

A LOW-TECH INTERVENTION AND THERAPY FOR LARGE GROUPS OF PERSONS WITH DEMENTIA

Anthony Sterns, Ronni Sterns,* Harvey Sterns**, and Vince Antenucci *

* *Creative Action LLC*

680 N. Portage Path, Akron, OH, 44303 USA

drtone@gmail.com, <http://www.creativeactionllc.com>

** *The University of Akron*

302 Buchtel Mall, Akron, OH, 44325-4301 USA

hsterns@uakron.edu

The Memory Magic concept (copyrighted, patent pending) is an innovative, engaging activity for an individual or a group of 10 to 20 or more persons with cognitive disabilities in both institutional and home care settings. A single activity staffer can run the activity leaving other staff to complete other tasks. One hundred persons with dementia were observed in 3 states and in each of 3 different care settings; long-term care, adult day care, and assisted living. At least three observations playing Memory Magic and three observations playing a comparable activity were completed for each participant. MMSE and WRAT-3 scores were also collected. Engagement was measured using the Menorah Park Engagement Scale (Camp, 2002). The game was shown to be significantly more effective for constructively engaging people with dementia in all three settings. Video of participants playing the game will be shown as well as detailed results of the study.

A GROWING NEED FOR ACTIVITIES FOR INDIVIDUALS WITH DEMENTIA

There are over 1.5 million people residing in 25,000 nursing homes in the U.S. (FIFA, 2004; Kassner & Bectel, 1998). About 38% are aged 75 to 84 and 36% are aged 85 or more. Long-term care facilities are required to provide activities for residents under Omnibus Reconciliation Act legislation of 1987.

Staff responsible for providing these activities are challenged by the cognitive and behavioral deficits associated with dementia and the challenge is growing. The Federal Interagency Forum on Aging (2004) reports that 12.7% of Americans over the age of 65, over 4.5 million people, have moderate to severe memory impairment. The percentage is 32.1% for those over the age of 65. With the risk of memory impairment such as Alzheimer's disease and dementia highest for the oldest age groups, the Alzheimer's Association (1999) estimated 50% of long-term care residents suffer from dementia.

Activities are also scheduled on a regular basis in the 4000+ adult day care centers and in 6000+ assisted living settings in the U.S where many also suffer from dementia. Given the increasing number of persons living into advanced old age in the U.S., and the increased risk for developing dementia associated with advanced old age, it is likely that the need to provide stimulating and engaging activities for persons with dementia will increase with time.



Figure 1. Residents of a dementia unit engaged in the Memory Magic™ Game.

OVERCOMING ACTIVITY BARRIERS

Activity programs for persons with dementia must overcome several barriers. First, the activities provided to persons with dementia must be appropriate (i.e., meaningful, useful, or relevant). It is important that activity professionals avoid giving to persons with dementia activities viewed as childish (as when children's toys are given to them) or just busy work.

Second, the activities must be as inclusive as possible. Activities that welcome participation and success despite a broad range of cognitive and physical challenges will engage the largest number of participants. Games such as bingo that require the manipulation of many small pieces and encourage competition exclude individuals with

poor fine motor skills and discourage cooperation among participants.

Third, sufficient activities should be provided. For example, family members of residents in long-term care often complain that persons with dementia spend large amounts of time disengaged from their environment—sleeping, staring into space, making repetitive movements or vocalizations, etc. Staff members often report problem behaviors including wandering, agitation, and verbal abuse. These behaviors are often associated with boredom.

Meeting basic needs of long-term care residents is potentially more challenging as a result of memory impairment. These basic needs include a sense of self-worth, expression of thoughts and feelings, a sense of belonging, a sense of accomplishment, and a sense of order. Many of the problem behaviors associated with dementia can be traced to the inability to meet one or several of these basic human needs (Sterns and Camp, 1999). But in order to be successful, activities must be based on a sound knowledge of cognitive and physical changes associated with dementia as well as the needs of caregivers and care giving settings. For example, group activities are especially important for these settings, in which each caregiver is usually responsible for a number of persons with dementia.

The Memory Magic™ Game, developed for this study, provides a stimulating, interesting, and challenging activity that can be performed successfully in a variety of settings as a means of helping persons with dementia meet basic needs.

MONTESSORI-BASED APPROACHES TO COGNITIVE REHABILITATION

There are many parallels between Montessori approaches to education and cognitive rehabilitation techniques (Camp, 1999, b; Camp & Mattern, 1999; Camp et al., 1997). Both are designed to take advantage of abilities available to the individual and circumvent deficits that may be present. Both enable the individual to function as independently as possible, engage in meaningful activity, provide feedback and success when tasks are attempted. Both techniques are designed to enhance self-esteem, enable individuals to function at their highest possible level of competence, and have meaningful social roles. In addition, activities in Montessori education are designed to focus on one concept at a time, are based on real world materials and experiences, and are developmentally programmed (i.e., they progress from simple to complex, or concrete to abstract). For a much fuller description of the Montessori method, the reader is referred to Chattin-McNichols (1992). Extensive discussion of the utility of this approach for

cognitive rehabilitation in dementia is also available, (e.g., Camp & Mattern, 1999; Camp et al., 1997; Dreher, 1997).

A number of prototypes for Montessori-based activities to use with individuals and groups of people who have dementia have been created and implemented within the context of activities programming in adult day care, assisted living apartments, and long-term care settings. These activities are designed to be cognitive prostheses. They enable individuals with dementia to function at a higher level of competence than would normally be the case. This occurs because these activities access spared abilities while providing ways to circumvent memory and other cognitive and physical deficits.

The Memory Magic™ Game was developed to take advantage of abilities still available to persons with dementia manifesting a large range of cognitive impairments. The game's purpose was to provide cognitive stimulation and social interaction.

The goal of this study is to validate a Montessori-based activity and make it available to professionals and consumers who work or live with persons with dementia. Our hypotheses are that individuals engaged in Memory Magic™ Game show lower frequencies of problematic behaviors, more positive affect, and greater engagement with their physical and social environments compared to when they are taking part in standard activities. To test these hypotheses we monitored the intervention through direct observational measures of time spent in and quality of engagement in activities, activities successfully completed, affect displayed in activities, and problem behaviors displayed during activities. We wanted to ensure that participants actually take part in activities before we link the intervention to outcome measures taken outside of the context of the activities.

THE MEMORY MAGIC™ GAME

The Memory Magic™ Game is a group activity for older adults and persons with dementia. Memory Magic™ includes a set of games to be played simultaneously by an individual or a group of 10 to 20 or more players (See Figure 1). Game play consists of an activity leader announcing a clue—the beginning of a sentence or phrase—while the participants each have a board containing a card with windows showing words that may complete the phrases. Players close a window shade to cover each correct response as it is announced. Players participate by reading the clue cards outloud, answering the questions, responding to hints, and taking part in discussions related to each question. Talking points are included on each question card to help the leader facilitate group discussion. Depending on the size of the group and the number

of unique Game Cards in play, a number of players will finish first, followed by others, and so on, until the end of the game is declared. A game typically lasts between 20 and 30 minutes. Two games are on each card so play can be extended to fill an hour activity period by just pushing the card into the board and revealing the next game.

The importance of winning and losing in Memory Magic™ is minimized. The enjoyment of the game arises not so much from the competition but rather from the act of playing, participating, socializing, using fine and gross motor skills to manipulate the window shade, assisting other players, and reminiscing. Activity coordinators or game leaders are instructed to make sure all participants play games that are appropriate for their levels of functioning. Each participant will have the opportunity to read a clue out loud and call out answers, decreasing competitiveness and increasing enjoyment. Once one person says the answer everyone has it so success is assured.

The Memory Magic™ Game consists of four distinct components: (1) Individual Game Boards, (2) Game Cards, (3) Calling Cards, and (4) Instructions for setup and play. See Figure 2.



Figure 2. Boards, Game Cards, Calling Cards and instructions for the Memory Magic™ Game activity.

PROCEDURE

The purpose of the study is to increase the amount and quality of engagement exhibited by persons with dementia while taking part in a group activity. As a result, the most appropriate comparisons are those of the same individuals taking part in activities currently being offered and when these same individuals are playing the Memory Magic™ Game. Therefore, the primary independent variable for the study was a within-subjects factor (i.e., Activity, having 2 levels) comparing participants taking part in Memory Magic™ versus taking part in other group activities scheduled for the same time of day.

For each participant, Memory Magic™ was scheduled twice a week for at least twelve weeks, e.g., on Mondays and Wednesdays, and compared with another group activity, e.g., current events, sing-alongs, etc. scheduled for the same time period on other days, e.g., on Tuesdays and Thursdays. Activity therapists conducted both types of group activities and research staff collected engagement data on each participant. The complexity of the calling card (one of three levels available) was matched to the players' cognitive levels. Data was collected from 133 participants at 3 different facility types; assisted living (N= 35), adult day care (N = 51), and nursing home care (N = 57). Thus, the primary design of the study is a repeated measures design with activity as the within-subjects variable and type of facility as the between-subjects variable. Data was collected from each facility type in 3 different locations: Birmingham, AL; Cleveland/Akron, OH; and Washington, D.C.

Implementation of Treatment. Research staff trained activities staff at each setting in the implementation of the Memory Magic™ Game. A standardized protocol was created for this purpose. Activities staff were videotaped leading Memory Magic™ game and their performance was assessed, and feedback provided to them regarding ways to improve their adherence to protocols.

The primary outcome measure was an assessment of engagement. the MPES measure (Camp, 2004), collected by research staff who observed Memory Magic™ games. Researchers observed 6-8 persons each session playing Memory Magic™ and a second group of persons engaged in a standard group activity approximately twice per week, such that each participant generated two MPES sets of scores (one for playing Memory Magic™, one for taking part in a standard group activity) each week for up to four months.

Demographic measures were collected from participants with dementia. These included age, gender, years of education, and mental status (MMSE scores). These scores were used both as sample descriptors and as covariates for exploratory analyses.

RESULTS

Engagement. A series of repeated measures ANOVAs were conducted where the within subjects factor was Activity (standard versus the Memory Magic™ Game). The dependent variables were active engagement, passive engagement, other engagement, and no engagement in the activity. Active engagement is defined as vocally or physically participating in the observed activity. Passive engagement is defined as listening or watching the observed activity. Other engagement

is defined as attending something other than the observed activity. No engagement is defined as sleeping through or leaving the activity. The between subject factor was type of facility. The between subject factor was type of facility were the types included assistive living, adult day care, and nursing home care. A significant effect for activity was found ($F(1, 130) = 13.86, p < .001$) indicating that the Memory Magic™ Game was more actively engaging (Mean = 2.0, s.d. .25 vs. 1.9, s.d. .48) than control standard activities. The interaction with type of facility was non-significant.

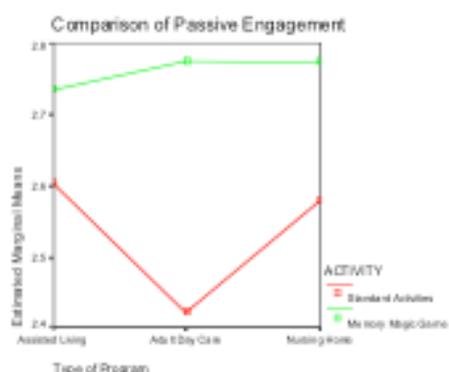


Figure 3. Passive Engagement .

Another repeated measures ANOVA was conducted where the repeated factor was a standard activity or the Memory Magic™ Game activity. The dependent variable was passive engagement in an activity. The between subject factor was type of facility. A significant effect for activity was again found ($F(1, 130) = 35.60, p < .001$) indicating that the Memory Magic™ Game was more passively engaging. The interaction with type of facility was also significant ($F(2, 130) = 3.10, p < .05$). The Memory Magic™ Game is consistent across facility type (Mean = 2.8, s.d. .29) where engagement in

other activities are lower in assisted living and nursing home care (Mean = 2.6, s.d. .31) and still lower in adult day care (Mean = 2.4, s.d. .44).

Another repeated measures ANOVA was conducted and a significant difference was found ($F(1, 130) = 35.67, p < .001$) indicating that the Memory Magic™ Game had fewer individuals engaged in other things compared to level of engagement in standard activities (Mean = 1.4 vs. 1.2). The interaction with type of facility was significant with the most distractions occurring in adult day care for standard activities (Mean = 1.6, s.d. .43) and the Memory Magic™ Game (Mean = 1.3, s.d. .30).

Another repeated measures ANOVA was conducted and a significant effect for activity was again found ($F(1, 130) = 8.28, p < .01$) indicating that the Memory Magic™ Game had fewer people unengaged compared to levels of non-engagement in standard activities (Mean = 1.1, s.d. .25 vs. 1.2, s.d. .37). The interaction with type of facility was not significant.

Affect. A repeated measures ANOVA was conducted where the repeated factor was a standard activity or the Memory Magic™ Game activity. The dependent variable was expressing positive affect in an activity. Positive affect was defined as expressing pleasure (laughing/smiling) during the observed activity. A significant effect for activity was found ($F(1, 130) = 58.88, p < .001$) indicating that the Memory Magic™ Game elicited more positive affect than control activities. The interaction with type of facility was also significant ($F(2, 130) = 5.20, p < .01$). The Memory Magic™ Game elicited the most positive affect in assisted living (Mean = 1.5, s.d. .31) and slightly less in nursing home settings (Mean = 1.4, s.d. .31).

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