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## Origins of Montessori Programming for Dementia

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### Abstract

The focus of this article is on the evolution of the use of Montessori educational methods as the basis for creating interventions for persons with dementia. The account of this evolution is autobiographical, as the development of Montessori Programming for Dementia (MPD) initially was through the efforts of myself and my research associates. My initial exposure to Maria Montessori's work came as a result of my involvement with my own children's education. This exposure influenced ongoing research on development of cognitive interventions for persons with dementia. A brief description of Montessori's work with children and the educational methods she developed is followed by a description of how this approach can be translated into development of activities for persons with dementia. Assessment tools to document effects of MPD were created, focusing on observational tools to measure engagement and affect during individual and group activities programming for persons with dementia. Examples of the use of MPD by researchers, staff members, and family members are given, as well as examples of how persons with dementia can provide MPD to other persons with dementia or to children. Finally, examples of MPD's dissemination internationally and future directions for research are presented.

### Keywords

Montessori method; cognitive rehabilitation; engagement; activity; "I'm still here" approach

### Introduction

Because of the personal nature of this article, it is largely written in the first person. I thank the many persons who, over many years, have worked with me and discussed this approach to the treatment of dementia.

Recently, Beck, Levinson, and Irons (2009) traced the origins of J. B. Watson's famous experiment with "Little Albert," and their detective work led to the discovery of the person who probably was the infant in Watson's laboratory and shown in his films of conditioning experiments. In a similar manner, this article traces the origins of the use of Montessori educational techniques as interventions for persons with dementia. In my case, however, I have a distinct advantage over Beck, Levinson, and Irons. They had to make inferences and deductions based on records, circumstantial evidence, and the sometimes erroneous or conflicting evidence presented by the memories of persons associated with events that occurred almost 90 years ago. In my case, I only have to contend with omissions or false memories generated in my own mind over the course of the last 32 years of my life experiences. However, it is hoped that the reader will be indulgent, and that the tracing of the origins of this intervention will serve as an inspiration to younger researchers to be open to interruptions in their careers and to serendipity.

When I was a graduate student working on my doctoral degree in psychology at the University of Houston, I studied cognition and aging. However, when I started graduate school I was married and had a 2-year-old daughter, who was later diagnosed as learning disabled. I worked during semester breaks at child care centers to better understand normal child development. I also worked part time for a while at a school for children with emotional and learning disabilities, to better understand my daughter and her challenges.

While at that school I was introduced to teaching materials that were labeled “Montessori.” That was my first introduction to the term, in 1977. I bought several toys at a department store that were labeled “Montessori teaching toys” for my daughter. I found them to be cleverly constructed, but did not examine them in great detail. They seemed to interest my daughter. In 1979 I graduated with a doctorate in experimental psychology, with a dissertation project that involved examining age differences in fact recall and inferential reasoning from world knowledge systems in normal younger and older adults (Camp, 1981). In fact, some of my sample consisted of members of a society of persons with high scores on intelligence tests. I was far away from the field of Alzheimer’s disease or intervention development.

I began my academic career as an assistant professor at Fort Hays State University in Hays in western Kansas. There were no Montessori schools in the town, though my daughter attended an excellent school for children with developmental disabilities. My son and youngest daughter were born in Hays. While there I was recruited by my department chairperson to teach weekend seminars in memory improvement as a means of increasing student credit hour production for the department and university (Camp, 1996). This started an interest in developing memory interventions for normal older adults (c.f., Anschutz, Camp, Markley, and Kramer, 1985; 1987) as well as in examining what types of memory strategies were spontaneously utilized by normal younger and older adults (Camp, Markley, and Kramer, 1983a; b). In 1983 we moved to New Orleans, where I was on the faculty of the psychology department of the University of New Orleans. My oldest daughter went to special education classes in public schools, but my son was able to enroll in a Montessori school. Three years later my youngest daughter enrolled in the same Montessori school. I began to examine the environment, teaching materials, and methods associated with Montessori education.

While my past research had focused on normal aging, once I moved to New Orleans I began to work with adult day health centers. In a New Orleans suburb one of the first adult day centers in the U.S. focused specifically on providing services to persons with dementia was opening. I began to work with this center and several others in the area, and so began a new direction of my research. This involved developing interventions for challenging behaviors associated with dementia.

I was struck by the potential of Montessori methods as interventions for persons with dementia, though initially this was only a theoretical interest. My research at the time focused on developing a memory improvement technique – spaced retrieval – as an intervention for persons with dementia (Camp, 1996; 2006a). This involves giving persons practice at successfully remembering information over successively increasing time intervals. Spaced retrieval is, in essence, the use of shaping from behavioral technology applied to memory (Bjork, 1988). There is evidence that spaced retrieval engages implicit memory in persons with dementia (Camp, 2006; Camp and Foss, 1997; Foss and Camp, 1994). It soon became clear that using interventions targeted at memory systems that were impaired in persons with dementia might not be as effective as working with systems that were either intact or less damaged.

I began to write about the use of memory interventions for normal older adults and persons with dementia that would target either explicit or implicit memory, using either external or internal storage of information (Camp et al., 1993). At that time, it also seemed to me as if Montessori materials were capable of accessing implicit or procedural learning systems very efficiently. For example, to teach the geography of the United States children are presented a puzzle with wooden pieces. Each piece is in the shape of a state, with a wooden peg attached that can be used to lift and place the puzzle piece. A template or map of the United States is provided, with an outline of each state available. Children place each puzzle piece on the corresponding shape outlined on the template. Once they become proficient with this task, they are presented the task again but without the outlined template. With practice, they learn where all of the states are located in relation to each other and to the United States as a whole. AND, the peg attached to each puzzle piece is located where the capitol of the state is located. For the state of Wyoming, the peg is in the lower right corner (where Cheyenne is located), and for the state of Oregon, in the upper left corner (where Salem is located). Unconsciously, automatically, and effortlessly these children learn the locations of the state capitols. Maria Montessori said “they will learn through their hands.” To teach children phonics (which can start at three years of age or even earlier), a letter from the alphabet is cut out of sandpaper and glued to a wooden square. A child is invited to learn a lesson regarding the square. For example, in the Roman alphabet a child would see a “t” on the square. The teacher would put two fingers on the sandpaper and trace the letter, pronouncing the phonetic sound of the letter at the same time. The child, after observing the demonstration, would imitate these actions. In so doing, the child “feels” the phonic, hears the phonetic sound of the letter, sees the phonic, and makes the movements of the kinesthetics necessary to draw the letter. In addition, however, there is a subtle lesson embedded in the materials themselves. The background color of paint on the wooden squares for all consonants is one color, and the background color for all vowels is a second, contrasting color. This fact is not pointed out by teachers, but by mere manipulation of these sandpaper letters a child unconsciously learns which ones are “special,” i.e. are vowels.

In addition, my wife, Linda, began to study to become a Montessori pre-school teacher. I had the opportunity to type up her lesson plans for her training, which gave me a great deal more exposure to the Montessori method of education for children. Maria Montessori was the first woman M.D. in Italy. An advocate of women’s rights, her first work was with children who were deemed “unteachable,” often with mental retardation. Montessori developed training regimens based on rehabilitation techniques, and these “defective” children began to pass educational tests designed for normal children. Later, she was asked to work with 3- to 6-year old children in a housing project in the poor section of Rome. Given the janitor’s daughter to train as a teacher, Montessori created the first “children’s house” (Casa dei Bambini), as well as an educational system based on her earlier work and on systematic observation. She field tested her approach and materials, and continued to do so for 50 years in children’s houses around the world. Lillard (2005) describes some key principles of the Montessori method, almost all of which apply to best care practices for dementia. Some of these include the need to include movement and motor learning in activities, providing freedom and choice within an ordered structure, providing contexts and activities that are of interest to the person, allowing learning from peers, embedding activity within a culturally relevant context, providing both empathy and high expectations, and providing a structured environment that provides the supports needed to facilitate success.

Later, I was asked to teach Child Development at the Montessori training center in New Orleans where my wife received her certification as a Montessori teacher of preschool children. I had been struck by the fact that Montessori’s approach could be viewed as containing features of a number of different theoretical orientations. For final exams in my class, Montessori teachers-in-training had to present two activities from the perspective of a

Montessori philosophy and approach. Then, they had to present the same lessons from the perspective of two other theoretical orientations. For example, a Montessori activity could be viewed as the creation of a “zone of proximal development” from the perspective of L.S. Vygotsky. The materials and procedures associated with the activity provide the assistance necessary to allow the individual to display abilities and behaviors beyond those which could be achieved without such assistance (Vygotsky, 1978). A Montessori activity might be viewed as a self-directed, individualized learning task from the point of view of B. F. Skinner, in which the materials guide learning, prevent error, and provide continuous feedback, with success providing reinforcement for the learner (Skinner, 1954).

In my own mind, I was beginning to see linkages between Montessori’s approach and the translation of concepts in neuroscience into practical interventions for persons with dementia. And so, I suggested to a graduate student that he might examine the use of Montessori teaching materials with person living with dementia at the adult day center for persons with dementia as a master’s thesis project. Shortly after this, I left New Orleans, though the student, David Vance, continued his study and published research based on his thesis (Vance and Porter, 2000).

In 1995 I left academia, literally and figuratively, and my family moved to Cleveland, Ohio, where I began work at the Myers Research Institute of Menorah Park Center for Senior Living. It was at this point that I decided to explore the use of Montessori techniques for persons with dementia in earnest, and began piloting the use of this intervention with the assistance of my wife. Menorah Park had an adult day health center, assisted living, skilled nursing facilities (including a special care unit for persons with dementia), and later a home health agency. My staff and I began to develop Montessori Programming for Dementia (MPD) within each of these programs. *The Montessori Method*. The Montessori teaching method is used to train children in the areas of practical life (activities of daily living), sensorial experiences, language, math, engaging and maintaining the environment, science, and social skills. Developmentally and programmatically based, Montessori techniques seem well-suited for persons with dementia. Each lesson is first presented at its simplest level and each subsequent lesson, increasing in complexity, is a variation of previously mastered skills or concepts. Materials are taken from the everyday environment and are designed not to be “toys” but tools to practice independent living. Persons with dementia need structure and order in their environment and activities; changes in routine or physical surroundings may be upsetting (Vance et al., 1996). Maria Montessori said the same of her young students, and thus all activities involve a structure and order that comfort and allow attention to be focused. Activities involve immediate feedback, high probability of success, and repetition. Tasks are broken down into steps that can be mastered and then sequenced, an approach familiar to occupational therapists. Montessori-based programming makes use of a number of rehabilitation principles and techniques, including: task breakdown, guided repetition, task progression from simple to complex and concrete to abstract, etc. Such programming also takes advantage of principles for dementia interventions including extensive use of external cues, reliance on procedural/nondeclarative/implicit memory rather than declarative/explicit memory, etc. Persons with dementia demonstrate the ability to learn through procedural or nondeclarative memory, a phenomenon remarkably similar to what Montessori described as “unconscious learning” in her children (Vance et al., 1996).

MPD activities can be structured to be used in one-on-one, small group, or large group situations. As stated earlier, activities are chosen for individuals based on their abilities and interests. Examples include sorting pictures or words into categories such as “Fruits vs. Vegetables,” which may be given to someone who enjoyed gardening, or “Cities in Europe vs. Cities not in Europe” for someone who enjoyed travel or geography. Fine motor tasks such as using scissors to cut out pictures to be used in the category sorting activities or using

a screwdriver to help repair a faucet are activities that can provide practice in maintaining fine motor function while allowing individuals to create/produce items as a result of their practice, which is another key Montessori concept.

Other examples of Montessori-based activities involve the use of templates, or outlines of materials onto which the actual materials are placed. A template of a place setting at a meal would involve a piece of paper with the outline of a plate, knife, fork, spoon, and glass for liquid refreshment. Using this template as a guide, a person with dementia can set the table for himself or herself. A template of dentures could be placed on a table next to the bed, and the person with dementia could learn the habit of taking out dentures and putting them on a template before going to sleep.

We also use templates to help persons with HIV or with diabetes to take medications appropriately. For example, we worked with a man who was HIV+ and who had difficulty remembering which medications to place in his weekly pillbox. Cognitive deficits, including executive dysfunction and short term memory difficulties, are commonly seen in persons with HIV, especially if the disease has progressed to produce HIV-associated dementia (HAD). For this person, we created a template to use when filling his pillbox. The template was similar in size and dimensions to the weekly pillbox. Life size pictures of his pills were glued onto the template in columns (each column representing pills for one day of the week). His task was to match his actual pills to the pictures, and once all of the pictures had been matched, to place each column's pills into the appropriate container in his actual pill box. He improved in this task with practice, and we used spaced retrieval to train him to take out the template and use it at a consistent time (Sunday evenings). Both by the report of this person and that of his physician, this person with HIV was much better able to follow his medication regimen. Furthermore, the use of the template eliminated placing inappropriate medications into the pillbox (Skrajner et al., 2007). An important point to be made from this example is that even when pharmacologic interventions may be necessary, it is critical that nonpharmacologic interventions be included in the treatment regimen to insure that persons with cognitive deficits can adhere to medical regimens successfully. For more detailed description of MPD and its applications, the reader is referred to the following sources: (Camp, 1999; 2006b; Camp et al., 2006; Joltin, Camp, Noble, and Antenucci, 2005; Skrajner et al., 2007).

Initially, MPD was developed and implemented by researchers. We quickly determined that the effects produced by these activities often were profound, but did not easily map onto existing outcome measures. After careful observation and extensive discussion, it was decided that the most significant construct affected by MPD was that of engagement – connectedness with the social and physical environment. Further, we determined that engagement had different forms or aspects. As a result, we created the MPES – Menorah Park Engagement Scale. In its original form, engagement was defined as having four categories: Constructive Engagement (CE), which involved direct interaction – verbal or physical – between the person with dementia and the target activity. Examples would include speaking about the activity or to the activity director, holding or manipulating objects related to the activity, etc. Passive Engagement (PE) involved watching the activity but not directly taking part in it. Both CE and PE are considered positive forms of engagement, and persons with dementia sometimes need to simply watch an activity before they gain the confidence to begin to actively take part at a later time. Self-engagement (SE) was defined as engagement with oneself rather than the target activity, such as picking at one's clothes, talking to yourself, etc. Non-engagement (NE) was defined as sleeping or staring into space for 10 seconds or longer.



In an initial study (Judge, Camp, and Orsulic-Jeras 2000), 10-minute observations were taken of nine person living with dementia with dementia during Montessori-based programming and 10 person living with dementia with dementia during regular activities programming at an adult day health center, with the amount of time observed during each specific form of engagement recorded. In the MPES scoring, categories of engagement are mutually exclusive, so that if a person is talking about the target activity appropriately while picking at their blouse, the person would be coded as exhibiting constructive engagement. The purpose of the MPES is to record the highest level of engagement that the person with dementia is capable of displaying. Person living with dementia in Montessori-based programming showed significantly more constructive engagement and less passive engagement that person living with dementia in regular activities programming.

In a second study, we worked with sixteen residents of residents on an advanced dementia unit in a long-term care facility during standard activities programming and during MPD activities. In addition to using the MPES as before, we adopted the Affect Rating Scale (ARS), developed by Lawton, Van Haitsma, and Klapper (1996), a standardized and validated measure of pleasure, anger, anxiety/fear and sadness. Type of affect observed was recorded during the same 10-minute observation session as when MPES data was being recorded. For the ARS, a five-point scale was used to record each affect observed: 1 = never observed; 2 = less than 16 seconds; 3 = 16 – 59 seconds; 4 = 1 – 5 minutes; 5 = more than 5 minutes. Each data recording session focused on a single person.

These residents with advanced dementia showed significantly more constructive engagement and less passive engagement, as well as significantly more pleasure, while participating in Montessori-based activities than in regularly scheduled activities programming. Results being produced by such studies led to activities staff asking for training in the implementation of such programming. Engagement is now being recognized as an extremely important element of quality of life and of successful intervention for persons with dementia (e.g., Cohen-Mansfield, Dakheel-Ali, and Marx, 2009).

Our current version of the MPES has been simplified so that it can be used by staff in care settings for persons with dementia so that these staff members can document the effects being produced by MPD. Rather than recording specific amounts of time within an observation window, engagement categories are scored as “1 – never observed,” “2 – observed up to half of the time,” and “3 – observed more than half the time.” Affect categories have been simplified to Pleasure and Anxiety/Sadness (i.e., positive and negative valence in affect), using the same 3-point scale as with engagement categories. We have found that MPD is still able to produce significant effects using this modified version of the MPES. (Copies of the MPES are available from the author on request; email: camp@thehearth.org).

### **Implementation of MPD by care staff**

In a project funded by the U.S. National Institute of Mental Health (C. Camp, PI), it was demonstrated that staff could be trained to implement MPD “from the ground up” in a variety of care settings, including adult day health centers, assisted living facilities, and skilled nursing homes. In addition, MPD implemented by these trained staff produced significantly more positive engagement while decreasing forms of negative engagement in persons with dementia compared to standard activities programming (Skrajner et al., 2007). Home health workers also have been trained to implement MPD and have done so successfully (Gorzelle, Kaiser, and Camp, 2003).

### Implementation of MPD by family members

Family members watching staff implement MPD requested training in this approach as a way of maximizing the quality of their visits with relatives who had dementia, and so we have trained family members to use such activities (Rose et al., 2003; Schneider and Camp, 2002). In a further study, we trained family members to engage persons with dementia at end of life in hospice care (Skrajner et al., 2007). For example, daughters worked with mothers on flower arranging, washing and drying dishes, matching samples of wall paper with different borders for wallpaper (for an older adult who was an interior designer), using maracas to keep time to favorite music, matching photos of food with the part of a meal they represented (dessert, main course, etc.), and working through finger mazes (mazes that sit on a table top and which have paths that are traced with a finger). All daughters reported that using these activities allowed better quality, more focused visits. Most daughters showed other visitors (husbands, grandchildren, friends, and staff) how to use the activities, as well.

### Implementation of MPD by persons with dementia

We also have developed training techniques to allow persons with early to moderate stage dementia to serve as small group activity leaders for persons with more advanced dementia in adult day care, assisted living, and long-term care (Camp and Skrajner, 2004; Camp, Skrajner, and Kelly, 2005; Skrajner and Camp, 2007). For example, we developed printed materials to facilitate creation of reading and discussion groups. The activity is known as Reading Roundtable®, and the stories are designed to be age appropriate and interesting. Topics range from the invention of the game of basketball to stories of movie stars to stories of famous persons such as Leonardo da Vinci. Pages are printed only on one side, and participants take turns reading single pages aloud to the group while the rest of the participants follow along silently. Questions and discussion items follow the stories. Using the simplified MPES, we found that when persons with early to moderate dementia led reading and discussion groups of persons with dementia in adult day health care and in long-term care with more advanced dementia, significantly more constructive engagement and pleasure, and significantly less non-engagement were seen than were observed with these same group members during regular activities programming led by activities staff members (Skrajner and Camp, 2007).

In an interesting case study (Mattern and Kane, 2007), a resident at Menorah Park with Huntington's disease (HD) asked if she could do something to help residents with Alzheimer's disease. While her fine motor skills were severely impaired, and she had to use a walker to ambulate, she had good social skills and could still read. Focusing on her strengths, the Reading Roundtable® task was modified to allow her to lead it successfully. First, each page of a reading roundtable story was put onto a single slide of a PowerPoint presentation file. This file was loaded onto a tablet computer with touch screen capability, such that all one had to do to advance a PowerPoint slide was to touch the screen. The computer was attached to a large screen TV monitor. The resident with HD would gather other residents who were members of the reading group and have them come to the room with the large screen TV monitor. Staff would have loaded the PowerPoint file into the computer beforehand. The first page of the story would be on the screen, and the woman with HD would read this aloud to the group. Then she would touch the screen of the computer to advance to the next page. She then would invite a member of the group to read the page aloud while the rest of the group followed along. This pattern continued through the reading of the story and discussion questions. Thus, focusing on her remaining cognitive, physical, and social abilities, we enabled this person to effectively fill the role of volunteer group leader. These two examples illustrate another key element in MPD – the need to create meaningful social roles for persons with dementia. This not only produces positive

affect for the individual, but it also contributes to the creation of communities, where persons with dementia not only live, but live well.

### Intergenerational programming

MPD also has been used to enable persons with dementia to serve as mentors to young children by presenting activities to children as a teaching device (e.g., how to fold clothes, how to use tools, how to pronounce letters, how to count and add, etc.). Such programming has been shown to significantly increase positive forms of engagement and affect display in persons with dementia compared to standard activities programming in adult day health centers (Camp et al., 2004), as well as in long-term care facilities (Camp et al., 1997; Lee, Camp, and Malone, 2007). This type of intergenerational programming has been successfully implemented by other researchers (Gigliotti et al., 2005).

### MPD as an assessment tool

A further use of MPD has been the use of such activities as an assessment tool for persons with moderate to advanced dementia (Camp, Koss, and Judge, 1999; Skrajner et al., 2007; Camp et al., in press).

### International research

In Taiwan (Lin et al., 2009), MPD was shown to significantly reduce agitation and aggressive behaviors in long-term care residents with high levels of agitation (scores of 35 on the Cohen-Mansfield Agitation Index - long form), as well as significantly increase positive affect. Researchers in Australia, led by Dr. Daniel O'Connor, are now working to replicate these results (van der Ploeg et al., 2009). In Spain, researchers have created MPD interventions for the Spanish culture, and found that when used with persons with advanced dementia, increased engagement was produced. What was very interesting in their results was that persons with dementia taking part in MPD showed significant increases in mental status scores (MMSE), as well (Buiza, 2007; Etxeberria et al., 2006).

Training in the implementation of MPD has been conducted across the United States and Canada, as well as in Europe, Australia, and Asia. Training materials to allow implementation of this approach have been translated into Spanish, French, Greek, Japanese, Korean, and Mandarin. As this approach focuses on capturing the remaining strengths and capacities of persons with dementia, it can be used to personalize plans of care that can be integrated into programs, such as restorative nursing in long-term care settings, within a wide variety of care delivery settings and reimbursement systems.

In 2008 I left Menorah Park and began working with Hearthstone Alzheimer Care. With their seven assisted living residences in the United States, there is now an opportunity to test MPD on a system-wide level, in a variety of settings, and in a very real world context. MPD also fits nicely within the overall "I'm Still Here" approach (Zeisel, 2009) developed by the President of Hearthstone Alzheimer Care. In addition, with Hearthstone-affiliated facilities in the U.S. and other countries, there is the potential to conduct additional applied research with MPD on an international scale, which should add to the considerable and growing interest in MPD and the overall "I'm Still Here" approach around the world.

### Conclusion

My oldest daughter is now in her mid-30s, and works at a part-time job while living at home with us. We use Montessori methods with her to enable my daughter to function more independently, to be engaged, and to focus on her strengths and abilities. We want her to live well, as I want persons with dementia to live well. I recently received a call from a



former graduate student who is interested in adapting MPD for use with adults with developmental disabilities.

Thus, what began as an attempt to help my daughter and learn more about child development has evolved into an intervention system that is helping older adults with dementia around the world, and that may further develop into a system for helping adults like my daughter living with developmental disabilities. The cycle has come full circle.

It is my hope that this case history of the development of MPD will provide other researchers, especially those early in their careers, to be willing to explore new opportunities as they arise. While the outcome of straying away from the beaten path is less certain than staying on it, it also can be far more interesting and worthwhile.

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