Practice Concepts ___

Resident-Assisted Montessori Programming (RAMP): Training Persons with Dementia to Serve as Group Activity Leaders

Cameron J. Camp, PhD,[1] and Michael J. Skrajner, MA[1]

Purpose: The purpose of this study was to determine the effects of an activity implemented by means of Resident-Assisted Montessori Programming (RAMP). **Design and Methods:** Four persons with early-stage dementia were trained to serve as leaders for a small-group activity played by nine persons with more advanced dementia. Assessments of leaders' ability to learn the procedures of leading a group, as well as their satisfaction with this role, were taken, as were measures of players' engagement and affect during standard activities programming and RAMP activities. **Results:** Leaders demonstrated the potential to fill the role of group activity leader effectively, and they expressed a high level of satisfaction with this role. Players' levels of positive engagement and pleasure during the RAMP activity were higher than during standard group activities. **Implications:** This study suggests that to the extent that procedural learning is available to persons with early-stage dementia, especially when they are assisted with external cueing, these individuals can successfully fill the role of volunteers when working with persons with more advanced dementia. This can provide a meaningful social role for leaders and increase access to high quality activities programming for large numbers of persons with dementia.

Key Words: Procedural memory, Engagement, Social roles

Rehabilitation, according to the World Health Organization, "implies the restoration of patients to the highest level of physical, psychological, and social adaptation attainable. It includes all measures aimed at reducing the impact of disabling and handicapping conditions and at enabling disabled people to achieve optimum social integration" (cited in Wilson, 1997, p. 487). By this definition, we can conclude that any intervention that assists clients is considered rehabilitation, not simply those that allow a client to return to premorbid levels of functioning. Therefore, activities for persons with dementia should be considered rehabilitative if they can increase or prevent further decline in adaptation and functional levels.

Past research has shown that activities utilizing external memory aids and procedural learning (Squire, 1992, 1994) enable persons with dementia to demonstrate increased engagement with their environment and more positive affect than standard activities programming (Judge, Camp, & Orsulic-Jeras, 2000; Orsulic-Jeras, Judge, & Camp, 2000; Orsulic-Jeras, Schneider, & Camp, 2000; Orsulic-Jeras, Schneider, Camp, Nicholson, & Helbig, 2001). Persons with dementia have even shown the ability to serve as teachers or mentors for preschool children when provided appropriate training and

Table 1. Adherence to Five Crucial Procedures Required for Leading Memory Bingo

Leaders	Instruct Participants to Arrange Cards Two by Two (%)	Hold Up Calling Card, Large Print Facing the Players (%)	Allow a Player to Respond to the Calling Card (%)	Instruct Players to Place Winning Cards Into Boxes (%)	Start Discussion–Sing Songs After Cards are in Boxes (%)
L1					
Procedure followed—at least sometimes	91	100	100	100	82
Procedure followed—in every possible instance	82	90	27	36	0
Staff member redirected or cued leader	0	0	0	0	0
L2					
Procedure followed—at least sometimes	100	100	100	100	60
Procedure followed—in every possible instance	30	40	10	30	0
Staff member redirected or cued leader	17	25	33	8	17
L3					
Procedure followed—at least sometimes	90	100	100	100	90
Procedure followed—in every possible instance	10	60	0	10	0
Staff member redirected or cued leader	40	10	40	10	40
L4					
Procedure followed—at least sometimes	100	100	100	100	85
Procedure followed—in every possible instance	64	43	0	29	0
Staff member redirected or cued leader	29	29	7	14	7

Notes: L = Leader; MMSE = Mini-Mental State Exam (score). L1 and L2 had a diagnosis of early-stage dementia. Scores were as follows: L1, MMSE = 30; L2, MMSE = 26; L3, MMSE = 20; L4, MMSE = 16.

support (Camp et al., 1997). The interventions used in these studies have been based on the Montessori method of education.

Montessori-based activities are derived from the work of Maria Montessori (1870–1952), an Italian educator who stressed the importance of self-paced learning and developmentally appropriate activities. Many principles and techniques used in rehabilitation are similar to those Maria Montessori utilized in educating children. In the Montessori method, task breakdown, guided repetition, progressions from simple to complex and concrete to abstract, and the like are inherent in educational activities for children. These principles are consistent with Montessori's training in rehabilitation and her work with children with autism and mental retardation. Finally, Montessori-based programming takes advantage of principles used in dementia interventions, including extensive use of external cues and reliance on procedural or implicit memory rather than declarative or explicit memory (Camp, 1999a; Squire, 1992, 1994).

Much of our work has focused on creating Montessori-based group activities that can be led by professionals (e.g., rehabilitation, activities, and nursing staff). The program to be described, which is referred to as Resident-Assisted Montessori Programming, or RAMP, focuses on training persons with early-stage dementia to act as group leaders for Montessori-based small group activities that have previously demonstrated effectiveness in increasing levels of constructive engagement in persons with moderate to advanced dementia (Judge et al., 2000; Orsulic-Jeras, Judge et al., 2000; Orsulic-Jeras, Schneider et al., 2000; Orsulic-Jeras et al., 2001). This report involves a small-*n* demonstration project focused on preliminary results involving a single activity in an ongoing study. Later stages of the study will involve other activities, settings, group leaders, and players. The aims of this ongoing project are (a) to determine whether it is possible for persons with dementia to lead Montessori-based activities; (b) to develop materials and procedures that maximize the probability of such persons leading Montessori-based activities; and (c) to determine whether introduction of RAMP activities increases residents' levels of enjoyment and engagement compared with standard activities programming.

Methods

Participants: Leaders

Four female residents of Menorah Park Center for Senior Living were trained to lead Memory Bingo—a small-group, Montessori-based activity (Camp, 1999a, 1999b). Three resided in long-term care, and one resided in assisted living. Their ages were 74, 75, 80, and 91 years. One resident was diagnosed with Alzheimer's disease and the others with an unspecified form of dementia. Mini-Mental State Exam (MMSE) scores (Folstein, Folstein, & McHugh, 1975) for leaders are shown in Table 1. One additional long-term-care resident began training to be a leader but asked to be withdrawn from the study because of a busy schedule.

Participants: Players

Players (seven females, two males) were recruited from a special care unit at Menorah Park Center for Senior Living. Their MMSE scores ranged from 1 to 13 ($M = 8.3$, $SD = 4.1$). Ages ranged from 82 to 95 years ($M = 88.7$, $SD = 4.1$).

Materials

Memory Bingo.—Memory Bingo is a Montessori-based group activity designed for persons with dementia (Camp, 1999a, 1999b). A group leader holds up a large "calling card" with an incomplete statement on it for everyone to see, such as "Beauty is only skin. . . ." The player participants have four playing cards in front of them, each with a different word on it. After one of the players reads the calling card out loud, players look at their playing cards to see if they have the answer word ("deep"). If so, they turn the card over. After all four playing cards are turned over, the game is "won." An important component of the activity is discussion of topics represented on the calling cards and playing cards. The purpose of the game is not to have a player win, per se, but to engage and allow social interaction among players.

The procedures used in playing Memory Bingo remain constant, although content of the game varies. After several games, the players learn the game's procedures, the result of utilizing aspects of procedural memory such as repetition priming. Similarly, group leaders become more proficient in their roles with practice.

Modifications Made to Memory Bingo.—In the early stages of training, we decided to modify Memory Bingo to accommodate the needs of the leaders. For example, we affixed answers to the back of the calling cards. Thus, the calling card with the phrase "Beauty is only skin . . ." has the word "deep" printed on its back.

Resident leaders were forgetting which calling cards had already been used and which had not. Our solution was to provide leaders with a document holder, which was their "pick up" pile, and a document tray, labeled "Discard," which was their discard pile. The document holder served an additional purpose for one of the leaders, who had suffered a stroke. This leader, who had use of only her left hand, had a much easier time picking up the cards when they were placed on the document holder, which kept them at a slight angle.

Additional modifications made the game easier for players and consequently made the game run more smoothly for the leaders. Instead of turning over their winning cards, the players were instructed to place winning cards in a box with a slot on the top. The cards were then "out of sight and out of mind." This avoided repetitive questioning ("Why is this card turned over?" or "Should I keep this card turned over?"), which had been frequently directed toward the resident leader.

Design and Procedures

Training Procedures.—Leader training sessions were conducted once or twice a week, depending on the leaders' availability. Initial training sessions, held with staff members only, were conducted before the leaders entered the real-life training phase. The actual numbers of initial training sessions for each leader were two, four, five, and eight. After the trainee felt fairly comfortable with the game, training sessions were conducted in a real-life setting. Nursing home residents played the game, and research staff cued the leaders as necessary. One to three training sessions were held with resident leaders working with players from the advanced dementia unit. After that point, once leaders expressed confidence in their ability to lead groups and had demonstrated that they could generally adhere to the RAMP procedures shown in Table 1, leaders' training was concluded and data collection during RAMP sessions commenced. When the procedure of leading the game became relatively automatic for the leader, the leader was permitted to lead the game on her own, although a research staff member was nearby so that assistance could be provided if necessary.

Scoring

Assessment of Leaders.—During RAMP sessions, staff members observed whether leaders were carrying out the main tasks required to lead the Memory Bingo activity successfully. Results from these assessments are shown in Table 1 and reviewed in the Results section. We also interviewed leaders to determine their satisfaction with RAMP.

Assessment of Players.—The Menorah Park Engagement Scale (MPES): The 11-item MPES was created to measure the effects of activities such as Memory Bingo on players' levels of engagement with the environment. The MPES looks primarily at four types of engagement: constructive engagement (CE), passive engagement (PE), nonengagement (NE), and other engagement (OE). CE is defined as any motor or verbal behavior exhibited in response to the activity in which the client is taking part, such as manipulating playing cards or speaking during a discussion of a topic on a playing card. PE is defined as listening or looking behavior exhibited in response to the activity in which the client is participating, such as listening to a discussion or watching someone read a calling card. NE is defined as staring off into space, keeping one's eyes closed, or sleeping during the game. OE is defined as either self-engagement (any purposeless behavior involving

the resident's engagement with himself or herself during an activity such as fidgeting with one's clothes) or engagement not related to the target activity, such as looking at actions taking place outside of the activity or chatting with a friend and ignoring the activity.

The MPES was used to determine the type and quality of engagement that occurred during both standard unit activity programming and Montessori-based interventions, and it also included items derived from the Affect Rating Scale (ARS; Lawton, Van Haitsma, & Klapper, 1996) involving pleasure and anxiety or sadness. In addition, there were items involving refusing to participate, leaving an activity, and engaging in problematic behavior. MPES items are generally scored as 0 (never seen), 1 (seen up to half the activity time), or 2 (seen more than half the activity time). Five-minute observation windows were used.

Interrater reliability among researcher staff taking MPES observational data for this study had been established previous to this study, as the observers had been using the MPES in a number of other research projects before the start of the RAMP project. Initial interrater reliability was established over the course of thirty 5-min observation sessions during activities programming for persons with dementia on special care units by use of a criterion of 80% or greater perfect agreement for each of the 11 MPES items. Periodic comparisons of ratings by different staff were conducted in this study to ensure that rater "drift" did not take place, and when questions arose regarding scoring of a specific item, it was determined by consensus.

During this project, each player participant was observed in each of 6 sessions at baseline, in 6 sessions during regularly scheduled unit activities, and in 6 to 10 sessions during RAMP activities. Each player participant was observed individually for 5 min during each session. Researchers took one observation on a single player at a time for 5 min, recorded his or her engagement and affect during this time period, and then moved on to the next resident. We were able to take observations on multiple residents during an activity session for two main reasons. First, several research staff members were present during the sessions. Second, observations lasted only 5 min, whereas the activity sessions typically lasted for approximately 25 to 40 min; therefore, each staff member had sufficient time to record several observations during each session. Observations were recorded with paper and pencil.

Description of RAMP Sessions

RAMP sessions, which lasted between 25 and 45 min, were conducted one to three times per week, depending on availability of the leaders. Leaders' availability varied as a result of the need to accommodate these residents' therapy sessions, doctors' visits, family visits, outings, holidays, and so on. Each leader facilitated at least 10 Memory Bingo games (up to 2 games per RAMP session).

Staff members assembled groups of residents for the RAMP sessions. One of the resident leaders even enjoyed assisting staff members with this task. Residents of the special care unit who were not enrolled in the study were still permitted, at their request, to participate in RAMP programming. The inclusion of nonstudy residents, from whom no data were collected, made it possible for up to eight residents to play Memory Bingo at one time. In one instance, when two leaders were available at the same time, two simultaneous Memory Bingo sessions were conducted.

Results

Leaders

Outcomes associated with the leader assessment form are shown in Table 1. At least partial adherence to protocols occurred with very high frequency. This level of adherence enabled all games to be completed. Ability to follow protocols in every instance was difficult to achieve, but, again, this was not necessary for games to be conducted and completed. Staff assistance was never required for any procedure in a majority of sessions for any leader, and it was kept at 40% of sessions or less for most procedures. The procedure that required the least amount of staff assistance was reminding players to place winning cards in the box. The procedures that were most challenging for leaders were instructing participants to set up cards appropriately and initiating open-ended discussion. (We have since developed external cues to assist leaders in accomplishing these protocols more effectively, i.e., a template for players to use to guide card placement and cue cards to guide discussion topics.)

All leaders responded that they enjoyed their role. In addition, all leaders felt that their involvement with other residents was worthwhile and said they would recommend the program to friends. In fact, one leader convinced a friend to take part as a group leader in a subsequent phase of the project.

Players

For players, only three instances of refusal to participate occurred throughout the study, though all occurred outside of RAMP. During pretreatment baseline observations, every participant tried to leave during an activity at least once. However, after RAMP sessions began, we observed only one resident leaving during an activity (standard programming), and then only on a single occasion.

To determine if players exhibited more engage-

ment and positive affect when taking part in RAMP than when taking part in standard group programming, we took the average score of each player's MPES items during standard group activities at two points in time: before RAMP implementation and while RAMP implementation was occurring. This provided us with the opportunity to determine if changes occurred during standard programming over the course of the study. In addition, we took these same measures while RAMP sessions were conducted. Thus, each item on the MPES yielded three scores per player, which represented levels of a within-subjects factor, Type of Session. Six sessions were used to compute these scores during regular group activities. During RAMP, 6 to 10 scores were used to compute means.

Some types of behavior and affect were never observed. These included exhibiting anxiety or sadness and acting inappropriately. Players generally were calm during all observed activity sessions. For MPES items that occurred with regularity across sessions, we conducted repeated measures analyses of variance for the Type of Session factor, with Helmert contrasts. This divided variance into two contrasts: standard programming assessed before RAMP initiation versus all programming after RAMP initiation, and standard programming occurring once RAMP sessions had started versus these same measures taken during RAMP sessions. We were interested in determining if RAMP sessions produced effects that might generalize to standard programming, and these contrasts could assist in this determination.

For CE, the overall Type of Session factor was found to be significant, $F(2, 14) = 6.43$, $p < .01$. Means for the standard activity at baseline, standard activity after RAMP initiation, and for the RAMP activity were 0.73, 1.15, and 1.28, respectively, on a scale of 0–2. Helmert contrasts indicated that CE was significantly less frequent during baseline than during the combined activities (standard activity after RAMP initiation and RAMP activity) after initiation of RAMP, whereas the comparison of these two latter forms of activity were not significantly different from each other. PE did not yield significant differences across levels of Type of Session.

For OE, the overall Type of Session factor was found to be significant, $F(2, 14) = 55.30$, $p < .001$. Means for the standard activity at baseline, standard activity after RAMP initiation, and for the RAMP activity were 1.10, 0.60, and 0.25, respectively, on a scale of 0–2. Helmert contrasts indicated that OE was significantly more frequent during baseline than during the combined activities (standard activity after RAMP initiation and RAMP activity) after initiation of RAMP, and OE was significantly more frequent in the standard activity after RAMP initiation than during the RAMP activity.

For pleasure, the overall Type of Session factor

approached significance, $F(2, 14) = 3.50$, $p < .06$. Means for the standard activity at baseline, standard activity after RAMP initiation, and for the RAMP activity were 0.42, 0.27, and 0.51, respectively, on a scale of 0–2. Helmert contrasts were not significant, though pleasure was most frequently seen during the RAMP activity.

Behaviors associated with two other items did occur, but not frequently enough to lend themselves to parametric analyses. Helping others was not observed during baseline but was observed in 2 out of 48 possible instances during standard programming after RAMP started and in 12 out of 48 possible instances during RAMP. Thus, there may have been some generalization of helping behavior that is sometimes seen during Montessori-based programming. Seventeen out of 48 possible instances of NE were observed at baseline, and 12 out of 48 instances were observed during standard programming after RAMP began. Only 6 instances of NE were observed during RAMP sessions (out of 48 possible instances).

Discussion

As mentioned earlier, this report is focused on initial results involving a single type of activity in an ongoing study. Our initial sample is small, and, as in any small-n study, generalization of results depends on replication across other samples and settings. However, the results being produced by our activity leaders with dementia are replicating those obtained previously with other samples and in other settings when this activity was presented by activity staff to persons with dementia. That is basically the point of this study—that persons with dementia can be trained to produce effects similar to those produced by activity staff.

These initial results show the potential of persons with dementia to fill the role of group activity leader effectively. It is necessary for leaders to make sure that players arrange cards two by two, and even more important to allow players to respond to the calling cards. Leaders may sometimes need redirection or cueing in these essential aspects of their role. However, even assisted leadership may be beneficial for the leader and the organization. Furthermore, we noticed that as we refined materials and procedures with the needs of dementia residents in mind, leaders were able to facilitate the activity with a reduced amount of staff assistance. As we continue to improve RAMP materials and procedures in the future, and as RAMP group leaders gain more experience, we believe that it will one day be possible for dementia residents to lead Montessori-based activities virtually unassisted.

The results also suggest that RAMP programming produces satisfaction and a heightened sense of self-worth in the group activity leaders, who in turn are able to elicit high levels of good-quality engagement

in players who have more advanced dementia. This creates a win–win situation. It also causes caregivers and staff who interact with our group leaders to view these individuals in a new way. Now these persons with early-stage dementia become a resource— additional hands to help engage persons with more advanced dementia. This has important implications for providing meaningful social roles to residents in long-term care.

Players responded well to RAMP, suggesting that RAMP may increase positive engagement and affect during RAMP compared with standard activities programming. There was some evidence that groups began to form social units and that prosocial behavior such as helping others began to appear outside of RAMP after our program was initiated. Although the study was not intended to determine the percentage of long-term-care residents on the advanced dementia unit who could take part as players in Memory Bingo, we were able to re-structure materials and procedures in ways that would maximize the number of residents who could take part in the program. Most residents on the unit were able to take part in RAMP activities, except for those who were too ill to participate in any group programming or who refused to take part in group programming in general. Even those unable to read often enjoyed being part of the group, and were able to sing along or joke with the leader. The beauty of Montessori-based group activities is that they can accommodate a wide range of cognitive abilities.

Preliminary examinations of results from other components of our project also are encouraging. At this point, we are exploring models for creating volunteer roles for persons with early-stage dementia in a variety of other settings, including assisted living and adult day care. We are also piloting a train-the-trainer model to implement this program on a larger scale. This includes working with a local chapter of the Alzheimer's Association. One unexpected benefit of our project was that, when forced to adapt materials and training methods to accommodate our group leaders, we found that the use of task break down, task analysis, and human factors made us better trainers in general.

References

Camp, C. J. (Ed.). (1999a). *Montessori-based activities for persons with dementia: Volume 1.* Beachwood, OH: Menorah Park Press.

Camp, C. J. (1999b). Memory interventions for normal and pathological older adults. In R. Schulz, M. P. Lawton, & G. Maddox (Eds.), *Annual review of gerontology and geriatrics* (Vol. 18, pp. 155–189). New York: Springer.

Camp, C. J., Judge, K. S., Bye, C. A., Fox, K. M., Bowden, J., Bell, M., et al. (1997). An intergenerational program for persons with dementia using Montessori methods. *The Gerontologist, 37,* 688–692.

Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). "Mini-mental state": A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research, 12,* 189–198.

Judge, K. S., Camp, C. J., & Orsulic-Jeras, S. (2000). Use of Montessori-based activities for clients with dementia in adult day care: Effects on engagement. *American Journal of Alzheimer's Disease, 15,* 42–46.

Lawton, M. P., Van Haitsma, K., & Klapper, J. (1996). Observed affect in nursing home residents with Alzheimer's disease. *Journal of Gerontology: Psychological Sciences, 51B,* P3–P14.

Orsulic-Jeras, S., Judge, K. S., & Camp, C. J. (2000). Montessori-based activities for long-term care residents with advanced dementia: Effects on engagement and affect. *The Gerontologist, 40,* 107–111.

Orsulic-Jeras, S., Schneider, N. M., & Camp, C. J. (2000). Montessori-based activities for long-term care residents with dementia: Outcomes and implications for geriatric rehabilitation. *Topics in Geriatric Rehabilitation, 16,* 78–91.

Orsulic-Jeras, S., Schneider, N. M., Camp, C. J., Nicholson, P., & Helbig, M. (2001). Montessori-based dementia activities in long-term care: Training and implementation. *Activities, Adaptation, and Aging, 25,* 107–120.

Squire, L. R. (1992). Memory and the hippocampus: A synthesis from findings with rats, monkeys, and humans. *Psychological Review, 99,* 195–231.

Squire, L. R. (1994). Declarative and nondeclarative memory: Multiple brain system supporting learning and memory. In D. L. Schacter & E. Tulving (Eds.), *Memory systems 1994* (pp. 203–232). Cambridge, MA: MIT Press.

Wilson, B. A. (1997). Cognitive rehabilitation: How it is and how it might be. *Journal of the International Neuropsychological Society, 3,* 487–496.