Northern Illinois University
The Effects of an Art Program on Language Expression in Dementia
University Honors Program
In Partial Fulfillment of the
Requirements of the Baccalaureate Degree
With Upper Division Honors
Department of
Allied Health and Communicative Disorders
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DeKalb, IL
May 13, 2017
Capstone Approval Page

Capstone Title: The Effects of an Art Program on Language Expression in Dementia

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Date of Approval (print or type) 5/5/2017
Introduction and Literature Review

Dementia is an umbrella term for a number of neurodegenerative processes affecting multiple aspects of an individual’s life and significantly impacting cognitive skills, including memory, attention, and executive function (Howland, 2014). Alzheimer’s disease is the most common type of neurodegenerative dementia, affecting more than 35 million people worldwide (Bayles & Tomoeda, 2014), and projected to affect 115 million individuals by the year 2050 (Bayles & Tomoeda, 2014). Although pharmacological treatments (for example, acetylcholinesterase inhibitors) exist, these are able to manage symptoms only, with nominal effects on the degenerative processes. Therefore, until science can catch up with the rippling effects of dementia on our rapidly growing aging population, behavioral management and enhancing quality of life are paramount (Emre & Hanagasi, 1999).

Among many possible cognitive interventions, cognitive stimulation has been endorsed as an approach that speech-language pathologists can use to treat patients with dementia (ASHA, 2005). Cognitive stimulation can be described as designing and facilitating participation in group activities to improve individuals’ cognitive function while encouraging socialization (ASHA, 2005; Bahar-Fuchs, Clare, & Woods, 2013; Clare, 2003). Such activities are important for patients with dementia unless they are in their final stages (Lubinski, 1995). Engaging in regular social communication is crucial for individuals with dementia to prevent premature and excessive functional communication disability (Lubinski, 1995). Although such therapy does not necessarily restore any lost abilities, cognitive stimulation activities help ensure that an individual
with dementia is operating at the highest level possible, in turn improving quality of life (Manasco, 2014).

Art therapy is a method of cognitive stimulation that has been found to produce positive health outcomes in individuals with dementia. The process of creating art capitalizes on areas of the brain that tend to be spared until very late in the disease process. In the brain that is developing dementia, the artistic impulse usually is not damaged and remains intact (University of Alabama Birmingham Magazine, 2009). Art therapy additionally encourages independence, self-control, and self-worth, which has been shown to possibly predict functional outcomes (Miallidis et al., 2010).

One example of art therapy for individuals with dementia is Memories in the Making (Kinney & Rentz, 2005). This study observed the overall quality of life of individuals with mild to moderate dementia during art therapy and compared the findings to a more traditional activity in the adult day center like crafting. Kinney and Rentz found that participants sustained attention for a longer period of time, and were significantly more interested in Memories in the Making (Kinney & Rentz, 2005). Despite these initial, positive outcomes, these data are primarily descriptive; that is, little to no quantitative data that exist. It follows that although there is a solid rationale for including art programs in standard dementia care, few evidence-based guidelines exist (Alzheimer’s Association, 1994). Establishing such guidelines is critical for educating staff and caregivers in long-term care or memory care facilities, to maximize provision of well-designed programs to facilitate communication and quality of life for those with dementia (Lubinski, 1995; Manasco, 2014).
Our study was done to evaluate the effects of a structured, communication-based art therapy program on language expression for individuals with dementia residing in a memory care facility. Our primary hypothesis was that our participants would demonstrate increased expressive language/communication (e.g., increased total number of utterances) during these sessions, compared to a social control activity (cooking) already offered at the facility.

**Participants and Procedures**

PAINT (Positive Activity, INTentional Expressions) is a novel, structured, communications-based arts program designed specifically for individuals with dementia (Gardner & Mayer, 2016; Jeppson & Mayer, 2016). As part of a larger study, this project involved observing the specific impact of program participation on language and communication for three individuals with mild to moderate dementia and residing at Lincolnshire Place in Sycamore, IL during the time of the study.

PAINT sessions were run by a graduate student in Speech-Language Pathology and a group of undergraduate research assistants, under the supervision of a licensed Speech-Language Pathologist and Communicative Disorders faculty member. All study procedures were approved by NIU’s Institutional Review Board, and all study participants were provided informed consent from their primary guardian. In addition, each participant provided informal consent/indication of willingness to participate in the art activity prior to each PAINT session.

The communications-based arts program (PAINT; Jeppson & Mayer, 2017) used in this study is based on the Memories in the Making protocol from the Alzheimer's Association and pilot data from our lab (Color Me a Memory (CMAM); Mayer &
Gardner, 2016; Verhulst et al., 2016). PAINT sessions were run for 30 min. x 8 weeks at Lincolnshire Place in Sycamore, IL, and involved free-form painting (with a different theme per session) in conjunction with one-on-one interpersonal interaction with trained volunteers/research assistants. We observed the impact of PAINT participation on language and functional communication. Language samples were collected during each of three baseline sessions, where participants were observed in an activity (cooking) that was proposed by facility staff to be comparable to PAINT sessions in terms of engagement, interest level, and social opportunity/activity. Additionally, participants were observed in PAINT sessions x 8 weeks for 30 minutes each. Lastly, language samples were collected at follow-up 1 which was two weeks following the last PAINT session in addition to follow-up 2 which was seven weeks following the last PAINT session. Each language sample was transcribed, coded, and analyzed using Systematic Analysis of Language Transcripts (SALT) to examine if and how language (e.g., number of ideas produced) improved with regular program participation.

Each of our eight PAINT sessions had a theme. These themes were reinforced with items of inspiration that corresponded to the chart below. For example, on week four we had “travel” as our theme and brought items from around the world such as souvenirs, a globe, and a post card. These items were in place to not only trigger ideas for painting, but also initiated conversation for our participants. We found participants were often reminiscing on old memories such as vacation they went on with their significant other or a beach they went to when they traveled out of the country.
Our research team provided the structured, weekly art program and observed the impact of program participation on indicators of cognition, communication, and quality of life. During painting sessions, researchers and volunteers engaged with the participants; all sessions were both video- and audio-recorded for off-line analysis. Offline data were recorded on an observational tool designed to examine indicators of communication, cognition, and affect including positive/negative words used, attention, interest, self-esteem, and reminiscence. My portion of this project focused heavily on language transcription analyses using Systematic Analysis of Language Transcripts (SALT) software.

Our three participants’ language samples were coded based off of the following possible communication difficulties: perseveration, circumlocution, abandoning of thoughts, inappropriate syntax, word error, inappropriate topic maintenance, less talkative, unintelligible segment, memory difficulty, and word-finding difficulty. This list was created based off of communication difficulties that we expected to see from those with dementia (Bayles & Tomoeda, 1993). All behaviors were operationally defined at the outset to maximize coding reliability, as follows: (1) perseveration: repeating or
excessively increasing the duration of a sound, word, or thought; (2) Circumlocution: describing the function and/or characteristics of the word; (3) Abandoning of a thought: is when a thought is incomplete; (4) Inappropriate syntax: paragrammatic (some grammar, but still has errors) or agrammatic (no grammar); (5) Word error: semantic or phonemic substitution; (6) Inappropriate topic maintenance: missing the point of the message and/or failing to stick to it in one’s own messages (e.g. inappropriate tangents); (7) Less talkative: based on how much a participant speaks in a given minute; (8) Unintelligible segment: the audience is unable to understand the speaker; (9) Memory difficulty: using phrases such as “I don’t know, or “I can’t think;” and (10) word-finding difficulty: “uhh” or “um.”

Once the communication difficulties were distinguished, a key was created in which unique codes were inserted into the transcribed language samples. Some codes were already created by the SALT software such as abandoning of thought, > and unintelligible segment, XXX. Other codes such as word error [CS], circumlocution [C], and inappropriate topic maintenance [TM] were created based off codes I manually input into the SALT software.
After transcribing and coding all three of the participants’ language samples, SALT assisted in the analyses of the communication difficulties listed above. In other words, SALT allowed me to analyze the targeted speakers’ strengths and weaknesses. Ultimately, this allowed us to hone in on areas of concern, which allowed for better interpretation of how participant language use may have changed over the course of the study (SALT Software, 2016).

**Results**

Below are paintings from July 23rd, 2016, when our session theme was yard animals. To the far left, Participant 1 painted a boat on water. The middle picture is a green picnic table on grass, painted by Participant 2. Finally, Participant 3 painted colorful lines across the page, as she tried to mimic the paintings around her.
We used visual inspection as a preliminary analysis of the quantitative data from the language samples (Satake, Jagaroo, & Maxwell, 2008). In line with our primary hypothesis, the total utterance count for each participant increased during PAINT sessions compared to the baseline and follow-up activity. Figure 1A shows the increase in total utterance count from all three of the participants.

In line with known expressive language difficulties found in the setting of mild to moderate dementia (Vasse, Dassen, Spijker, Rikkert, & Koopmans, 2010), we found that the increase in expressive language during PAINT sessions was accompanied by a parallel increase in word errors, as seen in Figures 1B-1F. These errors included: inappropriate syntax, abandoning of thought, word finding difficulty, circumlocution, and memory difficulty. Although we saw these increases in communication difficulties during PAINT sessions, they were not consistent throughout the eight weeks. There were days that participants were more talkative than others; some items of inspiration were more meaningful where participants were able to reminisce and share a story where we saw a spike in total utterance count. On the other hand there were times that participants may have wanted to sit back and listen to others in turn reflecting in a lower total utterance count.
Figure 1:

A. Total Utterance Count

B. Inappropriate Syntax

C. Abandoning of Thought

D. Word Finding Difficulty

E. Circumlocution

F. Memory Difficulty
Discussion

Generally, despite numerous case studies, quantitative evidence supporting the utilization of art therapy for maximizing functional communication for individuals with dementia is poorly documented. Our data are consistent with the benefits of the PAINT program, which was designed specifically as a structured, communication-based arts activity, to increase communication and participation for three individuals with a diagnosis of mild to moderate dementia and residing in a memory care facility. In line with the premise of cognitive stimulation (Lubinski, 1995) participation in PAINT resulted in positive communication outcomes (i.e., total number of utterances during sessions) for all three participants for the duration of the program. Importantly, this increase in utterances was seen in comparison to a social control activity that had been suggested by the facility as maximally facilitation communication and cognitive stimulation.

Although the participants’ increase in total utterance count was accompanied by concomitant increased communication difficulties over the eight weeks of PAINT, we were encouraged to see the participants engaging regularly in conversation. Increased socialization was exactly what we were looking for during this cognitive stimulation activity. Again, this social engagement is crucial for preventing premature and excessive function communication disability (Lubinski, 1995).

The increase in language expression during PAINT was seen in comparison to the baseline cooking activity and moreover was not maintained at the follow-up cooking activity. This importantly demonstrates the need for staff training at dementia care facilities to utilize strategies (e.g., one-on-one interaction) and activities (e.g., free-form
art with no pre-conceived instructions) that maximize communication and active participation. It is notable that the baseline/follow-up cooking activity was included at the suggestion of Lincolnshire staff, who were asked which weekly activity was most closely related to a cognitive stimulation approach (ASHA, 2005; Bahar-Fuchs et al., 2013; Clare, 2003). Staff reported that cooking was extremely interactive as the participants engage with the staff member running the activity as well as some one-on-one interaction throughout. With that said however there was a significant difference in interaction when comparing the baseline/follow up activity to our PAINT sessions. It is paramount for staff to be trained in these dementia care facilities to establish what truly embodies an engaging activity. For example, the simple fact that the participants with dementia were more talkative when paired individually with a researcher/volunteer during PAINT signifies the importance of one-on-one interaction. Additionally, staff can be trained to incorporate communicative strategies such as using closed ended questions and/or shorter, simpler sentences while interacting with individuals with dementia (Vasse et al., 2010). Additional strategies may include checking in with residents to see how they are feeling, which allows for open communication (Vasse et al., 2010). Finally, PAINT sessions were loosely structured enough that our participants were able to take ownership of the activity and their role within it; this is in stark comparison to the cooking activity which involved following step-by-step instructions to produce a pre-specified product.

Our findings are consistent with the idea that to maximize communication and engagement, staff should allow opportunities for residents in a memory care facility to express themselves freely; i.e., by giving them the tools necessary to complete an activity
but with less formal instruction. Ultimately, this will allow for maximal individual engagement during cognitive stimulation activities (Alzheimer’s Association, 2017).

Future research may need to be performed to further investigate the utility of language sample analysis for cognitive stimulation-based studies for individuals with dementia. Language samples should be coded for reliability purposes (e.g., using the coding key designed for this study). Additionally, this study may need to be performed staying consistent with the time allotted for each PAINT session. For example, all paint sessions should be 30 minutes long. Some participants may want to continue painting, but all video and audio recording should stay on for the first 30 minutes of the session.

In conclusion, the number of people with dementia is on the rise. Art therapy is only one of the countless ways to incorporate cognitive stimulation, in turn achieving an individual’s highest performance. It is evident that art therapy is beneficial to individuals with dementia as their social engagement increased substantially over the eight weeks. The expected results, demonstrated a need for professionals working with the geriatrics population to be trained properly to ensure patients with dementia are getting the care they need.
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References


Jeppson & Mayer (2016). Positive Activity, INTentional expressions


Dementia is an umbrella term for a number of neurodegenerative processes affecting multiple aspects of an individual’s life and significantly impacting cognitive skills, including memory, attention, and executive function (Howland, 2014). Although pharmacological treatments (for example, acetylcholinesterase inhibitors) exist, these are able to manage symptoms only, with nominal effects on the degenerative processes. Therefore, behavioral management and enhancing quality of life are paramount (Emre & Hanagasi, 1999).

Researchers observed the impact of participation in a structured weekly art program on indicators of cognition, communication, and quality of life for individuals with mild to moderate dementia living in this care facility. Researchers observed and collected data using an observation tool while residents are painting. All sessions were
both video- and audio-recorded for off-line analysis. Offline data was recorded on an observational tool designed to examine indicators of communication, cognition, and affect including positive/negative words used, attention, interest, self-esteem, and reminiscence. My portion of this project focused heavily on language transcription analyses using Systematic Analysis of Language Transcripts (SALT) software. After transcribing the participants’ language samples, SALT has aided in the analyses of communication errors. It shows the targeted speakers strengths and weaknesses. The software allowed us to hone in on areas of concern, which allowed better interpretation of how participant language use has, if at all, changed.