

The Effect of Art Therapy on Cognitive Performance of Hispanic/Latino Older Adults

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Abstract

This article presents the results of a pilot study investigating the efficacy of art therapy to enhance cognitive performance in a sample of 24 elderly Hispanic/Latino members of a community center who participated in a weekly structured thematic therapeutic arts program. A 12-week, quasi-experimental, pretest/posttest, nonrandomized, controlled design evaluated outcomes using the Clock Drawing Test (CDT) and the Cognitive Failures Questionnaire (CFQ). Participants who attended the art therapy sessions outperformed those who did not on both cognitive evaluation tests. The findings suggest that the combination of self-initiated art making with art therapy session attendance may be most beneficial for enhancing a person's perception of cognitive ability, which in turn may positively affect overall cognitive performance.

Introduction

Among older adults, cognitive functioning is essential for independent living (Rodgers, Ofstedal, & Herzog, 2003). Impaired cognitive functioning has been found to be a predictor of early death (McGuire, Ford, & Ajani, 2006), whereas enhanced cognitive functioning is correlated with a longer and higher quality of life (Ostbye, Krause, Norton, Tschanz, & Sanders, 2006; Rodgers et al., 2003). Mood disorders (Baune, Suslow, Engeli, Arolt, & Berger, 2006), persistent anxiety and related emotions (Gray, Braver, & Raichle, 2002), a lack of mental stimulation (Snowdon, 2001), low self-esteem (Pruessner, Lord, Meaney, & Lupien, 2004), and decreased social interaction (Pillai, & Verghese, 2009) are some of the many factors that can negatively affect cognition among the elderly population.

Of the 36 million individuals over the age of 65 in the United States, 20% or more may be afflicted with cognitive impairment (Ofstedal et al., 2007). Although cognitive

impairment is a frequent problem for elderly clients across all cultural backgrounds, some research indicates that rates of dementia (a form of severe cognitive impairment) may be higher for elderly Hispanic and Latino Americans than for other ethnic groups (Gurland, Wilder, Lantigua, Stern, & Chen, 1999). This finding is of particular concern because Hispanic and Latino Americans represent one of the largest and fastest growing demographics of older adults in the United States. (National Hispanic Counsel on Aging, 2007).

Ultimately, adherence to treatment is the deciding factor in whether or not clients will experience improved cognitive functioning as a result of therapy (Reardon, Cukrowicz, Reeves, & Joiner, 2002). It has been widely reported that Hispanic/Latino clients underuse available mental health services because such services often are not culturally compatible (Dingfelder, 2005; Gallagher-Thompson, Solano, Coon, & Area, 2003). According to the findings of recent outcome studies, however, Hispanic/Latino clients are more likely to desire counseling over psychotropic medication than non-Hispanic/Latino clients (Cooper, Gonzalez, Joseph, & Rost, 2003; Sánchez-Lacay et al., 2001). Some segments of the Hispanic/Latino population are even averse to the idea of taking psychotropic medication (Hodgkin, Volpe-Vartanian, & Alegria, 2007).

Art therapy has been evaluated as an effective as well as versatile therapy for many Hispanic/Latino clients (Bermudez & ter Maat, 2006). In regards to enhancing cognitive performance, art therapy provides dynamic treatment given its ability to enhance mood (De Petrillo & Winner, 2005), facilitate communication (Malchiodi, 2003), increase social support (Arrington, 2001), address cultural concerns (Wadeson, 2000), and provide person-centered interactions (Innes & Hatfield, 2002; Levine-Madori, 2007) while stimulating various regions of the brain (Hass-Cohen & Carr, 2008). Some research indicates that engagement in a creative and cathartic activity such as art therapy promotes a higher quality of life and health, for example, having fewer problems with diminished vision and mobility (Cohen, 2006; Zeltzer, Stanley, & Melo, 2003). Art therapy treatments have been found to result in clinically significant improvements in emotional and cognitive states (Cohen, 2006; Kim, Kim, Lee, & Chun, 2008; Silver, 1999; Zeltzer et al., 2003).

The investigation described in this article addresses the rising need for sustained wellness and cognitive functioning for elderly Hispanic/Latino clients, drawing primarily from three research studies. The first was a longitudinal

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The term "Hispanic" is problematic for some members of the population who prefer to be identified as "Latino" (although others do not). Therefore, "Hispanic/Latino," which is the U.S. Census terminology, was used throughout the article. Also note that the TTAP Method referenced in this article is registered and trademarked; all rights reserved.

study of 678 Catholic women religious conducted by Dr. David Snowdon, entitled *Aging With Grace* (Lemonick & Park, 2001). The study investigated the sisters' lifestyle, their community involvement, and the onset of diseases related to the aging process. The data were collected from convent archives spanning 60 years that recorded the daily activities of the participants, as well as annual medical examinations and postmortem autopsies that examined the absence or presence of cognitive impairments and their causes. Research findings suggested that an active lifestyle paired with consistent, dynamic mental stimulation staves off cognitive impairment throughout the aging process.

The second study was an outcomes-based evaluation of *Memories in the Making*, an art program for individuals with illnesses related to dementia (Rentz, 2002). Participants took part in a weekly art program and used paints to express themselves by creating colorful visual images on paper or fabric. Results from preliminary data suggested that participation in the weekly art sessions contributed to the individuals' sense of well-being.

The third study used in the design of this investigation was conducted by Levine-Madori (2005) and examined the degree to which participation in art and recreation therapy correlated with cognitive functioning and psychosocial well-being among elderly residents in a skilled nursing facility who were diagnosed with mild to moderate Alzheimer's disease. Results showed a positive and statistically significant correlation between participation in therapeutic activities, levels of cognitive functioning, and psychosocial well-being.

The value of the current study is in its use of a replicable, systematized art therapy treatment modality for a population at high risk for mental illness: Spanish-speaking Hispanic and Latino Americans (Rios-Ellis, 2005). The study investigated the following main research question and two sub-questions: Does cognitive performance change in elderly Hispanic/Latino participants as a result of attending structured art therapy sessions? Does self-directed art making influence levels of cognitive functioning? Is self-perception of cognitive abilities influenced by the creation of artwork?

Methods

Participants

Participants for the study were members of a downtown area community center that aims to provide culturally sensitive activities and meals to Hispanic/Latino seniors who are 60 years and older. All community center members were either Spanish-speaking immigrants to the United States or were from Puerto Rico. They were recruited for the study via a sign-up sheet for "relaxing art therapy sessions." Members of the community center who were not interested in attending the art therapy sessions were the control group. Those who attended two or more art therapy sessions formed the experimental group. Thus, the experimental and control groups were self-selected.

Of the 120 Hispanic/Latino older adult members registered as attending community center activities, 34 mem-

bers signed up to participate in the art therapy sessions. Although 28 of the 34 interested participants completed the pretest, a total of 24 participants ($N = 24$) completed both the pre- and posttest and thus were included in the study. The 9 male and 15 female participants were between 62 and 93 years of age, with an average age of 75. A majority was from Puerto Rico, although Argentina, Cuba, the Dominican Republic, and Venezuela nationalities also were represented. Participants had an average of 7 years of formal education and had been living in the mainland United States for an average of 20 years. Most lived with family members. Participation was voluntary and individuals had the choice of attending as many or as few art therapy sessions as they wanted.

Approval to conduct the study was granted by a Human Subjects Review Board (HSRB). Consent was obtained from participants via HSRB-approved information letters and permission forms. All community center attendees who participated in the study were asked to sign consent, demographic, and cognitive evaluation forms.

Instrumentation

Two pre- and posttests were chosen based on research demonstrating their reliability (Larson, Alderton, Neideffer, & Underhill, 1997; Samton, Ferrando, Sanelli, Karimi, & Barnhill, 2005) and use with the Hispanic/Latino population (Royall et al., 2003). The first was the neurological Clock Drawing Test (CDT) with sensitivities of up to .86 (i.e., accurately indicates cognitive impairment 86% of the time) and specificity of up to .96 (i.e., does not falsely reveal cognitive impairment 96% of the time; Brodaty & Moore, 1997). The Clock Drawing Test has been found to be a useful indicator of change in cognitive status given that it draws on auditory comprehension, visual-spatial ability, and constructional praxis (Samton et al., 2005; Shulman, Shedletsky, & Silver, 1986). Recently, CDT scores and brain imaging measures have been correlated and CDT scores have been found to be a predictor of atrophy in the brain (Samton et al., 2005).

The second evaluative test selected was the Cognitive Failures Questionnaire (CFQ), which measures everyday deficits in attention, perception, memory, and motor coordination. The CFQ has an internal validity of .91 and a test-retest reliability rate of .82 (Larson et al., 1997). This self-report documents the frequency of deficits in completing simple everyday tasks and failures in attention, memory, perception, and motor function (Broadbent, Cooper, FitzGerald, & Parkes, 1982). Although self-reports are subject to bias due to such factors as personality, motivation, and misreporting, self-report cognitive evaluation tests have been found to consistently reflect changes in cognitive processes, as well as attitudes and adaptations to old age (Rabbit, Maylor, McInnes, Bent, & Moore, 2006).

Data Collection Procedures

In the first week of the investigation, I (first author) asked all participants to complete three forms: (a) a demo-

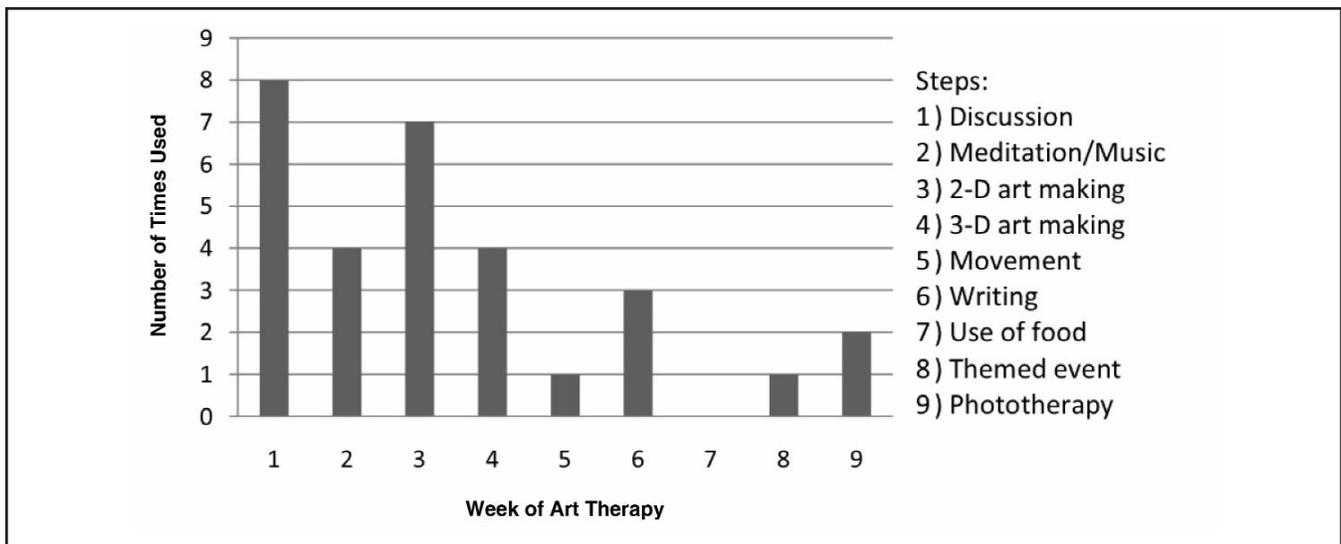


Figure 1 Frequency of TTAP Method Step Use

graphic form that collected data on gender, age, country of origin, highest level of education completed, the length of time lived in the mainland United States, the frequency with which the participant created art, and with whom the participant lived; (b) the Cognitive Failures Questionnaire; and (c) the Clock Drawing Test to assess for cognitive impairment.

Throughout the 10-week intervention phase of the study, all participants had the choice of attending a weekly 2-hour art therapy session or one of five other activities: creating art or crafts on their own, playing dominoes, playing bingo, socializing, or watching television. As the principle researcher, I provided art therapy and documented attendance in the art therapy sessions and in other daily activities chosen by the participants in lieu of art therapy. Four volunteers who were graduate art therapy student peers assisted with collecting pretest and posttest CFQ and CDT scores in weeks 3 and 12. Two nursing student volunteers also helped document daily activities chosen by the community members.

Therapeutic Thematic Arts Programming for Older Adults™ was selected for the art therapy intervention because it was specifically developed for older adults and is grounded in brain health research and humanistic aging theories (Levine-Madori, 2007). Additionally, this method employs a variety of themes in order to achieve a dynamic balance between the various needs of the individuals and interactions in the group. The TTAP Method systematizes the therapeutic use of music, guided imagery, painting, movement, poetry, sculpture, photography, themed discussion, and group collaboration (Levine-Madori, 2007). The structure of each session is formalized according to Bloom's "taxonomy of learning" (Anderson & Sosniak, 1994; Levine-Madori, 2007) in order to engage multiple brain regions through visual, spatial, linguistic, kinesthetic, intrapersonal, interpersonal, and musical stimulation. During the planning of each session, I reviewed and adapted the TTAP Method in accordance with my art therapy training. Themes that were originally intended for an extended

duration were incorporated for use in single sessions. A description of the content of the sessions, the corresponding step, and the intended stimulation is shown in Table 1.

Figure 1 illustrates the frequency with which each of the nine steps was used throughout the 10 weeks of art therapy sessions. Group discussion (Step 1) was most frequently utilized in combination with two-dimensional therapeutic art making (Step 3). The only step of the TTAP Method that was omitted was the use of food as a focus for activity (Step 7).

Results

Of the 34 interested members, 28 were present at pretest; the control group was composed of 15 participants who did not attend more than one art therapy session and 13 participants were in the experimental group, having attended two or more art therapy sessions. Four of the 28 participants were not present at posttest. Thus, there was a 14% (4/28) overall attrition rate. The experimental group

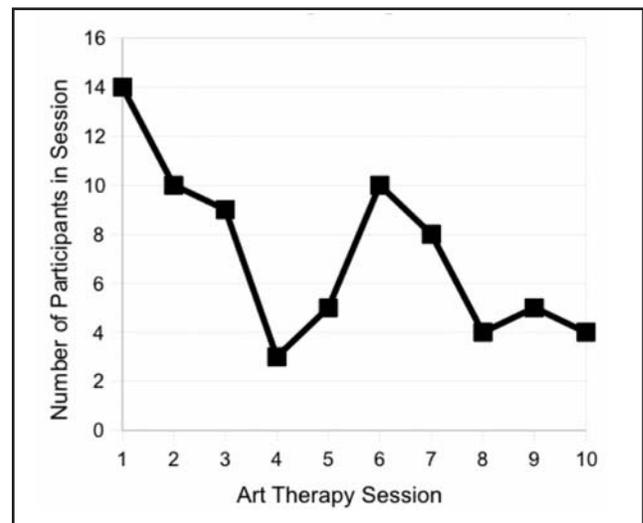


Figure 2 Number of Participants Per Session

Table 1 Session Activities Corresponding to TTAP Method Steps and Intended Stimulation

Session	TTAP Steps	Intended Stimulation	Art Therapy Activities
1	N/A	Evaluation	Pretest
2	1, 3, 4	Linguistic, visual, spatial	Name animals, share/compare previous memories of animals from your native country, create an origami bird, paint the bird to resemble birds from your native country.
3	1, 3, 5	Linguistic, visual, interpersonal, kinesthetic	Name animal characteristics, compare humans and animals, movement activity, draw an animal that shares characteristics with you.
4	1, 2, 3, 6	Linguistic, spatial intra/interpersonal, kinesthetic	Pick a sea shell, relate the shell to past experiences, share memories that arise, create a collage of the memory, write a story about the collage.
5	2, 3	Visual, intra/interpersonal, kinesthetic, musical	Meditate on an image of the ocean, listen to ocean sounds, paint a memory of the ocean.
6	1, 4	Linguistic, spatial, interpersonal, kinesthetic	Name different religions, share/compare childhood concepts of God, create a sculpture using clay.
7	1, 4, 9	Visual, spatial, interpersonal	Discuss cultural aspects of Halloween versus Day of the Dead, compare experiences, paint a pumpkin resembling something or someone, display pumpkins.
8	1, 4, 8, 9	Spatial, intra/interpersonal	Discuss types of masks, create a mask, be photographed in the mask, review photograph with the group.
9	1, 2, 3, 6	Linguistic, visual, spatial, intra/interpersonal	Name types of love and discuss experiences, meditate on a positive memory of love, draw the memory, write a letter to a loved one.
10	2, 3, 6	Linguistic, visual, spatial, intra/interpersonal, musical	Listen to music, meditate on any memory, create a mandala, write a story.
11	1, 3	Visual, spatial, interpersonal	Discuss times to say goodbye, share and compare goodbye experiences, create a collage in response.
12	N/A	Evaluation	Posttest

had an attrition rate of 7% (1/15; leaving 1/14) whereas the control group had a 23% (3/10; leaving 10) attrition rate. On average, individuals in the experimental group were older, had a higher level of education, had been in the mainland United States a shorter period of time, and made artwork more frequently on their own. Those in the control group were more frequently Puerto Rican and female, and were less likely to live with family members than participants in the experimental group.

The number of participants who attended the art therapy sessions varied throughout the duration of the study (Figure 2). The lowest number in any given art therapy session was 3 participants and the highest number was 14. The fourth session had the least participation and occurred on the day when many of the community members received their social security checks. Four participants consistently attended most frequently with six and eight sessions among them. Participants in the experimental group attended an average of four sessions.

Cognitive Evaluation Test Scores

Upon completion of the 12-week study, the Clock Drawing Tests were blindly and independently scored by

three raters using the clock drawing interpretation and scoring system described by Sunderland (1989). Their percentage of agreement was 88%. Regressions for both the CDTs and the CFQs were blindly run by a statistician using the SHAZAM statistical program. The p value was set at $p < .05$ for determining significance.

Cognitive Failures Questionnaire. Results indicated that cognitive performance scores for the Cognitive Failures Questionnaire were significantly correlated to participation in art therapy sessions (Table 2). A polynomial regression analysis was used to examine the relationship between art therapy attendance and CFQ scores. When all 24 participants were graphed, a curvilinear (inverted-U) trend became present, $N = 24$, $p = .001$, $R^2 = 0.47$. Participants with the highest attendance in art therapy also self-reported a higher frequency of cognitive failures in their CFQs. Cognitive performance scores for the CFQs were significantly but not positively correlated to participation in art therapy sessions.

Two participants were removed as possible outliers because their scores deviated markedly from the rest of the sample. These two individuals also showed the highest level of both motivation and resistance toward taking the

Table 2 Cognitive Evaluation Test Results

Test	Experimental (N=14)					Control (N=10)					Analysis (N=24)			
	Pre		Post		% ^a	Pre		Post		%	df	p ^b	Effect Size ^c	f
	Mean	SD	Mean	SD		Mean	SD	Mean	SD					
CDT	4.93	1.97	6.88	2.32	(.77)	6.53	2.70	6.73	2.73	(.36)	23	0.021	0.47	6.13
CFQ	37.14	19.33	32.71	20.63	(.69)	37.30	23.50	46.60	19.36	(.27)	23	0.001	0.69	9.32

^a % indicates percentage improved
^b p-value was set at $p < .05$
^c effect size was estimated from Pearson's correlation (r)

Table 3 Mean Difference in Pre/Post Cognitive Evaluation Test Scores and Art Making

Category	Experimental Group		Control Group	
	CDT	CFQ	CDT	CFQ
Self-Directed Art Making	0.66	8.40	-0.33	-1.00
No Art Making Outside of Session	2.54	1.50	0.14	-10.30
Self-Directed and No Art Making Combined	2.20	3.50	0.01	-7.50

posttest out of concern for whether it meant that the art therapy sessions were not going to continue. After these two participants were removed from the data set as outliers, the regression trend showed a positive and significant linear trend, $N = 22$, $p = .010$, $R^2 = 0.29$, indicating that cognitive performance scores for the CFQs were positively and significantly correlated to participation in art therapy sessions.

For the CFQ cognitive evaluative test, of the experimental art therapy group, 69% of the participants' scores increased, 31% decreased, and no scores remained the same. For the control group, 73% of the participants' scores decreased, 27% increased, and no scores remained the same. Participants who attended the art therapy sessions had an average increase of 3.50 points in their CFQ scores. Those who did not attend art therapy sessions had an average decrease of 7.50 points in their CFQ scores.

Clock Drawing Test. A linear regression served to illustrate the relationship between art therapy session attendance and Clock Drawing Test scores and revealed a positive and significant but weak linear trend, $N = 24$, $p = .021$, $R^2 = 0.22$. Cognitive performance scores for the CDTs were positively and significantly correlated to participation in art therapy sessions (Table 2).

In the experimental group, 77% of the participants' CDT scores improved, 15% stayed the same, and 8% showed a decrease. In the control group, 46% of the participants' scores decreased, 36% improved, and 18% showed no change. Participants who attended the art therapy sessions had an average increase in CDT score of 2.20 points. Those who did not attend art therapy sessions had an average increase in CDT score of 0.10 points.

Correlation With Self-Directed Art Making. Table 3 shows the mean differences in pre- and post-cognitive evaluation test scores for different levels of participation in art

making. Participants who attended the art therapy sessions and who also created art or crafts on their own outside of the session had an average increase in CDT score of 0.66 points and an average increase in CFQ score of 8.40 points. Those who participated in the art therapy sessions but did not make artwork on their own showed an average increase in CDT score of 2.53 points and an average increase in CFQ scores of 1.50 points.

Control group participants who did not make artwork on their own and who also did not attend the art therapy sessions showed an average increase in CDT score of 0.14 points and an average decrease in CFQ score of 10.30 points over the 12 weeks of the study. Those participants who created art or crafts on their own (e.g., knitted, made paper doll dresses, sewed leatherwork, etc.) but who did not attend art therapy sessions showed an average decrease in CDT score of 0.33 points and an average decrease in CFQ score of 1.00 point.

Although the majority of those who attended art therapy sessions showed improvement in their cognitive evaluation scores (77% improved on the CDT and 69% improved on the CFQ), not all those who declined participation in the art therapy sessions showed a decrease in these scores. In the control group, 36% of individuals improved their CDT scores. The majority of those in the control group who did not participate in the art therapy sessions showed a decrease in scores (46% decreased on the CDT and 73% decreased on the CFQ). In the art therapy experimental group, there was a tendency toward improved cognitive performance as measured on the CDT and CFQ.

Four pre- and post-Clock Drawing Tests in Figures 3–6 illustrate the contrast between pre- and post-depictions of the clock. Participant A (Figure 3) was among the 36% of

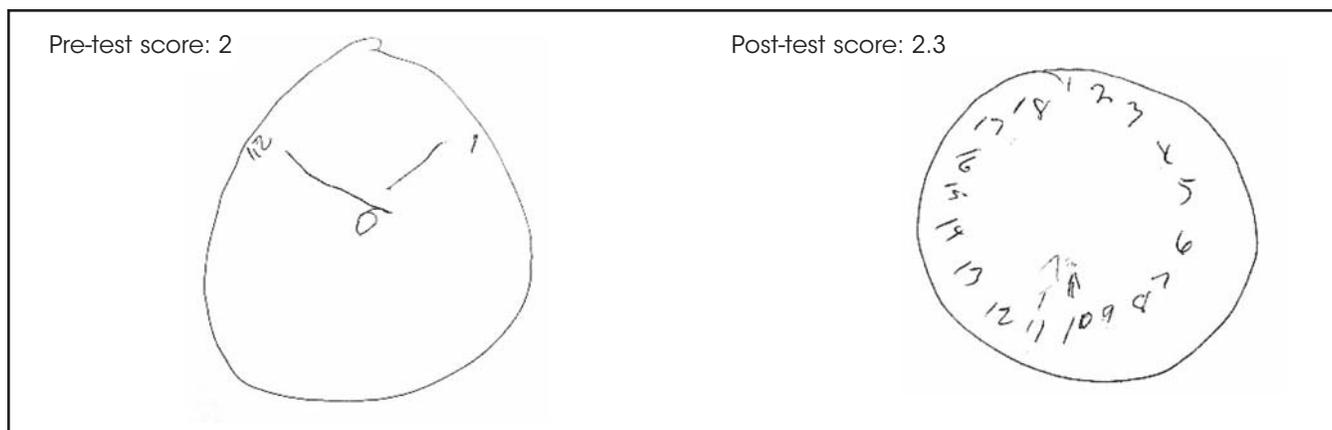


Figure 3 Participant A: Did Not Attend Art Therapy Sessions

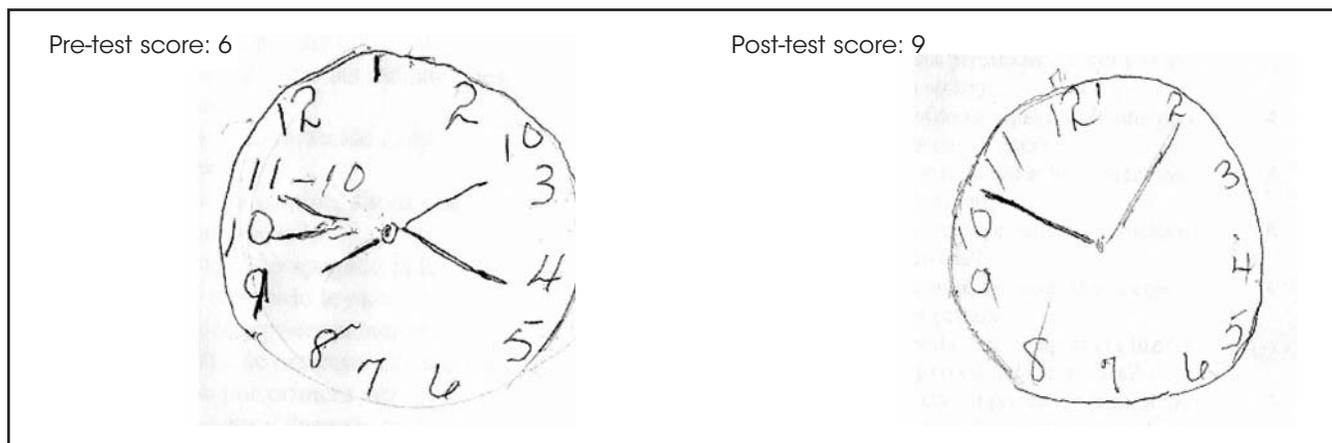


Figure 4 Participant B: Attended Art Therapy Sessions

participants in the control group who improved on CDT score. His score shows a slight increase of 0.30 points. He did not participate in art therapy but preferred to spend most of his time at the community center playing dominoes.

Participant B attended the art therapy sessions; the score given by the raters showed an increase of 3 points. This participant attended 8 therapy sessions, he actively participated, and he would often sing while creating his artwork.

Participant C also attended 8 therapy sessions; her score improved by nearly 2 points. She often was quiet during the therapy sessions and participated in discussions only very minimally. She actively engaged in art making, however, and was inventive with design elements in her work. Both of the CDTs drawn by Participant B and Participant C illustrate such scores as demonstrated by 77% of the participants who attended art therapy sessions.

Participant D did not attend art therapy sessions and spent most of her time at the community center playing bingo. Her CDT score decreased by 3 points, and illustrates the typical scores of 46% of participants who did not attend art therapy sessions and whose CDT scores decreased.

Discussion

This pilot study utilized the TTAP Method as a structural support for art therapy, which allowed the researcher

to facilitate person-centered, multimodal interventions that can be replicated in the future. The TTAP Method provided a structure for planning and tracking cognitive stimulation activities within the art therapy session while encouraging rapport-building interaction. In addition to the quantitative measures described above, therapeutic outcomes revealed a pattern of emotional disclosures during the sessions that indicated a heightened level of intimacy among group members. Discussions between group participants often went beyond the art directive to include significant themes related to participants' personal lives. The topics shared ranged from experiences of domestic abuse, alcoholism, and poverty to fear of the afterlife, as well as expressions of life regrets, loss and grieving, pride in loved ones, nostalgia for a former life, and newfound love within the community center. Themes and art interventions were planned so as to be safe and comfortable to newcomers to the group. However, participants utilized the therapeutic opportunity and directed the discussions and depth of art creation based upon their own emotional and enhanced level of comfort.

As the facilitator, I (first author) was consistently surprised by the depth of the disclosures that occurred during the group and the apparent risks that the participants took with one another. Participants expressed a genuine enjoy-

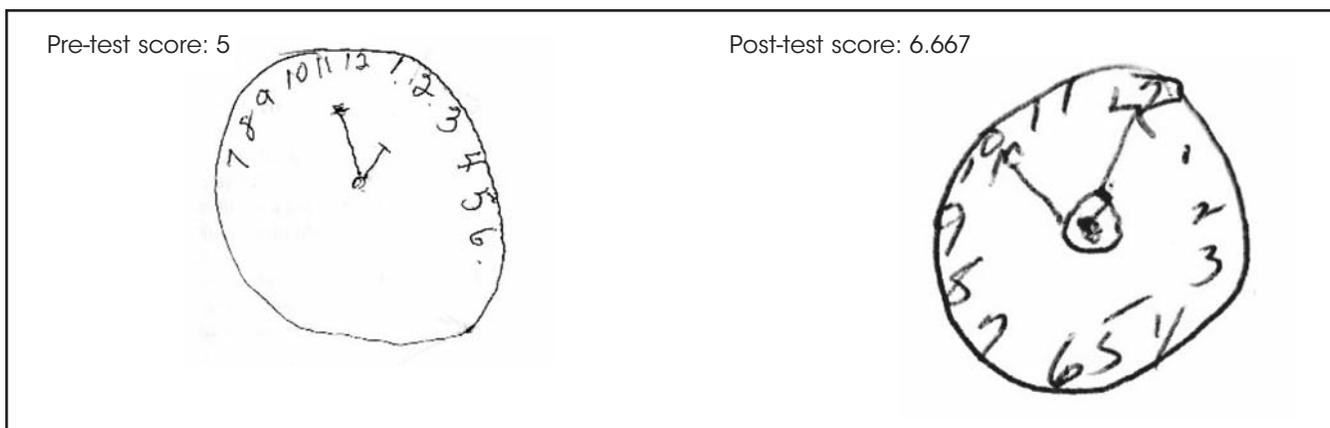


Figure 5 Participant C: Attended Art Therapy Sessions



Figure 6 Participant D: Did Not Attend Art Therapy Sessions

ment of art therapy and concern regarding whether or not sessions would continue. In general, the participants were open to various forms of creative expression, including singing and creating two- and three-dimensional artwork. The many emotional reactions and disclosures that ranged in intensity throughout the art therapy sessions may have positively affected the outcome of cognitive performance test scores.

The CFQ scores serve as a reflection of change in self-perception and self-confidence, whereas the CDT scores (as intrinsic to the nature of the test) demonstrate changes in auditory comprehension, visual-spatial ability, and constructional praxis/visual motor skills (Samton et al., 2005). The results of this pilot study indicated that art therapy sessions did contribute to self-perceived changes in cognitive functioning, as well as to changes in visual-spatial ability, auditory comprehension, and visual motor skills. Art therapy attendance continued to be associated with cognitive performance levels beyond what could be attributed to other variables. Thus, the findings suggest that differences in cognitive performance were influenced by participation in systematized, structured creative arts therapy through the TTAP Method.

Participants who attended the art therapy sessions outperformed those who did not on both cognitive evaluation tests. Participants who did not create artwork on their own

and who also did not attend the art therapy sessions showed the greatest decrease in CFQ scores. In contrast, art users who attended the art therapy sessions showed the greatest improvement in CFQ scores. These findings suggest that art making positively influences a person's self-confidence, as well as the person's self-perception of his or her cognitive abilities. Additionally, the combination of self-initiated art making with art therapy session attendance may be most beneficial for enhancing a person's perception of his or her cognitive ability, which in turn may positively affect overall cognitive performance.

Participants who did not make art on their own but who attended art therapy sessions showed the greatest improvement in their CDT scores. Conversely, participants who made art on their own but did not attend art therapy sessions had the greatest decrease in CDT scores. This finding suggests that attending art therapy sessions may be more beneficial for enhancing visual motor skills and visual-spatial abilities than simply creating artwork on one's own.

Among the limitations of the study was the fact that experimental and control groups were self-selected, which may have created a selection bias. Attrition rates differed between the experimental group and the control group, with inferences made on the basis of only those participants who took both the pretest and the posttest. The 23%

attrition rate in the control group versus the 7% attrition rate in the experimental group may have skewed the results. Future research could improve upon this pilot by sampling several community centers and screening all participants for interest in art therapy. Of the interested individuals screened, half could be randomly selected as the control group and the other half could be selected as the experimental group, creating a less biased sample.

It is possible that there existed an experimenter bias as well. Because they were recruited on the basis of language, the number of volunteers available to collect the data and interact with the Spanish-speaking participants in the therapeutic sessions was limited. Many of the participants could not read and depended on the volunteers to help them complete the CFQ and the demographic questionnaire. During the pretest data collection only two of the four volunteers spoke Spanish fluently. The language barrier may have decreased the accuracy of information collected. Additionally, the primary researcher was also the therapist providing the art therapy sessions throughout this study. A double-blind research design in which the primary researcher is not the primary therapist would improve the study.

It is not possible to generalize the results to older adults or to Hispanic and Latino Americans as a whole due to the small, nonrandom sample drawn from one location in the northeastern United States. Arguably, those who chose to take part in the art therapy sessions might have shared certain unknown characteristics that affected the outcomes of the study. There may also have been factors affecting the cognitive evaluation scores other than the therapy program.

The participants in this pilot study primarily were originally from Puerto Rico, although other Latin American cultural groups also were represented. Although Mexican Americans constitute a significant percentage of the Hispanic/Latino population in the United States, none of the participants in the study were from Mexico. Therefore this pilot study does not adequately reflect the diversity of Spanish-speaking Hispanic and Latino Americans.

Notwithstanding these limitations, the study contributes evidence in support of structured art therapy programming for older adults. When art therapy is extended beyond the sessions with self-initiated art making in particular, older adults may receive the greatest benefit for enhancing self-perceptions and improving cognitive performance.

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