to assess whether participants were experiencing levels of depression. The coefficient alpha for the BDI-II was .83 in the current study.

State-Trait Anxiety Inventory (STAI; Spielberger, 1983) is a 40-item, self-report measure that assesses levels of transitory feelings of anxiety, worry, and fear (state), and the more stable (trait) tendencies to feel worried and react anxiously. The STAI was included in this study to assess changes in both state and trait anxiety levels from baseline to follow-up at times 2 and 3. Coefficient alphas of .90 and .87 were found in the current study for state and trait anxiety, respectively.

Spiritual Meaning Scale (SMS; Mascaro, Rosen, & Morey, 2004; Mascaro & Rosen, 2005; Mascaro & Rosen, 2006) is a single scale, 15-item self-report inventory that measures the extent to which a person believes that life, or some force of which life is a function, has a purpose, will, or way in which individuals participate, independent of religious orientation. The SMS will be included as a measure in this study to measure personal meaning. The coefficient alpha for the SMS score was .93 in the current study.

Pennebaker Inventory of Limbic Languidness (PILL; Pennebaker, 1982) is a 54-item scale that measures the frequency of a group of common physical symptoms and sensations. Cronbach alpha was .91 in the current study. Two additional items were also included to inquire about the number of days sick since the beginning of the semester and the number of physician visits since the beginning of the semester in order to assess changes in self-reported sick days.

Self-Assessment Manikin (SAM; Bradley & Lang, 1994) is the pencil-and-paper version of this instrument which was used to obtain participants' subjective ratings of affect: valence (happy vs. unhappy) and arousal (excited vs. calm) both immediately before and after each drawing session. The SAM consists of two sets of five cartoon pictographs depicting different levels of affective valence and arousal. For each dimension, participants are instructed to place an "X" on or between the figures that best describe their emotional response. Previous research has established that the valence and arousal dimensions reliably co-vary with physiological reactions associated with emotional experience (e.g., skin conductance, heart rate, and facial electromyography), signifying that the SAM is a valid measure of emotional response (Bradley, Greenwald, Petry, & Lang, 1992; Lang, Greenwald, Bradley, & Hamm, 1993).

Procedure

The conditions of each session were randomly assigned and the participants did not know which group they were attending. Participants in the experimental and control conditions were tested separately in small groups of 5 to 10 individuals. Using the example of various Pennebaker et al. written disclosure studies (Pennebaker, 1997a, 1997b; Pennebaker & Seagal, 1999; Pennebaker & Susman, 1988), and the previous mandala study (Henderson et al., 2007) the drawing sessions took place across three consecutive days, with all participants drawing for a total of 20 minutes each session.

At the beginning of the first session for each condition, all participants were given a large envelope that contained an informed consent, a demographic questionnaire, assessment measures (PDS, BDI-II, STAI, SMS, & PILL), a blank piece of paper, drawing instructions specific to their condition, and two SAMs marked with "before" and "after". For simplicity and standardization, a box of crayons or colored pencils and

a pencil were also provided. A trained research assistant instructed them to open their envelopes and follow along as the different items were explained. The purpose of the study was explained and written informed consent obtained. This included informing subjects of the sensitive nature of the study and providing them with a list of individuals or psychological service providers to contact if they felt distressed at any time during or after the experiment. The participants were asked to follow along as the specific instructions provided within their envelope were read aloud by the assistant.

All participants completed the time one measures for PDS, BDI-II, STAI, SMS, PILL, and a demographic questionnaire immediately before drawing at the first session. With the exception of the demographic questionnaire, the same measures were completed immediately following the last drawing session (time two) and at a one-month follow-up (time three). Participants completed the SAM both immediately prior to drawing and immediately after completing their drawings at each of the three sessions.

Drawing instructions for the experimental condition are a modification of the protocol used by Pennebaker and colleagues (1997b) and utilized in the previous research by Henderson et al. (2007) (Appendix). The participants in the mandala condition were asked to draw a large circle on their paper, and to then fill the circle with representations of feelings or emotions related to their trauma using symbols, patterns, designs and colors (but no words) that felt right to them. In the control condition, participants were instructed to draw an object over the next three days. Each day they were given a different drawing assignment (cup, bottle, or pens) and told to make their

drawing as detailed as possible. The research assistant instructed the participants to draw for 20 minutes. The six self-report measures, demographic data, SAMs, drawing and the instruction set were put in the envelope before leaving. Participants were thanked for their participation and reminded to return the following day.

At the end of the third session, a trained research assistant debriefed participants after they completed the second set of dependent variable measures (i.e., the PDS, BDI-II, PILL, STAI, and SMS), the drawing and two SAMs. However, this debriefing did not involve telling subjects the true nature of the study for fear of biasing the results at the follow-up session. Therefore, this was an abbreviated debriefing that focused more on how they were doing and ascertaining if there were any problems they had experienced. A full debriefing as to the nature of the study and the expected results was provided to the participants following the completion of the third set of dependent variable measures (all measures except the two SAMs) at the one-month follow-up. An outcome questionnaire assessing overall satisfaction with the study was completed at the follow-up session as well. Participants in the mandala drawing group were asked to write a description of the symbolic meaning of their mandalas after completing the measures at the one-month follow-up. The researcher waited a month to ask about the symbolic meaning of the mandala drawings because the results could have been confounded by having the participants put their feelings in words. This information was used for a brief examination of the qualitative features and symbolic meaning of the mandalas.

RESULTS

Quantitative Analysis

Data analysis was conducted by the use of the statistical package SPSS version 13.0 for Windows. Repeated measure ANOVA were conducted on all measures with time (3 levels) as within subject factor and condition as a between subjects factor. Independent measure t-tests were performed on trauma symptom severity at pre-test, post-test and follow-up between both groups.

Table A-2 presents the mean scores and standard deviations of the health measures taken at pre-test, post-test, and follow-up for the six self-report measures. Analysis indicated that the groups did not differ significantly on any of the reported measures. BDI [$F(1, 47) = .004, p = .952$], State [$F(1, 47) = .881, p = .353$], Trait [$F(1, 47) = .086, p = .771$], SMS [$F(1, 47) = 1.21, p = .277$], and Pill [$F(1, 47) = .008, p = .930$]. Contrary to hypothesis one and previous findings (Henderson et al., 2007), repeated measures in trauma severity symptoms (PDS) were not significant [$F(1, 47) = .497, p = .484$].

Further analysis using independent measure t-tests revealed a significant difference in mandala and control condition means at follow up, however, not in the expected direction [$t(48) = 2.01, p = .05$]. The treatment effect on change in slope of PDS from posttest to follow-up was significant [$F(1, 48) = 3.97, p = .05$], (Figure A-1).

A secondary hypothesis examined whether decreased anxiety in the mandala condition served as a mediator for improvement, if any, in self-reported trauma severity.

Again, as indicated in Table A-2, dissimilar to what was predicted, although not at the significant level, both groups reported decreases in state [$F(1, 48) = .102, p = .751$] and trait [$F(1, 48) = .021, p = .886$] anxiety.

A third hypothesis investigated whether affect within the mandala condition served as a mediator for improvement, if any, in self-reported trauma severity. Although no improvements in self-report trauma severity were shown, as demonstrated in Table A-3, those in the mandala condition did experience more levels of unhappiness [$F(1, 46) = 2.57, p = .116$] and greater arousal levels [$F(1, 46) = 1.49, p = .228$], but not at a level of significance.

Qualitative Analysis

A brief exploratory analysis of the qualitative features of the mandala drawings from this study was performed. Participants were asked to provide a description of the symbolic meaning of their mandalas after completing the last set of measures at the one-month follow-up session (Appendix-Satisfaction Survey). Those in the mandala groups were asked to “create three different drawings representing the most traumatic, upsetting experience of your life”. In these drawings, it was evident that many participants used extensive symbolism to represent emotions. For example, tears and broken hearts were used for sadness. Sunshine and bright colors were used for happiness and hope, and dark colors were used for depression (see Figure A-2 and A-3). The satisfaction survey revealed that some of the participants reported being helped by taking part in the study where they could express their trauma, whereas one reported that it made him more aware of his trauma and become more distressed. Even some in the control group

reported feeling calmer after they completed their drawings (see Figure A-4 and A-5 & Appendix- Comments from Participants for the Study). Several participants reported being annoyed by the repetition of questions asked pretest, posttest, and follow up, suggesting that they answered automatically on the self report measures instead of being reflective.

DISCUSSION AND CONCLUSIONS

The results of the present study failed to replicate the significant findings of Henderson and her colleagues (Henderson et al., 2007) that relative to those in the control condition, individuals assigned to the experimental mandala drawing group benefited by reduced symptoms of PTSD at the one-month follow up. In fact, the finding was reversed in that the control group showed a significant drop in decreased PTSD symptoms at one-month follow up. Also, no significant differences were found over time between experimentally assigned mandala drawing groups and control groups on measures of changes in the variables of self-reported depression, anxiety, spiritual meaning, or decreases in the self-reported frequency of occurrence of physical health problems.

In addition, the results of this study did not support hypotheses two or three that anxiety or affect mediated any significant improvement in trauma severity symptoms, as there was none. However, trends in a decrease in state and trait anxiety in both conditions were noted. As was reported in the qualitative section, some who drew in the control condition group also became more relaxed after they drew. This is consistent with the study done by Pizarro (2004) which found that those in the drawing condition were more relaxed and enjoyed their experience more than those in the writing group. While the results were not significant, the tendency in our data showed that those in the mandala condition did experience more levels of unhappiness and greater arousal levels, which would also be consistent with the theory of repeated exposure. This may be

explained by the fact that those in the mandala condition thought about their traumas while those in the control group did not.

Marx and Sloan (2004b) did a review of the literature on the written disclosure paradigm and made some interesting observations and suggestions as to why the written disclosure does not work in all circumstances. Applying this rationale to the use of creativity for disclosure, there are various possible explanations for the differences between these and previous findings. One may involve gender differences. In some studies, males have been shown to have a greater beneficial outcome than females in the written disclosure paradigm. In the Henderson et al. study (2007) there were only two men (12%) in the control condition and six (31%) in the mandala condition, hence there were more men in the group that showed improvement. The present study had ten and eleven men in each group respectively, making it 38% and 42% for the groups, evening out the distribution (Table A-4). Even though there was no significant difference between the two groups, there were 26% more men in the control group. Sample size is too small to draw definite conclusions. In future studies, gender should be evenly distributed, or all female or male groups used. Other studies using the written disclosure paradigm looking at gender differences have had mixed results (Epstein, Sloan, & Marx, 2005).

Another difference may be the time between the occurrence of the reported trauma and when they were processed. In the original study by Henderson et al. (2007), 61% of the study participants reported that the reported trauma was experienced longer than 6 months ago while in the current study, 86% reported that trauma had occurred

longer than 6 months. It may be that those in the disclosure group were made to remember a trauma that had already been processed, so the trauma was reactivated and brought to the surface, rehearsed, and remembered, while participants in the previous study were processing recent traumas that needed to be remembered in order to extinguish the negative reaction.

Since the instructions gave participants the option to draw the same or different experiences, those who drew mandalas depicting different traumas, may have used avoidance to keep from dwelling on one specific trauma thus cognitive restructuring would not have taken place. Some researchers have noted that it is important to write about the same trauma over the three-day period in order to establish exposure and extinction (Marx & Sloan, 2004a; Schoutrop et al., 1997). Finally, there may be some unknown mediator variables such as personality traits or learning styles for which we are not testing that could explain the difference in results.

Surprisingly, the results did reveal a significant difference between the means of trauma severity symptoms reported in the experimental mandala drawing group and control condition group at the one month follow up, however in the opposite direction as hypothesized. The simple act of drawing (art therapy) for three days may have had a beneficial effect on the participants versus dwelling on trauma for three days. Given the small sample size, the likelihood of finding an effect when there is one is small, so this is an encouraging finding worth further examination and discussion.

The possibility of rehearsal effects of memory in the mandala group could partially account for why those in the experimental group did not have a reduction in

symptoms, however, an analysis would need to be conducted to ascertain how many participants actually drew about the same experiences or drew about three different traumas.

Limitations of Present Study

The current project was an attempt to replicate the initial study by Henderson et al.(2007) to examine the feasibility of this line of research. Because of the discrepancies of gender composition, it was not a pure replication. An obvious weakness of this study is the small sample size. Considering the ambiguous results between the two studies, similar research studies with comparable samples in greater numbers size need to be conducted. Like the written disclosure studies that find ambiguity, it will be important to isolate variables that may influence outcomes.

Further, although the participants were undergraduate college students with symptoms of PTSD, it would be beneficial to have a sample from a larger population of individuals suffering from more severe levels of trauma. For example, doing a study at a rape crisis center or prison where there are a large number of documented cases of people with PTSD.

Another shortcoming was the lack of direct comparison of a mandala drawing task with other control groups, such as a pre-drawn mandala coloring condition, another art therapy condition, and a writing condition. As reported in individual therapy cases and in specific studies cited before, it may be important to have a mandala condition which would not focus on trauma. Another mandala condition that might prove valuable would be to have individuals draw mandalas and reflect on something positive. Research

has shown the significant healing impact of positive attributes such as hope and meaning (Arnau, Rosen, Finch, Rhudy, & Fortunato, 2007; Mascaro & Rosen, 2006; Mascaro & Rosen, 2005; Mascaro, Rosen, & Morey, 2004). Ideally, all or some of these conditions could be examined in future studies and various health benefits for different manipulations might be uncovered.

Directions for Future Research

Extending this line of research with women and men who are victims of abuse, in prison, or have combat-related PTSD would be an area of great interest. Some people, depending upon age, educational opportunities and difficulties in cognitive processing, lack the ability to adequately and effectively express traumatic experiences through written or verbal language. Furthermore, sometimes shame is associated with the trauma, so victims are locked into secrecy by their abusers or society and are fearful to disclose incidences of abuse or other trauma. Mandalas drawn by such people could serve the need for expression of traumatic experiences in a simpler and less threatening way than writing or talking about the events. Perhaps individuals need to not focus on their traumas, but relax and think about positive things in life that might promote resilience. For example, having participants meditate, and focus on positive attributes such as hope, meaning, or love might prove to be the most helpful of all. Even though this research project did not replicate the original study (Henderson et al., 2007), there are many questions that beg to be answered and theories that need to be tested. Future scientific investigation will certainly clarify this murky area and hopefully be illuminating.

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APPENDIX

Table A-1*Types of Trauma Experienced*

Trauma	Mandala group condition (n=26)	Control group condition (n=24)
Accident	1	3
Disaster	0	1
Non-Sexual assault/known	7	3
Non-sexual assault/unknown	1	0
Sexual assault/known	1	0
Sexual assault/unknown	3	1
Life-threatening illness	0	2
Other traumatic event*	9	12

*Other traumatic events included suicide, death or illness of family member, abortion, and adoption.

Table A-2*Individual Assessment Measures*

Assessment	Mandala group condition (n=26)		Control group condition (n=24)	
	M	SD	M	SD
<u>PDS</u>				
Time 1	20.46	10.22	16.63	8.78
Time 2	18.88	9.64	16.46	8.43
F/U	18.15	10.99	12.54*	8.43
<u>BDI-II</u>				
Time 1	18.88	8.69	18.17	7.94
Time 2	17.12	10.12	17.13	7.54
F/U	17.46	10.50	16.29	9.19
<u>STAI-State</u>				
Time 1	46.62	11.74	46.00	8.59
Time 2	41.04	11.27	42.54	10.03
F/U	41.08	12.18	42.71	11.25
<u>STAI-Trait</u>				
Time 1	48.38	9.62	48.33	8.88
Time 2	46.42	10.02	46.75	10.16
F/U	45.77	10.44	44.38	11.19
<u>SMS</u>				
Time 1	61.85	11.96	59.21	12.09
Time 2	61.96	13.60	59.25	12.02
F/U	62.42	13.90	62.46	10.97
<u>PILL</u>				
Time 1	131.69	26.68	120.29	25.13
Time 2	124.31	28.32	112.71	28.52
F/U	121.62	32.79	110.75	32.18

Note: PDS = Post-traumatic Stress Disorder Scale, BDI-II = Beck Depression Inventory – II, STAI-State/Trait = State-Trait Anxiety Inventory, SMS = Spiritual Meaning Scale, PILL = The Pennebaker Inventory of Limbic Languidness

* $t(48) = 2.01, p = .05$.

Table A-3*Differences in Affect of Valence and Arousal*

Assessment	Mandala group condition (n=22)*		Control group condition (n=23)*	
	M	SD	M	SD
<u>SAMV</u>				
Day 1	-.7500	1.47	-.0217	.730
Day 2	-.3182	.880	-.1087	.690
Day 3	-.2273	.896	.2174	.951
<u>SAMA</u>				
Day 1	-.0227	1.24	-.0217	1.27
Day 2	.1818	1.98	-.2174	1.13
Day 3	.2955	.667	-.1957	1.12

Note: These are mean differences in before and after condition at each time period.

SAMV= Self Assessment Manikin Valence; minus (–) represents less happy, SAMA= Self Assessment Manikin Arousal; minus (–) represents more calm.

* ns are less in each group because not all participants completed both SAMs.

Table A-4*Differences in Ratios of Men and Women*

	Henderson et al.		Current Study	
	F	M	F	M
Control	15	2	13	11
Mandala	13	6	16	10

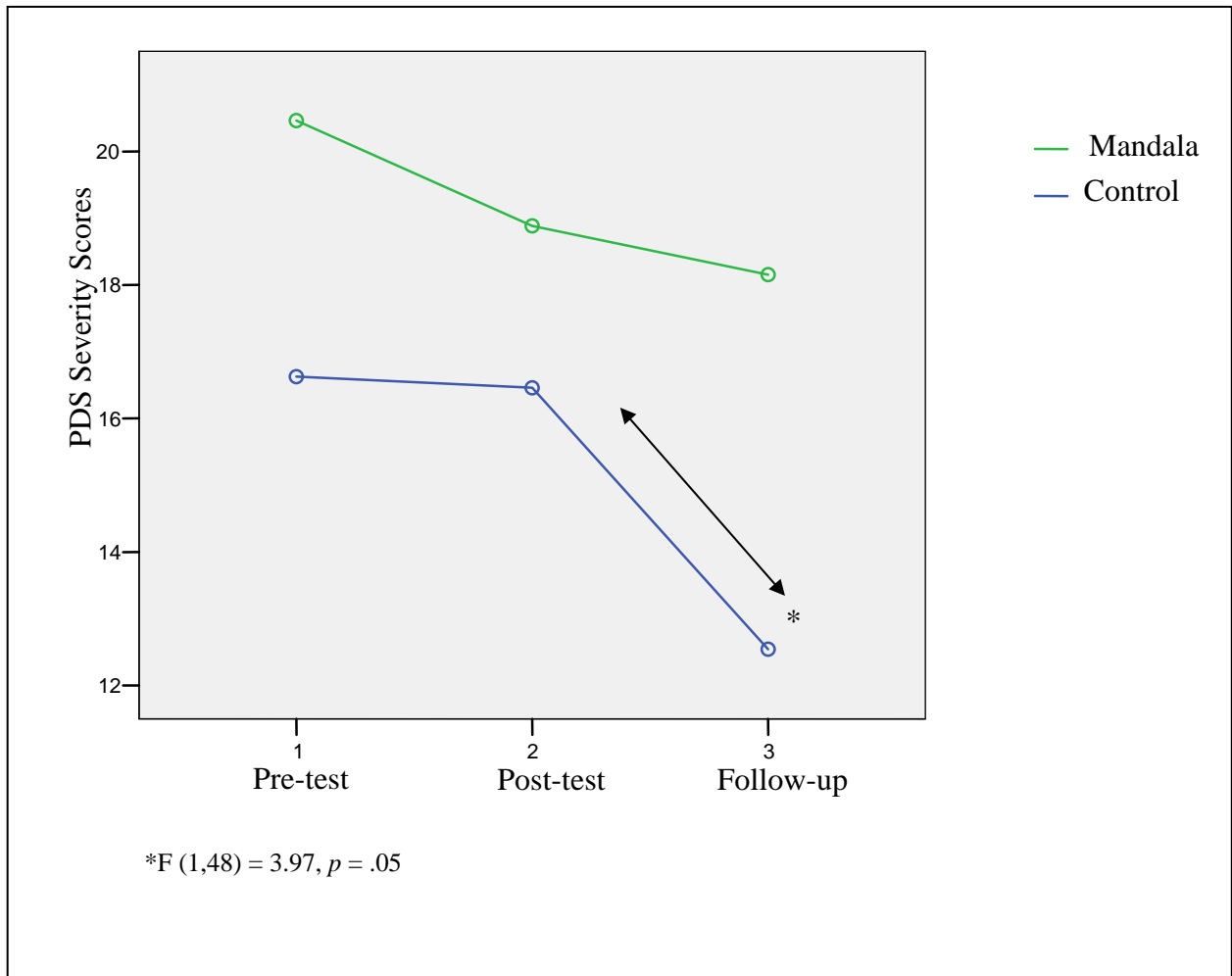


Figure A-1. *Treatment Effect on Change in Slope*



Figure A-2. *Mandala Drawing 1*

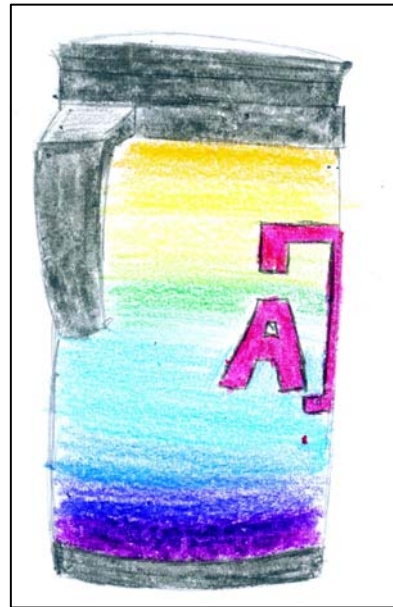


Figure A-4. *Drawing of Cup*



Figure A-3. *Mandala Drawing 2*



Figure A-5. *Drawing of Bottle*

Drawing Instructions Mandala

Drawing instructions for the experimental condition were as follows:

(On the first day): What I would like to have you do for the next three days is to create three different drawings representing the most traumatic, upsetting experience of your life. As you draw, I want you to really let go and explore your deepest emotions and thoughts. You can draw a representation of the same traumatic experience on all three days or different experiences each day. In addition to a traumatic experience you can also draw a picture about a major conflict or problems that you have experienced or are experiencing now. Whatever you choose to draw about, it is critical that you really delve into your deepest thoughts and emotions. Ideally, I would like you to draw a representation of traumatic experiences or conflicts that you have not previously discussed in great detail with others.

As you begin the drawing, I would like you to draw a large circle that covers the entire page. Then I would like you to fill the circle with whatever you feel belongs there and best represents your thoughts and emotions concerning the traumatic experience or problem you have chosen to reflect upon as you draw. Fill it with any shapes, symbols, patterns, designs, or colors that feel right to you. It can be as abstract or structured as you like. Try not to censor yourself or allow any “rules” to interfere; there is no right or wrong way to fill in your circle. Let your emotions and intuitions guide you. The only restriction is that you **DO NOT WRITE ANY WORDS**. It is important that you try to draw continuously for the entire 20 minutes. A researcher will signal you to stop once 20 minutes have passed.

(On the second day): I hope yesterday's drawing session went well. Today, I want you to draw another picture representing a traumatic experience in your life. It could be the same experience you reflected upon yesterday or it could be something different. Just like yesterday, I really want you to explore your deepest thoughts and feelings.

Remember to begin by drawing a large circle that covers the entire page. Then fill the circle with whatever you feel belongs there and best represents your thoughts and emotions concerning the traumatic experience or problem you have chosen to reflect upon as you draw. Fill it with any shapes, symbols, patterns, designs, or colors that feel right to you. It can be as abstract or structured as you like. Try not to censor yourself or allow any "rules" to interfere; there is no right or wrong way to fill in your circle. Let your emotions and intuitions guide you. The only restriction is that you **DO NOT WRITE ANY WORDS**. It is important to try to draw continuously for the entire 20 minutes. A researcher will signal you to stop once 20 minutes have passed.

(On the final day): You have made it through the first two sessions, and today is the last one. As you draw today, I again want you to delve into your deepest thoughts and emotions about a traumatic experience in your life.

Remember to begin by drawing a large circle that covers the entire page. Then fill the circle with whatever you feel belongs there and best represents your thoughts and emotions concerning the traumatic experience or problem you have chosen to reflect upon as you draw. Fill it with any shapes, symbols, patterns, designs, or colors that feel right to you. It can be as abstract or structured as you like. Try not to censor yourself or allow any "rules" to interfere; there is no right or wrong way to fill in your circle. Let

your emotions and intuitions guide you. The only restriction is that you DO NOT WRITE ANY WORDS. Try to draw continuously for the entire 20 minutes. A researcher will signal you to stop once 20 minutes have passed.

Drawing Instructions Control

Drawing instructions for the control condition were as follows:

(On the first day): What I would like to have you do over the next three days is draw three different pictures. Each day I will give you a different drawing assignment. Today I would like you to draw a cup. Make your picture as detailed as possible. It is important that you try to draw continuously for the entire 20 minutes. A researcher will signal you to stop when 20 minutes have passed.

(On the second day): I hope your drawing assignment went well yesterday. Today I would like you to draw a picture of a bottle. Make your picture as detailed as possible. It is important that you try to draw continuously for the entire 20 minutes. A researcher will signal you to stop when 20 minutes have passed.

(On the final day): This is the last day of the experiment. For today, I would like you to draw a picture of pens. Once again, make your picture as detailed as possible. It is important that you try to draw continuously for the entire 20 minutes. A researcher will signal you to stop when 20 minutes have passed.

Satisfaction Survey

Name: (optional): _____ ID Number: _____
Phone number: _____ Email Address: _____

1. Strongly agree 2. Agree 3. Undecided 4. Disagree 5. Strongly Disagree

How satisfied were you with the time you spent with this study? 1 2 3 4 5

Do you feel it was worth the five credits? 1 2 3 4 5

How could the study be improved? 1 2 3 4 5

Do you have any ideas on future studies using drawings? 1 2 3 4 5

How could the study be improved? Do you have any ideas on future studies using the drawings Do you have any other comments?

If you drew a mandala (circle with drawings), please write a description of the symbolic meaning of each of your three mandalas. Were the colors significant? Symbols, shapes?

1. _____

2. _____

3. _____

This information is intended for use in a subsequent study examining the qualitative features and symbolic meaning of the mandalas.

As with the rest of the study, your answers are absolutely confidential

Comments from Participants for the Study

Comments from participants in the mandala drawing condition:

“The study was effective because it helped me to release some feelings I had buried.”

“Have more students participate because the room was too lonely.”

“Could possibly do drawings alone to avoid distractions/nervousness.”

“Want more time to draw.”

“The same questions three times is annoying.”

“...it was just repetitive and became almost automatic.”

Comments from participants in the control drawing condition who drew a cup, bottle and pens:

“Enjoyed the study, drawing had a calming effect.”

“Would like to draw something more interesting.”

“I felt calm after the study.”

“Maybe a shorter time to draw.”

VITA

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Presentations:

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