

Implementation Techniques in Artistic Painting Activities for Individuals with Dementia:  
Promoting Engagement and Independence

Eduardo González-Cabañes MA,<sup>1\*</sup> Penelope Kuhn PhD,<sup>1</sup> Ana M. Ullán de la Fuente PhD,<sup>2</sup> Sara Ortega-Merino BA,<sup>3</sup> Lawrence Herringer PhD,<sup>1</sup> Shane Price BA,<sup>1</sup> Carla Saldaña MA,<sup>1</sup> Lucy Madden BA,<sup>1</sup> Anna Bartel BA,<sup>1</sup> and Estela Rojo-Hernández MA<sup>4</sup>

<sup>1</sup> California State University Chico, <sup>2</sup> Universidad de Salamanca, <sup>3</sup> Universidad de Burgos & <sup>4</sup>  
Centro de Arte Contemporáneo de Caja Burgos

Authors' Note

\*Correspondence should be addressed to Eduardo Gonzalez Cabañes, MA, who graduated in the Psychology Department at California State University Chico, and his current address is Av/Portugal, 143, 5ºD, Madrid, Spain; email: egonzalezcabanes@mail.csuchico.edu; phone (0034)665815945.

Penelope Kuhn, PhD, is a professor in the Psychology Department at California State University Chico, 400 West First Street, 95926, Chico, California; email: pkuhn@csuchico.edu; phone: 5308986750.

Ana M. Ullán de la Fuente, PhD, is a professor in the Social Psychology and Personality Department at the Universidad de Salamanca, Francisco Tomas y Valiente s/n, 37071, Salamanca, Spain; email: ullan@usal.es; phone: 923294500.

Sara Ortega Merino, BA, is a graduate student in the Nursing University School at the Universidad de Burgos, Hospital del Rey s/n, 09001, Burgos, Spain; email: som008@alu.ubu.es.

Lawrence Herringer, PhD, is a professor in the Psychology Department at California State University Chico; email: lherringer@csuchico.edu; phone: 5308984803.

Shane Price BA, Carla Saldaña MA, Lucy Madden BA, and Anna Bartel BA are graduate students in the Department of Psychology at California State University Chico. The emails in respective order are: [sprice9@mail.csuchico.edu](mailto:sprice9@mail.csuchico.edu), [carlasaldana11@mail.csuchico.edu](mailto:carlasaldana11@mail.csuchico.edu), [lmadden1@mail.csuchico.edu](mailto:lmadden1@mail.csuchico.edu), [abartel@mail.csuchico.edu](mailto:abartel@mail.csuchico.edu).

Estela Rojo-Hernández is the coordinator of educational programs in the Centro de Arte Contemporáneo de Caja Burgos, Calle Saldaña, s/n, 09003 Burgos, Spain; email: [educacioncab@cajadeburgos.com](mailto:educacioncab@cajadeburgos.com); phone: (0034) 947256550.

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### Abstract

**Purpose of the study:** We evaluated the efficacy of several Implementation Techniques (ITs) for the ability to integrate individuals with different levels of dementia in artistic painting activities and to promote their independence. We also explored the influence of the amount and frequency of practice in moderating the efficacy of these ITs.

**Design and Methods:** Twenty-three participants with dementia, ranging from mild to severe, were randomly assigned to practice either once a week or three times a week in an art painting class in which we applied the ITs. They were videotaped during the third and sixth sessions. Two blind coders assessed the affect, engagement, and independence of participants during observation periods systematically selected from the videos.

**Results:** Participants with mild and moderate dementia were actively engaged the majority of the time, and rarely required assistance. Participants with severe dementia reached similar levels of active engagement, but required more frequent assistance. Anxiety was rarely observed, whereas pleasure was apparent in 25% of all the observations. After several sessions of practice, participants increased their independence and decreased their passive engagement. Frequency of practice had no effect on the results.

**Implications:** The ITs allowed participants with dementia, including those with severe dementia, to benefit from all the opportunities of artistic painting classes, while maintaining high levels of independence, active engagement, and pleasure. Nevertheless, participants with severe dementia required intense personal assistance during the first sessions.

*Keywords:* Alzheimer's disease, autonomy and self-efficacy, formal caregiving, affect, frequency of practice.

## Implementation Techniques in Artistic Painting Activities for Individuals with Dementia: Promoting Engagement and Independence

Autonomy, or the ability to have control over one's decisions and preferences, is considered a central human need (Ryan & Deci, 2008). People with dementia, however, frequently report a lack of autonomy for doing activities they enjoy (Maki, Amari, Yamaguchi, Nakaaki, & Yamaguchi, 2012). Yet promoting autonomy in caregiving facilities is a complex problem. Facilities generally have limited resources and staff to attend to many clients with diverse symptomatology. Because of this burden, caregivers often have to standardize their assistance, thereby reducing attention to the individual preferences of each client (Boeije, Nievaard, & Casparie, 1997). In addition, people with dementia can feel guilty about being a burden (Secker, Hill, Villeneuve, & Parkman, 2003). Given this situation, one potential way to promote autonomy in people with dementia consists of offering group activities they can perform with relative independence, but which are simultaneously interesting and fulfilling (Camp, Zeisel, & Antenucci, 2011). Among these potential activities is artistic painting.

The production of art is motivating because it allows individuals to produce something of value while using complex mental capacities, such as creativity and art expression (Kinney & Rentz, 2005; Ullán et al., 2013). These capacities are relatively spared throughout the progression of dementia (Camp et al., 2011), as are the capacities to perform the physical procedures involved in artistic painting (Chancellor, Duncan, & Chatterjee, 2014). Furthermore, art productions cannot be evaluated in terms of right or wrong, which liberates individuals from the anxiety of failure.

Past research has shown that the symptomatology of the dementia was not an impediment for the normal integration of people with mild and moderate dementia into an art painting class

(Ullán et al., 2013), and that they showed frequent expressions of sustained attention, pleasure, and self-esteem (Kinney & Rentz, 2005; Rentz, 2002). Another study suggested that art activities could have positive effects beyond the duration of the sessions; after 12 weeks of daily participation in an art painting activity, people with mild and moderate dementia improved their mental quality of life and reduced their apathy in comparison to those who did not participate in the painting class (Hattori, Hattori, Hokao, Mizushima, & Mase, 2011).

People with severe dementia also displayed increased levels of engagement and pleasure while participating in art activities (Sauer, Fopma-Loy, Kinney, & Lokon, 2014). However, in this study each participant was assigned one facilitator who stimulated the participant during the whole session. In contrast, when people with severe dementia were included in art painting activities of three to six participants led by two facilitators, their scores on mental acuity, physical competency, calmness, and sociability during the sessions were generally low, and only reached the levels of those participating in other activities after several sessions of practice (Rusted, Sheppard, & Waller, 2006).

The independence and normal integration of people with severe dementia in artistic painting activities might require the application of specific techniques to compensate for their symptoms. A common symptom in the severe stages of dementia is language impairment (Budson, 2014). During the art activity participants might feel frustrated when they cannot understand verbal instructions from the facilitators. However, this can be compensated for with visual guidance, or even with kinesthetic guidance (Hutton, 1996). Kinesthetic guidance consists of managing the movements of the person to show him the procedures. Such guidance was effective in artistic painting activities for people with dementia when other types of guidance failed (Gross, Danilova, Vandehey, & Diekhoff, 2013).

The combination of serious aggravation of executive functions and decreased declarative memory, which is common in people with severe dementia (Budson, 2014), can also interfere with their normal integration in art painting activities. Executive functions include functions such as action planning, attention shifting, attention inhibition, or working memory. Due to the impairment of these functions, people with severe dementia might get easily distracted during the art activity, or overwhelmed while organizing the sequence of procedures (Budson & Price, 2005). If these problems are combined with a serious aggravation of declarative memory, that is, the ability to consciously recall facts or ideas, people with dementia might get disoriented in addition to frequently distracted (Seifert & Baker, 1999). These impairments can be somewhat compensated by with implicit memory (Camp et al., 2011), which is generally conserved throughout the progression of dementia (Budson, 2014), and allows people to activate memories that do not require conscious effort. For example, the engagement of participants with dementia in activities can be promoted by generating implicit associations between elements of the environment and the procedures required in the activities (Camp & Skrajner, 2004).

The innovations in the present study consist of bringing together several ITs that take advantage of these relatively unaffected capacities, with the objective of making all the opportunities that are generally implied in artistic painting available to participants with dementia, including: stimulation with a variety of famous art examples, discussion of artistic ideas, and making decisions about their artistic creations. Secondly, they would perform the activity with relative independence.

We hypothesized that participants would require several sessions to reach standard levels of independence because implicit memory is based on practice and repeated exposure. Past research has shown that people with dementia improved their performance after practicing



several sessions with the procedures of activities of day to day life (van Halteren-van Tilborg, Scherder, & Hulstijn, 2007) and activities of artistic painting (Rusted et al., 2006). We also hypothesized that participants who practiced more often would gain more independence. There is a lack of literature about the effects of frequency of practice, either in art activities (Chancellor et al., 2014) or in other procedural activities (van Halteren-van Tilborg et al., 2007), but we based our hypothesis on results from our pilot studies, and in a few studies that indicated that people with severe Alzheimer's disease performed better in implicit memory tasks when sessions were separated by a few days, rather than a week or more (Mitchell & Schmitt, 2006; Mochizuki-Kawai et al., 2006).

The aim of the study was to observe whether the ITs promoted high levels of engagement, positive affect, and independence in people with dementia while they participated in an art activity. The second aim was to study how these results were moderated by the amount and frequency of practice. We first tested the amount of practice by comparing the results of the third session with the sixth, and then the effect of the frequency of practice by comparing a group that practiced once a week with a group that practiced three times a week.

### **The Implementation Techniques (ITs)**

The objective of the ITs was for people with dementia, including those with severe dementia, to enjoy art activities with normalcy: a) having a constant sensation of control about their decision in participating; b) becoming independent with the procedures; c) finding and expressing their artistic preferences; d) discussing artistic methods of representation; d) creating their own art work according only to their decisions. The ITs were designed to compensate for the deficits in declarative memory, executive functions, and language impairments, first by taking advantage of procedural memory to facilitate the automatization of the procedures required in the activity,

and secondly by promoting the expression of their preferences with alternative methods of communication.

### **IT 1: Facilitating Accessibility: Emphasizing the Option to Leave or Join the Activity at Any Moment**

People with dementia might not remember what the art activity is when they are invited to participate. Doing the activity in a place patients can access independently at any time or facilitating accessibility with the staff allows participants to see the activity before they decide to participate. In addition, patients might get disoriented during the activity and react in ways suggesting that they want to leave. Making it obvious that patients have the option of leaving can increase their sense of control.

### **IT 2: Structuring the Environment to Generate Implicit Memories of the Activity and Procedures**

Always using the same distribution of materials, and leaving handy only the materials participants need to perform the procedures can generate implicit memories of the activity and its procedures (Camp & Skrajner, 2004).

### **IT 3: Using Materials and Art Examples Associated with Professional Painting**

The materials used can influence the perception participants have about themselves while they engage in the activity (Camp et al., 2011). In contrast to using painting materials associated with children's activities, using professional materials and discussing artistic ideas with references to famous artistic paintings can trigger their interest and motivation (Ullán et al., 2013).

### **IT 4: Asking about Artistic Preferences with Art Examples from Different Styles**

People with dementia have consistent preferences about art (Halpern, Ly, Elkin-Frankston, & O'Connor, 2008). On the other hand, the evolution of the dementia might influence

the artistic styles participants are able to produce. For people with Alzheimer's disease, the capacity to produce realistic art becomes impaired as the dementia advances, but they conserve the ability to produce abstract and symbolic art (Cummings, Miller, Christensen, & Cherry, 2008). In contrast, participants with some frontotemporal dementias tend to produce obsessive and realistic art (Miller et al., 1998). Asking participants about their preferences while viewing art examples from different styles helps attend to their various capacities and preferences.

### **IT 5: Asking about Preferences and Providing Options with Materials that are Physically Present**

Using materials that are physically present, such as art works printed on paper sheets, different mixtures of colors made in a palette, different brush traces represented in a separate canvas, etc. allows participants to compare several options simultaneously. If they cannot see the options, they might forget the different possibilities they can choose. This technique also allows individuals to express their preferences by pointing, which is helpful for participants with language impairments. Once participants have made their decision, these materials can be left on the table for continuous reference, and to serve as memory aids.

### **IT 6: Stimulating Initiative and Artistic Ideas by Presenting a Variety of Options and Pictorially Creative Triggers**

The creative process might generate hesitancy and doubts in some individuals, especially at the beginning. Art instructors can suggest several ideas: different mixtures of colors, brush traces, or creative triggers. To prevent making decisions for participants, which might decrease their engagement and motivation (LeBlanc, Cherup, Feliciano, & Sidener, 2006), art instructors can present all of these suggestions as options that participants can choose. Providing options for pictorially creative triggers can be very effective in stimulating their initiative at the beginning.

Pictorially creative triggers consist of shapes or images that are attached to the canvas, thereby providing a concrete idea for starting the art composition, yet at the same time suggesting new and varied transformations so that the originality of the art work corresponds to the wishes of the participant.

### **IT 7: Reducing the Sequence of Procedures to a few Steps Connected by Self-action Cues**

Self-action cues are stimuli that are derived from the actions performed by the participant, and these stimuli can generate an implicit memory when one procedure is finalized, prompting the next procedure. This implicit memory can be used to compensate for the problems with organizing or remembering the precise sequence of procedures (Orsulic-Jeras, Judge, & Camp, 2000). Art painting activities have the advantage of being able to be reduced to a few steps connected by self-action cues. For example, they can be reduced to painting, reaching for colors, and occasionally cleaning the brush. If they find their brush dry while painting, that reminds them of the need to reach for more colors; after reaching for the colors, participants find their brush filled, indicating the possibility of continuing to paint. Finally, painting with a dirty brush prompts the participant to recognize the need to clean the brush.

### **IT 8: Promoting Practice through an Errorless Learning Perspective (ELP) that Prioritizes Visual and Kinesthetic Guidance.**

For people with dementia errors can lead to frustration instead of contributing to learning because they might not remember what led to the error (Choi & Twamley, 2013). ELP is a learning strategy that consists of providing guidance to learners while reducing their mistakes and confusions to a minimum, and gradually removing the guidance as the learner demonstrates increased independence. A possible application of ELP in artistic painting is to provide all the necessary guidance in the beginning to allow the participants to start painting, and then providing

only the guidance that is necessary to avoid confusions or disengagement (Kinney & Rentz, 2005). To compensate for language impairments, this guidance should prioritize visual directions, such as pointing to or reaching for materials needed for the next procedure. When the instructions are not well understood, instructors can incorporate kinesthetic directions, such as guiding the participant's hand to show them a brush stroke.

## **Methods**

### **Participants**

The participants were 23 residents diagnosed with probable Alzheimer's disease ( $n = 4$ ) or unspecified dementia ( $n = 19$ ) from three residential care facilities in Northern California. Two additional residents were initially included in the study, but were excluded from the analysis because they did not follow the planned schedule. Two independent caregivers in each facility rated the participants' levels of dementia with the Global Deterioration Scale (GDS) (Reisberg, Ferris, de Leon, & Crook, 1982) and the Functional Assessment Staging Test in Alzheimer's Disease (FAST) (Sclan & Reisberg, 1992), reaching inter-rater agreements of  $\alpha = .95$  and  $\alpha = .96$  respectively for each test. The participants who scored 6 or higher in both tests were classified as having severe dementia ( $n = 9$ ); the rest were classified with mild or moderate dementia ( $n = 14$ ). The participants' demographic information is represented in Table 1. The study was approved by the Institutional Review Board at California State University, Chico (213-01), and all participants provided their consent and informed consent from relatives.

### **Design**

Participants went through six sessions of the art painting activity. The first two sessions served to acclimate participants to the activity, and took place within the two weeks previous to

the third session. After these two sessions, we randomly assigned participants in each facility to one of two groups, either practicing once a week or practicing three times a week.

Two independent observers rated the affect, engagement, and independence of participants from video recordings of the third and sixth sessions. To study the effects of practice, we compared the results of the third and sixth session. To study the effects of the frequency of practice, we compared the results of the two frequency-of-practice groups in the sixth session (Figure 1).

### **Art Activity Procedures**

The art activity took place in June and July of 2013 in the common areas of the facilities. The sessions lasted between 60 and 90 minutes and always occurred at the same time of the day in each facility, varying between 10am and 4pm. The sessions consisted of groups of three to six participants supervised by two art instructors who had practiced and collaborated in the design of the ITs for three years during previous pilot studies.

During the sessions there was always a worker from the center close to the room of the art activity available to facilitate the mobility of participants in joining or leaving the activity (IT 1). Materials for acrylic painting were always distributed in the same manner, simplified in such a way that participants always had the materials for painting handy and nothing else (IT 2), and resembling a class of professional artistic painting (IT 3). In front of each participant there was a canvas made with a wood panel covered with gesso. On the right there was a brush and a palette with the three primary colors. Additional mixtures of colors were made during the session. The center of the table was reserved for placing art examples.

At the beginning of the sessions, the instructors approached each participant individually and showed them several art examples illustrated on paper sheets. They were examples from

famous painters (IT 2) and were organized in four themes to represent different artistic styles, including abstract and realistic art (IT 4) (Table 2). Using these art examples as a reference, instructors discussed participants' artistic preferences and the type of painting each participant would like to do. The art examples related to each participant's preferences were placed on the table for future reference (IT 5). According to the theme of these art works, instructors asked participants to incorporate a pictorially creative trigger on their canvas (Table 2). They also asked about mixtures of colors and other options participants could choose (IT 6).

This initial individualized interaction lasted about five minutes and ended with the instructor providing the guidance that participants needed to start painting the canvas (IT 7). To avoid forcing other participants to wait, they were invited to join the activity progressively, as art instructors finished the initial interactions with other participants. During the rest of the session participants painted their own art works, and art instructors provided individualized interventions according to ITs 5, 6, and 8.

### **Observation Procedures**

We edited the videotapes to generate videos that zoomed in on each participant, creating a total of 46 videos: one video for each participant in each of the two evaluation sessions. From each of these videos we conducted a systematic selection of observation intervals (Table 3). Two independent observers rated the measures of engagement, affect, and independence, and two additional observers rated four qualitative variables to control for the experimenter bias. Observers did not know which frequency-of-practice group or which evaluation session the intervals belonged to. All of the observers received a total of eight hours of training, in which they conducted more than 30 observations, reaching an inter-rater agreement that exceeded 85% for all measures.

## Measures

**Engagement and affect.** For measuring engagement and affect we used the Menorah Park Engagement Scale (MPES) (Camp, Skrajner, & Gorzelle, 2015). Its engagement scale contains four behavioral categories: active engagement (doing or speaking about the activity), passive engagement (looking at or hearing the activity), other engagement (doing or attending to things other than the activity), and non-engagement (keeping the eyes closed, or staring into space). The MPES affect scale includes two affect items: pleasure (clear signs of pleasure such as laughing or smiling), and anxiety/sadness (obvious displays of sadness through tearfulness, conversation, or clearly observable depressed affect; or obvious displays of anxiety such as hand-wringing, rocking, anxious vocalizations, or other psychomotor activity if seen in combination with an anxious facial display). For each of the three observation intervals collected in the session after the participant started painting, the duration of each engagement or affect behavior was coded with the following scores: 1 (not present at all), 2 (present for less than half of the time) and 3 (present for more than half of the time). The inter-rater reliability was very high (intra-class correlation coefficient = .92). We summed up the scores of these three intervals, so that for each engagement or affect variable the highest possible score was 9 and the lowest possible score was 3.

**Independence.** We created a measure for independence, inspired by the Kitchen Task Assessment (Baum & Edwards, 1993), but adapted the definition of the activity requirements to those of the art activity: initiating painting (starting to extend the paint over the canvas), sequencing (organizing the sequence of procedures), painting (keeping engaged while extending the paint over the canvas and performing this procedure appropriately), and safety (keeping themselves safe). After watching the 4 intervals, observers coded the intensity of assistance for



each physical requirement as follows: 4 (independent), 3 (received only verbal or visual directions), 2 (received physical directions) and 1 (not capable without continuous assistance). We obtained consistent inter-rater reliability (intra-class correlation coefficient = .86). For the statistical analysis we created a composite variable “general independence” by combining the independence scores for the four requirements, which showed a high level of internal consistency ( $\alpha = .785$ ). The scores for this new variable ranged from 4 to 16.

**Measures to control for the experimenter bias.** In order to control for experimenter bias, or the consistency of the interventions that instructors provided to participants across the different conditions of the study, the observers coded four variables about the qualitative aspects of the interventions. An intervention was operationally defined as a group of interactions between the participant and the art instructor that were separated by at least 10 seconds from any other interaction. These variables were: (a) the antecedent of the intervention (whether the intervention was solicited explicitly by the participant, solicited by a behavior of disengagement or inappropriate development of procedures, or initiated by the art instructor without the mentioned antecedents); (b) the presence of praise (whether praise was present within the intervention or not); (c) the antecedent of kinesthetic directions (whether the first kinesthetic direction provided within the intervention was preceded by verbal directions about the procedures, by artistic comments or ideas, or neither); (d) the antecedent of verbal/visual directions (whether the first verbal/visual direction provided in the intervention was preceded by kinesthetic directions, by artistic comments or ideas, or neither). Observers obtained a substantial level of agreement: the kappa statistic for these variables were .81, .77, .66, and .69 respectively.

## **Results**

### **Control of Extraneous Variables**

We controlled for ten variables that could influence the results, including: age, level of dementia, the themes selected by participants, whether they used pictorial creative triggers, days between each of the acclimation sessions and the third session, and the four variables to control for experimenter bias. The values of these variables were not significantly different statistically, between the third and the sixth session, nor between the two frequency-of-practice groups, as indicated by several t-tests and chi squares.

The scores of the two observers were combined in the analyses by introducing a within-subjects factor (observer: observer 1 vs observer 2) in the MANOVAs that we used to analyze the dependent variables. These analyses did not show any significant difference between the observers, neither at the multivariate nor the univariate level. In sum, it is unlikely that the results presented below are due to any of the aforementioned extraneous variables or to the bias of the observers.

### **The Amount-of-Practice Effect**

We first considered all of the dependent variables together in order to examine whether the results of the sixth session were more positive overall than the results of the third session. To test this, we conducted a 2 (time: third session vs sixth session) x 2 (level of dementia: mild/moderate vs severe) x 2 (observer: observer 1 vs observer 2) MANOVA with the seven dependent variables (active engagement, passive engagement, other engagement, non-engagement, pleasure, sadness/anxiety, and general independence). The results showed that there was a significant improvement from the third to the sixth session,  $\lambda = .220$ .  $F(7, 15) = 7.60$ ,  $p = .001$ ,  $\eta^2 = .780$ . This general improvement occurred regardless of the stage of dementia; that is, for participants with mild or moderate dementia and for participants with severe dementia. Nevertheless, in both sessions, participants with mild or moderate dementia overall had more

positive scores than those with severe dementia  $\lambda = .318$ ,  $F(7, 15) = 3.47$ ,  $p = .021$ ,  $\eta^2 = .618$ .

The univariate analysis of each dependent variable is depicted in Figure 2, and includes the means and standard deviations calculated from the rates of one of the two observers randomly selected.

**Results for engagement.** Active engagement was present for more than half of the time in 89.13% of the observation intervals; that is, most of the time participants were physically working on or speaking about the art activity. In 7.2% of the observations, passive engagement was the predominant behavior. Other engagement and non-engagement behaviors were rarely observed, and predominated in only 3.33% of the intervals.

The pattern of engagement behaviors was similar for the two levels of dementia, and was relatively constant across time. Among the four engagement variables, the univariate analysis showed only one significant result: a decrease in passive engagement from the third ( $M = 5.39$ ,  $SD = 1.23$ ) to the sixth session ( $M = 4.43$ ,  $SD = 1.59$ ),  $F(1, 21) = 5.19$ ,  $p = .033$ ,  $\eta^2 = .20$ , which in turn is possibly due to an increase in active engagement, not directly reflected in this measure because of a ceiling effect.

**Results for affect.** Expressions of sadness or anxiety were observed in just 1.08% of the intervals, while pleasure was observed in 25.36% of the intervals. The pattern of affect expression was similar for both levels of dementia and for the two evaluation sessions. The univariate analyses showed no significant differences.

**Results for independence.** Figure 3 depicts the proportions of participants who became totally independent for each physical requirement from the third session to the sixth session. It also shows the proportion of participants who received higher levels of assistance.

The univariate analyses showed a significant interaction between time and level of dementia,  $F(1, 21) = 9.45$ ,  $p = .006$ ,  $\eta^2 = .310$ , indicating that participants with severe dementia made greater gains toward independence from the third ( $M = 11.44$ ,  $SD = 2.13$ ) to the sixth session ( $M = 13.22$ ,  $SD = 2.30$ ) than participants with mild or moderate dementia. The latter were consistently close to ceiling scores across the third ( $M = 14.71$ ,  $SD = 1.20$ ) and sixth sessions ( $M = 15.14$ ,  $SD = 1.29$ ).

### **The Frequency-of-Practice Effect.**

To evaluate whether practicing three times a week led to more positive results for engagement, affect, and independence than practicing once a week, we conducted a 2 (frequency of practice: once a week vs 3 times a week) x 2 (observer: observer 1 vs observer 2) MANOVA with the scores in the sixth session for the seven dependent variables. No significant differences were found between the two frequency-of-practice groups, neither at the multivariate level nor the univariate level.

## **Discussion**

The engagement and independence levels of participants with mild or moderate dementia were similar to the levels we could expect in participants without dementia participating in an art class: in both assessment sessions they were actively engaged the majority of the time, and were mostly independent for all the requirements. Participants with severe dementia were also actively engaged the majority of the time, but some of them required intense assistance in the third session. Nevertheless, in the sixth session the independence of participants with severe dementia increased considerably. Indeed, 66% of them were totally independent while painting, the main goal of the task. Moreover, not a single participant needed intense assistance for any of the requirements, just occasional guidance. Regarding affect results, anxiety or sadness expressions

were only observed once in one participant, while pleasure expressions were commonly observed.

We attribute these results to the motivating opportunities that artistic painting activities offer, such as creating something of value using high mental capacities like creativity, discussing artistic preferences, or expressing oneself through art, which can be an alternative way of communication for people with language impairment (Ullán et al., 2013). We also attribute the results to the ITs that helped the participants benefit from the artistic opportunities without the emotional burden of being highly dependent on others. Moreover, the communication strategies of the ITs probably helped generate a sensation of complicity and mutual understanding between instructors and participants.

The main implication of the study is that, after practicing several sessions, people with severe dementia can reach relatively high levels of independence, and therefore they can enjoy art painting activities without the need of assigning one facilitator to each participant. Nevertheless, we would recommend that participants with severe dementia be included in the groups progressively, including only one for each instructor in the first sessions and additional participants as they gain independence.

Based on our results, facilities that organize the activity for several days a week can expect similar levels of engagement, independence, and enjoyment than facilities that organize the activity only once a week. Nevertheless, future studies should use out-of-session measures to test whether more frequent sessions lead to higher improvements in the general quality of life of participants, as hypothesized in the literature (Chancellor et al., 2014).

It is important to note that there was one participant who needed assistance for safety because she tried to eat the paint in some occasions. This behavior generally disappeared when

the participant was engaged in painting, but instructors had to be alert in case the participant became disoriented again.

The main limitations of the study are the small sample size and the fact that artistic instructors were not blind to the objectives of the study. This last limitation was balanced by using blind observers for scoring and by controlling for experimenter bias in the statistical analyses. Future studies should continue developing implementation techniques to promote independence and autonomy of people with dementia while performing art or other productive activities.

Productive activities that require the exertion of higher mental abilities, yet can be performed with relative independence, can help increase the amount of time that a person with dementia feels capable, productive, and independent. Our most important finding was not reflected in our measures: we were amazed by the participants' creative capacities and we also observed multiple gestures of self-efficacy and pride. This feeling was also shared by relatives of participants, staff in the centers, and the community, who collaborated to organize public exhibitions for the art works (Appendix).

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Table 1

*Demographic Information of Participants Segregated by the Two Frequency-of-Practice*

*Groups: Practicing once a Week and Practicing Three Times a Week.*

|      | <u>Once a week</u>          |      |          | <u>Three times a week</u>   |      |          |
|------|-----------------------------|------|----------|-----------------------------|------|----------|
|      | n = 11 (2 males, 9 females) |      |          | n = 12 (3 males, 9 females) |      |          |
|      | M                           | SD   | Range    | M                           | SD   | Range    |
| GDS  | 5.82                        | .75  | 5 - 7    | 5.58                        | .90  | 4 - 7    |
| FAST | 6.03                        | 1.29 | 4 - 7.40 | 5.11                        | 1.29 | 4 - 7.40 |
| Age  | 82                          | 7.87 | 71 - 95  | 83.67                       | 9.31 | 71 - 95  |

*Note.* M = Mean; SD = Standard Deviation.

Table 2

*Art Themes: Art Examples Used for Each Theme and Pictorially Creative Triggers*

| <u>Themes</u> | <u>Description and Examples</u>   | <u>Pictorially Creative Triggers</u>                                |
|---------------|---|---|
| The Line      | Abstract art works depicting lines and/or geometrical figures, for example: <i>Tableau II</i> (P. Mondrian), <i>White over Red</i> (M. Rothko), <i>Senecio</i> (P. Klee).   | Lines made of paper tape distributed randomly on the canvas.        |
| Still Life    | Realistic art works depicting typical commonplace objects such as plants or fruit baskets, for example: <i>Sunflowers</i> (V. van Gogh), <i>Un Vase de Fleurs</i> (S. Chardin), <i>Still Life with Jug and Bread</i> (P. Picasso) | Paper images of vases or plates attached to the canvas.             |
| Landscapes    | Art works depicting natural landscapes, for example: <i>Branches of an Almond Tree</i> (V. van Gogh), <i>Wheatfield with Crows</i> (V. van Gogh), <i>Starry Night</i> (V. van Gogh)   | Paper images of houses, landscapes or trees attached to the canvas. |
| Joan Miró     | Abstract art works of Joan Miro, for example: <i>The Hunter</i> (J. Miró), <i>The Melancholic Singer</i> (J. Miró), <i>Woman, Bird and Star</i> (J. Miró)   | Curved lines traced randomly with a dark chalk over the canvas.     |

Table 3

*Systematic Selection of the Observation Intervals from the Video of Each Participant in Each Observation Session.*

| <u>Interval of observation</u> | <u>Duration</u>   |
|--------------------------------|---|
| Pre-initiation interval        | Generally 1 minute: This interval contains all the interventions received by the participants before starting painting. |
| Interval 1                     | 3 minutes: from minute 0 <sup>a</sup> until minute 3 <sup>b</sup>   |
| Interval 2                     | 3 minutes: from minute 8.5 until minute 11.5  |
| Interval 3                     | 3 minutes: from minute 17 until minute 20   |

<sup>a</sup>The minute 0 was defined as the moment in which the participant started painting the canvas.

<sup>b</sup> When one participant interrupted his participation for an external cause (ex: going to the bathroom), the time of this external interruption was eliminated from the interval, from the moment in which the external interruption occurred, until the second in which the participant had access again to the materials.

Figure 1

*Design of the study*

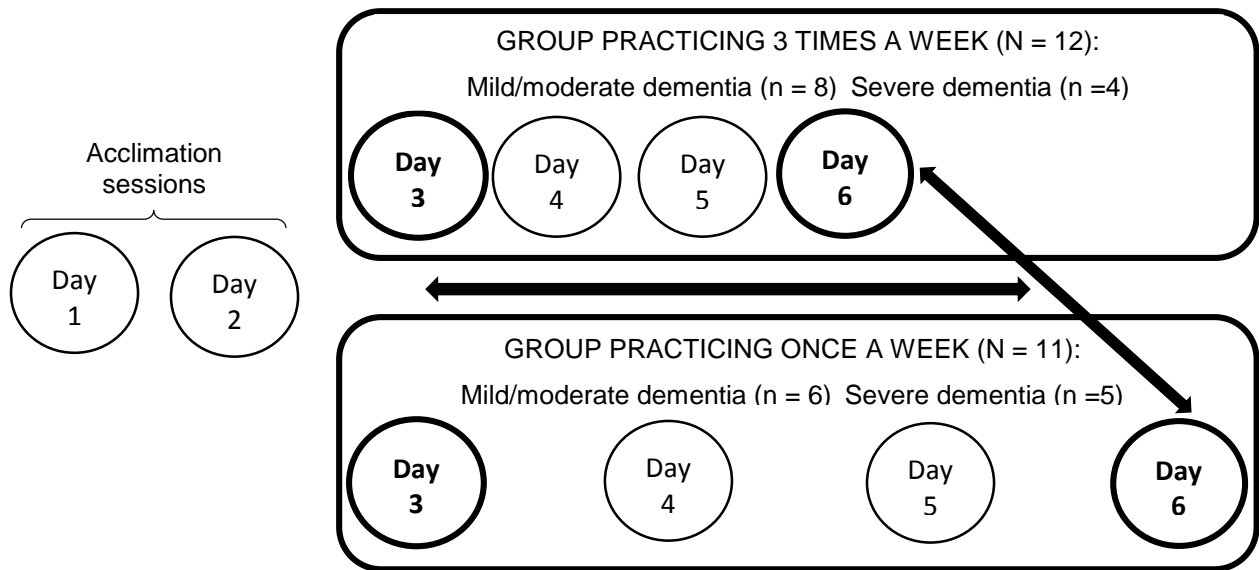


Figure 2

*Changes from the Third to the Sixth Session in the Means and Standard Deviations of each Dependent Variable, Segregated by Level of Dementia*

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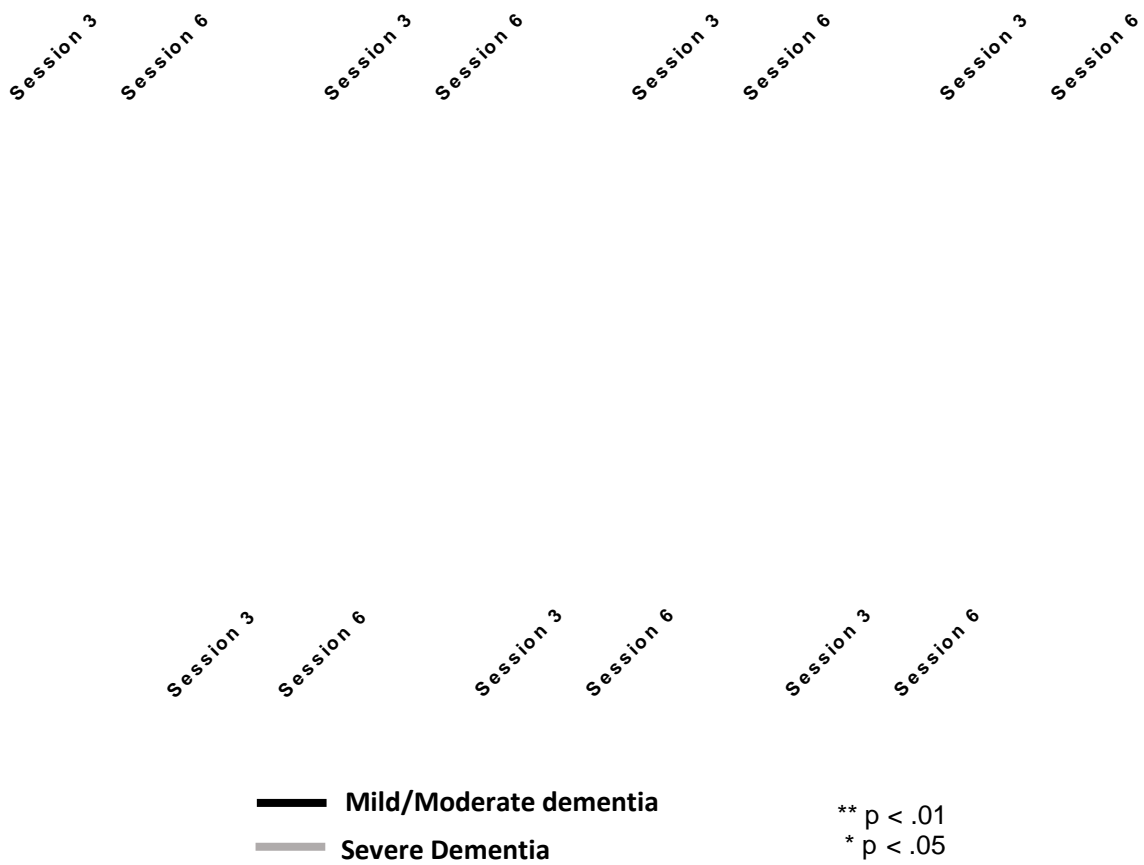
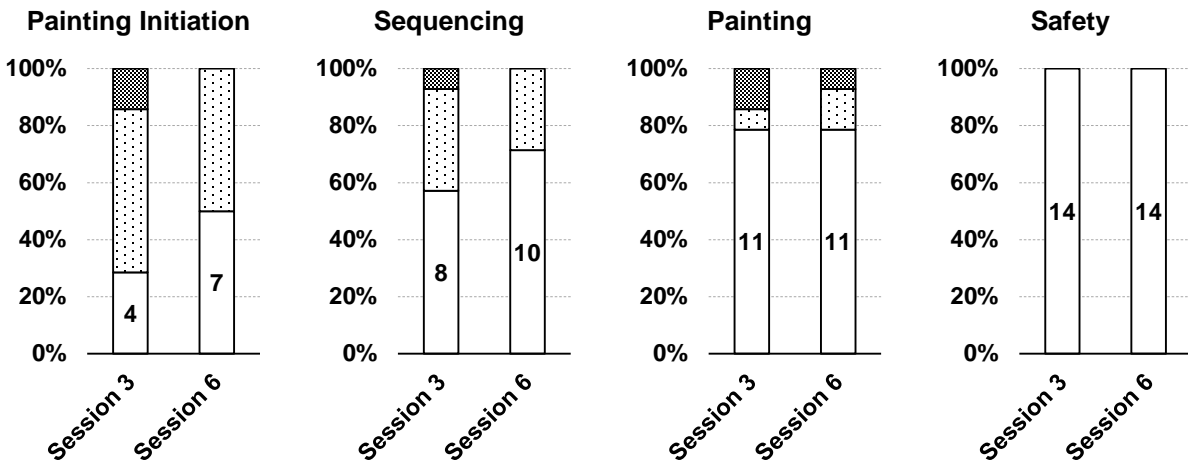


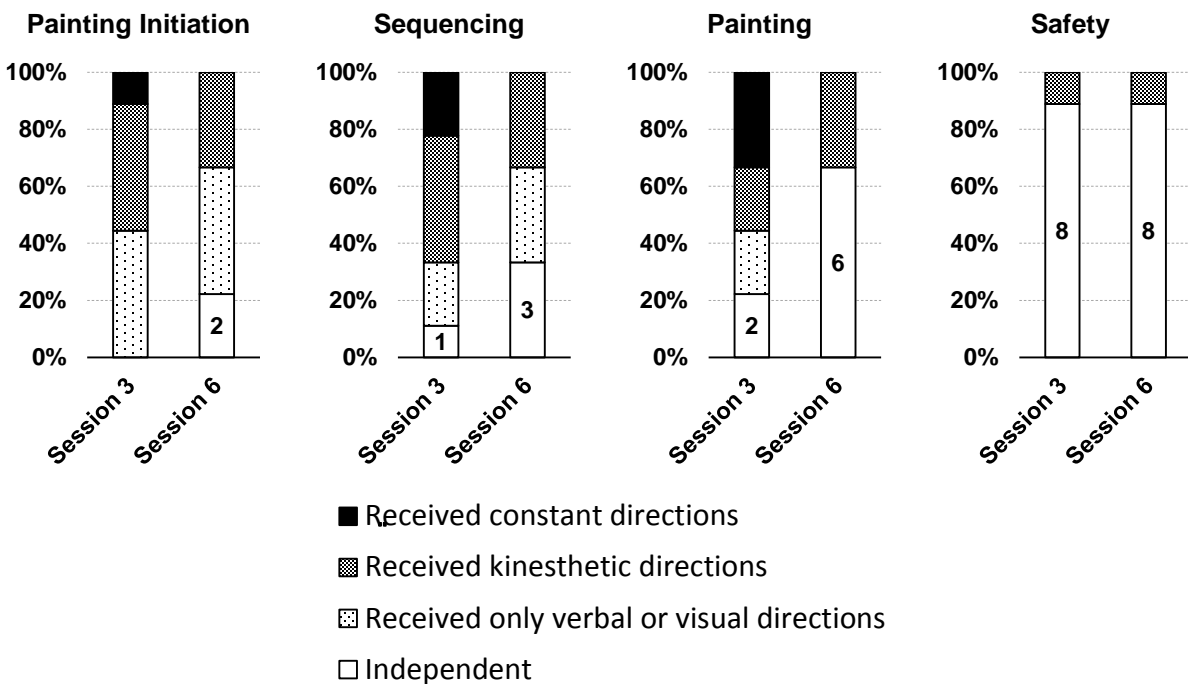
Figure 3

*Participants' Independence for Each Requirement, Segregated by Level of Dementia and Time.*

**Participants with Mild or Moderate Dementia (n = 14)**



**Participants with Severe Dementia (n = 9)**



*Note.* The numbers within the white bars refer to the number of participants who were totally independent. These frequencies were calculated combining the codes of the two observers, selecting the code of lower independence in case of disagreement.



## Appendix

*Art Works made in Roseleaf Care Center during the Present Study and Displayed in the Exhibition “From Many Minds” at the Museum of Northern California Art (2013), and in the Abstract Art Show Reception at Roseleaf Care Center (2013)*

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*By the participant B.K. (GDS = 5)*



*By the participant D.M.. (GDS = 6)*



*By the participant J.Z. (GDS = 6)*



*By the participant J.K. (GDS = 6)*



*By the participant G.M. (GDS = 4)*



*By the participant M.W.. (GDS = 6)*



*By the participant A.B. (GDS = 3)*



*By the participant H.J. (GDS = 7)*

*Art Works Made in the Center Afabur during the Pilot Studies (2012-2013), and Displayed in the “Exposición de Pintura Afabur 2014”, in the Museum “Casa de la Cultura de Burgos”.*

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*By the participant E.S.*



*By the participant A.N.*



*By the participant C.G.*



*By the participant C.M.*



*By the participant D.A.*



*By the participant F.A.*



*By the participant J.A.*



*By the participant S.A.*