Art Therapy: Journal of the American Art Therapy Association, 24(2) pp. 71-75 © AATA, Inc. 2007

Brief Reports

Effect of Art Production on Negative Mood: A Randomized, Controlled Trial

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Abstract

Art therapists have long held that art production causes reductions in stress and elevations in mood (Rubin, 1999). The authors examined this claim in a randomized, controlled trial. Fifty adults between the ages of 18 and 30 were randomly assigned to either create an art work or to view and sort a series of art prints. Three measures of overall negative mood and of anxiety were collected before and after each intervention. Two-way ANOVAs (Group by Time) demonstrated significantly greater reductions in negative mood and anxiety in the art production group compared with the art viewing control group on all three measures (all p-values < .005). These results demonstrate that the simple act of creating a work of art can produce dramatic reductions in negative mood and that these reductions can be attributed specifically to the production of art rather than to its viewing.

Introduction

In recent years, members of the art therapy community have increasingly called attention to the need for treatment-outcome research examining the efficacy of art therapy interventions. For example, Carolan (2001) argued that health care professions such as art therapy have an ethical responsibility to pursue research on patient outcomes. Furthermore, Carolan pointed out that experimental designs (e.g. randomized trials) are necessary in order to identify cause and effect relationships. That is, only true experimental designs can positively identify a particular treatment intervention as being the active ingredient in a patient's improved status. A number of other authors have made similar calls for experimental research on the efficacy of art therapy (e.g. Burleigh & Beutler, 1997; Deaver, 2002; Tibbets, 1995).

As Reynolds, Nabors, and Quinlan (2000) reviewed, the most common treatment-outcome research design employed in the art therapy field to date has been the single group, pre-post design in which a group of individuals are evaluated before and after an art therapy intervention. One example of this approach comes from Saunders and Saunders (2000), who evaluated the effectiveness of art therapy provided in a private agency to a group of children and adolescents (ages 2-16) with behavioral problems. At the outset of treatment, the participants were rated by the therapists for the frequency and severity of 24 problem behaviors. Therapists also listed three goals for each individual's treatment at this time. At the conclusion of treatment, the therapists rated the same list of behaviors and filled out a "goal attainment" checklist. The study found that there was a statistically significant improvement in both the frequency and severity of problem behaviors. Furthermore, about 95% of all goals were classified as "completely" or "partially" met.

Although such results are certainly encouraging, this study illustrates why single group designs are not sufficient in examining treatment efficacy. In their classic works on experimental design, Campbell and Stanley (1966) and Cook and Campbell (1979) discussed the many alternative explanations for changes in behavior over time other than the specific effects of a treatment (so-called "threats to internal validity"). Among the issues discussed are history (improvement due to factors occurring external to the study), maturation (improvement due to the passage of time), selection bias (the kind of people entering treatment are the kind of people who would improve in any case), testing (changes caused by repeated administration of the test instrument through boredom, fatigue, practice, etc.) and regression to the mean (people tend to enter treatment at their worst and can only improve). In addition, even studies with comparison groups are potentially open to the possibility of expectancy effects (raters who are aware that participants are supposed to improve rate them accordingly and/or participants show improvement because they think they're supposed to). All of these possibilities can potentially account for the improvements in behavior noted in the Saunders and Saunders (2000)

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study or indeed for treatment effects in any single group, pre-post design.

Controlled randomized trials represent an alternative to single group designs that allows these validity threats to be eliminated or at least minimized. Random assignment is intended to create comparison groups which have similar levels of problem severity at the start of treatment and which have equal opportunity to mature, regress to the mean, change through repeated testing, or experience non-treatment causes of improved functioning (such as family support). Ideally, such trials mask (or "blind") participants to the purpose of the study so that the two groups do not differ in their expectations of improvement. Furthermore, outcome measures can be structured so that individuals with knowledge of the study hypotheses and group assignment do not have the opportunity to unintentionally bias the results (ideally, all observers are masked or blinded). If the results of such a study show greater improvement in the treatment group than in the comparison condition, then a much stronger case for the specific efficacy of treatment can be made.

As Reynolds et al. (2000) reviewed, few such randomized trials have been performed in the art therapy field. Their review identified only five such studies. As they discussed, these studies provide only mixed support for the efficacy of art therapy. Furthermore, art therapy interventions were typically bundled together with other treatment modalities in these studies. Therefore, any improvements in patient status could not be specifically attributed to the art therapy component of treatment.

Since the publication of the Reynolds et al. (2000) review, a few additional randomized trials of art therapy have appeared. Pizarro (2004) randomly assigned undergraduates to three conditions: writing about a stressful event, drawing a picture of a stressful event, or drawing a still life. They measured changes in general health, perceived stress, physical symptoms, and negative mood. The only group differences were on the "social dysfunction" scale of their health questionnaire; they found that the writing group showed more improvement than the two art groups. A second randomized trial was conducted by Chapman, Morabito, Ladakakos, Schreier, and Knudson (2001), who studied pediatric patients hospitalized for traumatic injuries. Participants were randomly assigned to receive standard hospital care or hospital care plus the Chapman Art Therapy Treatment Intervention (CATTI). Unfortunately, the study failed to produce a statistically significant difference in symptom changes between groups. Finally, Colwell, Davis, and Schroeder (2005) compared the effects of art and music composition on the self-concept of hospitalized children in a random assignment design. Their results were mixed; across multiple measures the music group showed greater improvement than the art group on two subscales, while the art groups showed greater improvement on one.

Studies such as those reviewed above illustrate why a greater commitment to outcomes-based research is so important to the future of art therapy. The largely negative results just discussed demonstrate that it is not sufficient to simply assume that art therapy interventions inevitably produce improvements in clinical status. As with other clinical interventions, it is almost certainly the case that art therapy techniques will be better suited to some conditions than to others and that the specific techniques employed may determine the success of the intervention. Randomized trials are crucial for delineating the specific conditions under which art therapy techniques produce improvements in clinical status. As Burleigh and Beutler (1997) pointed out, the logical possibility that any given treatment intervention could do harm as opposed to good argues for the need for such studies.

The present study was designed to provide some preliminary evidence for one specific claim made on behalf of art therapy techniques. It is a common supposition that the production of art can have stress-reducing or relaxing effects (the art-as-therapy approach, Kramer, 1971, 1973; see also Rubin, 1999). However, this basic claim has yet to be empirically supported in a controlled trial. The present study attempts to provide some initial support by randomly assigning participants to one of two conditions: an art production condition and an art viewing/sorting condition. In this way, we attempted to test the specific assertion that it is the *production* of art (as opposed to exposure to art) which has therapeutic effects. Past studies of art therapy have not attempted to separate these effects; consequently, improvements in status could stem from the effects of viewing the completed art work rather than from its production. Furthermore, the use of an art viewing condition was intended to produce a control group which would be matched to the experimental condition for expectations of enhanced mood (people commonly associate the viewing of art with relaxation and stress-relief) and for the experience of completing a time-limited task (sorting art as opposed to producing art). If art therapy has effects which go beyond those produced by viewing art, completing a task, or simply expecting to feel relaxed, then participants in the art production group should experience greater reductions in negative mood states than individuals in the viewing and sorting condition.

Method

Participants

The sample used in this study consisted of 50 adults between the ages of 18 and 30 who were recruited through advertising posters at a local university and through word-of-mouth referrals in the local community. None of the participants were known to be suffering from mood-related disorders. Participants were recruited and assigned to conditions without regard to prior experience with or training in art or art therapy.

Procedure

All study participants took part in a single laboratory session. Following completion of the consent form, individuals were first asked to write down a 10-item "to-do" list of

Table 1
Mean scores (SD) on the POMS and STAI before and after treatment for the art production group (Group Produce, n = 25), and the art viewing group (Group View, n = 25).

	Group Produce Pre	Group Produce Post	Group View Pre	Group View Post
POMS Total	65.4 (31.5)	31.4 (29.0)	94.8 (38.0)	84.7 (48.2)
STAI: State	54.9 (9.7)	38.0 (7.4)	55.2 (11.9)	55.0 (10.4)
STAI: Trait	48.8 (7.5)	42.2 (7.5)	50.2 (9.0)	51.2 (7.1)

their "most pressing concerns or worries." Participants were told that the list was for their private use only and would not be collected at the end of the study. The purpose of the list was to produce a baseline level of mild negative mood against which the study manipulations could be assessed.

Following creation of the task list, all participants were asked to fill out two standardized mood assessments: the Profile of Mood States (POMS: McNair, Lorr, & Droppleman, 1971) and the State-Trait Anxiety Inventory (STAI: Spielberger, 1983). The POMS asks subjects to rate their current level of mood by rating the degree to which 65 mood-related adjectives describe their current state. Higher scores on the POMS reflect more negative mood states. The STAI is an instrument with two sets of 20 questions aimed at assessing an individual's anxiety levels. The 20 "trait" questions are designed to produce a measure of stable, long-term anxiety levels (trait anxiety), while the 20 "state" questions are intended to measure moment-to-moment fluctuations in anxiety (state anxiety). Once again, higher scores denote more negative states.

Following completion of the baseline measures, participants were assigned to one of two groups according to a blocked randomization schedule. The 25 subjects in the art production condition (Group Produce) were given 20 minutes to complete a free art task. All individuals were given free access to blank sheets of 8-1/2" x 11" white paper and their choice of crayons, colored pencils, charcoal pencils, or oil pastels. Individuals were simply asked to draw whatever they liked over the course of 20 minutes using as many sheets of paper as they desired. The other 25 subjects served as the control group and were asked to view and sort 60 art prints (Group View). The prints depicted famous paintings (see Appendix for a list) and participants were asked to view the prints and to categorize them into groups "based on their pictorial content." The intention was to create a condition in which participants were viewing art rather than producing it with a similar level of freedom to approach the task at their own pace and to make whatever judgments they chose. We asked individuals to sort the prints rather than simply view them for two reasons. First, we wanted to verify that individuals were actually looking at the prints as instructed (compliance in Group Produce was easily verified by the presence of a drawing at the end of 20 minutes). Second, we wanted Group View to experience a time-limited task to match the task demands placed on Group Produce. Our goal was to differentiate the groups based solely on whether or not they *produced* art rather than on their viewing of art or on their completion of a time-limited task.

Following the 20 minutes of art production or viewing and sorting, individuals were again administered using the POMS and STAI. Before being dismissed from the study, individuals were asked to make a list of 10 happy or favorite memories as a means of reducing any anxiety which might be remaining from the initial chore-list task.

Results

Three outcome measures were analyzed in this study: overall POMS score, state anxiety from the STAI, and trait anxiety from the STAI. Mean scores on each scale before and after treatment are depicted in Table 1 (higher scores = more negative mood). Group differences were examined in all three cases by means of a two-factor ANOVA in which Group (Produce or View) served as the between-factor, and Time (Pre or Post) served as the within factor. In each analysis we looked for a Group by Time interaction which would indicate differential change in mood state between groups from before to after treatment.

As can be seen in Table 1, Group Produce appeared to produce a greater reduction in negative mood on all three measures. In each case, Group Produce demonstrated a substantial decrease in negative mood score while Group View showed lesser or minimal change. This impression was borne out by the ANOVAs. For each of the three measures there was a significant Group by Time interaction [POMS: $F(1,48) = 11.2$, $p < .005$; State Anxiety: $F(1,48) = 66.4$, $p < .001$; Trait Anxiety: $F(1,48) = 23.7$, $p < .001$]. These significant interactions document a greater reduction in negative mood state in the art production group as compared to the art viewing group.

Discussion

The results of the present study clearly demonstrate greater improvements in mood in a group of individuals who were allowed to freely create a piece of art compared to a group which was asked to view and sort art prints. This result was documented across three independent measures of negative mood states. Thus, these results support one of the fundamental tenets of art therapy: the idea that the production of art has general mood-enhancing properties.

Because the present study employed a randomized, "placebo"-controlled design, the results cannot easily be attributed to factors other than the art production manipulation. The use of random assignment means that group differences are unlikely to be the result of selection bias, regression to the mean, maturation, testing, or history.

Furthermore, because neither group was informed as to the study hypotheses in advance and because both groups received an intervention that could plausibly be expected to produce elevations in mood (viewing art is commonly viewed as a relaxing activity), the results are unlikely to reflect differences in subject expectations (demand or placebo effects). Finally, the use of standardized questionnaires as dependent measures eliminates the possibility of biased judgments or ratings made by an observer with expectations about the study results.

One possible confound in the study stems from the nature of the control condition. Although it was assumed that viewing art prints would be viewed as relaxing, the act of sorting the prints could have been viewed as "test-like" and thereby could have induced negative emotional states. While this may have occurred in individual subjects, mean mood scores in this group either remained flat across the session (STAI) or showed mild improvement (POMS). Therefore, the difference between groups does represent an improvement in mood by Group Produce rather than a worsening of mood in Group View. It should also be noted that this study did not attempt to document whether the negative mood manipulation used at the outset (making up the "to-do" list) played a causal role in baseline mood states. Our sole concern was having a sufficiently high baseline of negative mood against which to compare the two conditions. The reductions in negative mood documented in this study demonstrate that our participants had adequate baseline levels of negative mood, but we cannot determine whether the "to-do" lists were necessary to produce those levels.

Although the results of this study are straightforward, they are limited in scope. First, this study employed a convenience sample of the general population rather than a group of individuals with a particular diagnosed disorder. Therefore, the results do not directly speak to the use of art therapy with individuals with clinically significant conditions. Second, the art intervention studied here was one of the simplest to employ, asking subjects only to freely produce a work of drawn art in their media of choice. More detailed art production procedures or instructions need to be studied in their own right. Finally, the art task employed here was not directed by a trained art therapist (the researcher giving instructions was completing an undergraduate senior thesis). Consequently, the present study was not set up to assess the unique contribution to therapy made by the therapeutic relationship between art therapist and client.

In some respects, however, the limitations just described highlight further the strength of the current findings. Even in the absence of a sample with clinically-significant mood disorders, a detailed art therapy protocol, or a trained art therapist, the simple act of freely drawing for 20 minutes produced clear reductions in negative mood compared to the act of viewing and sorting art works. Furthermore, the inclusion of an art viewing comparison condition isolates the production of art as the key factor in enhancing mood. The findings reported here should encourage those in the art therapy field to more fully document in controlled trials the benefits of art therapy in other settings and with other populations.

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Appendix List of 60 Art Prints Used in Group View Test

	Artist	Painting
1.	Toulouse-Lautrec	The Salon in the Rue Des Moulins
2.	Toulouse-Lautrec	Yvette Gilbert
3.	Caravaggio	The Supper at Emmaus
4.	Peter Bruegel, the elder	The Parable of the Blind Men
5.	Jacob Isaackszon Van Ruisdael	The Jewish Cemetery
6.	Rubens	The Garden of Love
7.	Rembrandt Van Rijn	The Bridal Couple (the Jewish Bride)
8.	Rembrandt Van Rijn	Jacob Blessing the Sons of Joseph
9.	Nicolas Poussin	The Rape of the Sabine Women
10.	Georges De La Tour	The Adoration of the Shepherds
11.	William Hogarth	Marriage à la Mode: the Marriage Contract
12.	Jean Honore Fragonard	The Bathers
13.	Bingham	Fur Traders Descending the Missouri
14.	John Constable	Salisbury Cathedral
15.	Cézanne	The Bathers
16.	Caspar D. Friedrich	Polar Ice (the Frozen Sea)
17.	Holbein, the Younger	Henry VIII
18.	Rouault	Head of Christ
19.	Caravaggio	The Conversion of Saint Paul
20.	Caravaggio	Adolescent Bacchus
21.	Caravaggio	The Death of the Virgin
22.	Caravaggio	The Martyrdom of St. Peter
23.	Rubens	The Descent from the Cross
24.	Rubens	The Rape of the Daughters of Leucippus
25.	Frans Hals	Women with Parrot: Malle Babbe
26.	Frans Hals	The Merry Drinker
27.	Vermeer	Young Woman with a Water Jug
28.	Vermeer	The Milkmaid
29.	Vermeer	A Girl in Yellow and Blue
30.	Vermeer	The Lace Maker
31.	Rembrandt Van Rijn	Self Portrait at the Age of 34
32.	Vermeer	The Girl with a Red Hat
33.	Rembrandt Van Rijn	Portrait of Rembrandt's Mother
34.	Rembrandt Van Rijn	Self-Portrait with Saskia
35.	Rembrandt Van Rijn	Descent from the Cross
36.	Rembrandt Van Rijn	Supper at Emmaus
37.	Georges De La Tour	The Repentant Magdalen
38.	Jacques Louis David	Napoleon in his Study
39.	Toulouse-Lautrec	La Goulue at the Moulin Rouge
40.	Degas	L'Absinthe
41.	Raffaello Santi/ Raphael	The Virgin and Child with Saint John the Baptist
42.	Hieronymus Bosch	Death and the Miser
43.	Pieter Bruegel the Elder	Peasant Dance
44.	Pieter Bruegel the Elder	A Peasant Wedding
45.	Albrecht Dürer	Apocalypse: The Riders on the Four Horses
46.	Albrecht Dürer	St. Jerome in his Cell
47.	Grünewald	The Resurrection
48.	Albrecht Dürer	Self-Portrait 1500
49.	Titian	Bacchanal
50.	Grünewald	Isenheim Altarpiece: The Joys of the Virgin
51.	Giorgione	Sleeping Venus
52.	Hieronymus Bosch	Christ Carrying the Cross
53.	Jean-François Millet	The Sower
54.	Monet	Women in the Garden
55.	Georges Del La Tour	Joseph the Carpenter and Young Christ
56.	Rembrandt Van Rijn	A Woman Bathing (Bathsheba)
57.	Degas	Two Laundresses Ironing/ The Pressers
58.	Monet	Water Lilies with Bridge at Giverny
59.	Géricault	Portrait of a Madman (Assassin of Kleptomaniac)
60.	Ingres	The Turkish Bath