MUSIC-MONTESSORI: IMPROVING QOL FOR THOSE LIVING WITH DEMENTIA

Thesis

Enhancing Montessori Methods with Music for the Treatment of Individuals Diagnosed With Dementia and Living in Long-Term Care: A Review of the Literature

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HONOURS BACHELOR DEGREE IN BEHAVIOURAL PSYCHOLOGY

St. Lawrence College
Dedication

Pastor John Hilliard – I am very grateful for all the different ways he taught me to look at psychology and for the new books; I’m sorry he will miss my graduation, but I know he would have been proud to see my finished thesis.

Mom & Dad – You always told me that I could do anything I put my mind to; thanks for believing in me. Granny, who inspired this thesis; I hope we can use this to help you; I love you.

Finally, I would like to dedicate this project to a good friend who encouraged me to go back to school and follow my dreams; thanks for the push, Harold.
Abstract

Dementia is a term used to cover any number of different ailments that affect the elderly. Once just known as senility or forgetfulness and a considered a normal symptom of aging, dementia is now known to be considerably more than just forgetting things. Dementia is a term used to describe a set of symptoms that may be related to severe illness, head trauma, Lewy body disease, Alzheimer’s, and others. According to the Alzheimer’s Society of Canada prevalence of dementia is 3% of those aged 65-74, 12% of those aged 75-84, & 37% of those over age 85. With a significant number of our population living well into their 90s, there is a need for better dementia care and treatment. This literature review explores the wide use of music therapy and various methodologies to determine an effective or efficient means of decreasing agitation & depression, which commonly accompanies dementia. This paper also considers the methods used in Montessori training used in dementia care to determine if it is effective & if it can be enhanced in any way by choosing one of the musical techniques to combine with the Montessori training.

This paper is a search for a novel solution to the long-standing concern of helping a person maintain skills contributing to the activities of daily living (ADLs), or perhaps even to train the elders new skills using Montessori training. This thesis also considers where the training might take place, who would conduct the training, and what resources would be needed to ensure that the training was conducted properly. While this is a theoretical framework, there is sufficient evidence to support a combination of Montessori and music as a trial project to verify the hypothesis that this would increase the positive effects. Finally, there are considerations of multilevel challenges that would need to be overcome in order to make this combination approach a possibility.

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Chapter I: Introduction

There has been much discussion in the media regarding the use of non-traditional approaches to assist the improvement in quality of life for those living with extreme illness, (mental or physical), those with markedly high physical restrictions or barriers, and the elderly living in care homes. Many of the millions of elders living in long-term care worldwide are in need of medical and environmental interventions to sustain them (Alzheimer’s Association, 2017; Padlia, 2011; Mayo Clinic 2016)). However, according to Ridder, Stige, Qvale, and Gold (2013), many may also benefit from alternative approaches, such as targeted music therapy, or Montessori methods to improve their lives.

Montessori methods have been used for many years to help children learn and be successful in engaging in new and different skills. The Montessori Method, developed by Maria Montessori for early childhood education (Napoletan, 2013; Wikipedia, n.d.), promotes errorless learning, thereby building the confidence of the child, or person, to perform the necessary task. Montessori methods have begun to be used more widely to improve the lives of those living with dementia in recent years. The largest problem in using Montessori is the time needed to build a relationship with the client and get to know what might be meaningful to the elder (Napoletan, 2013). According to Napoletan, the primary reason to use Montessori methods is to ensure that the full needs of the person in their spiritual life, physical and emotional aspects are all addressed, while creating meaningful moments for the client. Given that Montessori endeavours to take all aspects of the person into account, the additional time to ensure that all caregivers are trained to provide a steady competency of care should be required and expected for all such activities. Montessori methods have been used to improve the quality of life for those having dementia by building on the strengths of the individual to teach or retain needed skills, (Wu, Lin, Wu, Lin & Liu, 2013; Camp et al., 1997).

Another client-centered treatment option is music therapy. Matthews (2015), stated that the use of music may aid in a more meaningful connection for caregiver and dementia sufferer. Music therapy can decrease the need for psychotropic medications according to Ridder, Stige, Qvale, and Gold, (2013). Music can improve quality of life by improving symptoms of pain, or physical discomfort, (McNab, 2010; Ridder et al, 2013).

The use of Montessori methods can improve the overall function of the individual by building on their strengths (Fermina, 2006; Wu, et al., 2013; Camp et al., 1997), and various forms of music as therapy can aid in the relaxation of those who have become distressed (Matthews, S. 2015; McNab, 2010; Ridder et al, 2013), or help with pain control and discomfort, (McNab, 2010; Ridder et al, 2013). Since the need for long-term care is increasing exponentially as baby-boomers in our population age, there is also an increase in the demand for improved quality of life as part of the continuing care of elders living in nursing homes, (Borowiak & Kostka, 2004). The World Health Organization (2001) defines quality of life as the person’s own perceptions of their life position in context of their own values, goals, expectations, concerns and standards within the context of the culture with which they identify. However, many researchers have found it difficult to accurately define quality of life as a broad concept, and have instead shifted their focus to specific areas which are known to impact quality of life, such as depression or satisfaction with different life areas (McNab, E. 2010; Borowiak & Kostka, 2004).

Accordingly, the present review will address only two specific areas of quality of life that are measurable, depression and agitation. According to Lee, Chan and Mok, (2010), the...
perceptions of the elderly have had significant impact on how they manage their illnesses, which can directly affect both their health and quality of life. Lee et al. state that the use of music, as a means to connect with feelings for non-verbal clients, can aid in relieving depression and agitation symptoms for those living with dementia, is an appropriate, non-invasive, non-threatening, inexpensive approach that focuses on human well-being rather than the causes of illness. Thus, targeting well-being instead of illness can be seen as a preventative measure as well as a means to improve quality of life for the elderly and since nearly half of all residents living in long-term care homes has a diagnosis of dementia, (Statistics Canada, 2016; Alzheimer’s Association, 2017), it is important to find as many treatment options as possible. Since music therapy and Montessori therapy each can be used to effectively assist in relaxation or improving the mood of those living in long-term care facilities, perhaps combining music with Montessori teaching could give medical staff, clients and caregivers more alternatives to medication when developing comprehensive care plans, while providing individuals with more helpful options to adjust their personal living space within the care facility.

A scoping review is like a systematic or synthesis review, both are trying to sift through the body of information available to conclude or find a direction for the research (Dijkers, 2015; Arksey & O’Malley, 2005). The reviews differ in that a systematic review focuses on a well-developed research question, while a scoping review looks at the broader topic and takes many different design forms into consideration. Systematic reviews are typically designed to answer a very narrow question from mainly high quality reviews, while a scoping review is less likely to focus on specific questions and is designed to allow for gaps or inconsistencies in the literature to be highlighted while remaining focussed on the research question (Arksey and O’Malley, 2005; Dijkers, 2015) and includes sources that may not be peer reviewed. The systematic review is to find the magnitude of a specific known effect; where scoping is trying to identify options from multiple streams and find any coherent lines of thinking in the research and if there is any effect at all.

The purpose of the present scoping review is to examine the effectiveness of music and Montessori methods respectively and to assess whether there is any evidence to support the use of both methods together to improve outcomes over the use of each method alone. The question for the literature review is: can the addition of music to Montessori methods improve results as an alternative treatment option and be considered as a strategic part of the care plan to improve the quality of life for elderly people who have been diagnosed with dementia and are living in long-term care?

Chapter II: Literature Review

Dementia and its Treatment

Dementia is a term used to describe symptoms and is not a specific disease itself, (Alzheimer Society of Canada, 2016; Alzheimer’s Association, 2017; Mayo Clinic, 2017; Statistics Canada, 2016). Symptoms included are usually some loss of memory, difficulty with problem solving, language and even difficulty thinking. According to the Alzheimer’s Society of Canada, (2016) and the Alzheimer’s Association, (2017) there are some illnesses, such as sleep disorders, vitamin deficiency or thyroid disease, that mimic the symptoms of dementia, but these are treatable and the symptoms will eventually decrease, which means they are not true forms of
For those living with the true forms of dementia including Lewy Body disease, head trauma, vascular dementia, Alzheimer’s, and others, the symptoms will never decrease and go away because dementia is progressive. The fact that the disease is progressive means that the symptoms will continue to worsen as the person ages and will ultimately lead to death, (Alzheimer’s Society of Canada, 2016; Alzheimer’s Association, 2017).

Problems with thinking and memory often cause the sufferer to become very confused and upset about what is happening, which can also cause behavioural outbursts to the point of becoming violent with others (Alzheimer’s Association, 2017; Alzheimer’s Society of Canada, 2016). The fact that many forms of dementia can lead to such debilitating and restricting problems outlines the need to find multiple options for helping sufferers and their caregivers, whether they are family members or care-home providers. According to Blackburn and Bradshaw (2014), dementia currently impacts over 35 million people, at a cost of over $35 billion according to Valcour and Blanchette (2010), and that number will increase as the largest group in our population ages and begins to live the over 65 life.

**Treatment of dementia** is similar for most types of dementia in the early stages (Alzheimer’s Association, 2017). Medication is recommended for nearly everyone with dementia and various supports are offered based on the community and the family situation for the sufferer, (Alzheimer’s Society of Canada, 2016; Alzheimer’s Association, 2017). Since there is a growing demand for treatment and quality care to retain the best quality of life for our elders, there is a need to explore alternative options in long-term care.

**Montessori Methods in the Treatment of Dementia**

To understand how Montessori methods are used to help in the treatment of dementia, it is important to know what this method focusses on and how it applies in a long-term care facility. According to Acar-Dreyer, (2015) a high priority of Montessori education is to develop responsible people who are competent in their ventures and adaptive to become problem solvers as they learn for life. The goal of Montessori use for elders is to bring meaning into the lives of the elders with dementia, (Cline, 2006). The full sense of Montessori programming for elders is best summed up by Camp who said,

Montessori-Based Dementia Programming™ is designed to reduce environmental demand, capitalize on preserved abilities, modify the social and physical environment, and provide external (social, cognitive, and physical) supports to enable older adults to successfully take part in and complete meaningful activities that they could not perform without the intervention. In other words, Montessori-based activities make use of the practices of enablement by both utilizing existing abilities and finding methods of circumventing impaired abilities to enable disability to be decreased. This, in turn, should lead to improvement in quality of life.

Elders can learn by using their senses, manipulating material and socializing with others in their environment. Each person is evaluated as a whole individual; physical, spiritual, social and the cognitive needs and preferences are considered together; each part is considered just as important as all the others. Caring and consideration for self and others are necessary for successful Montessori learning (Acar-Dreyer, 2015; Femia, 2006). The most frequent use of Montessori methods for people with dementia is surrounding feeding or other activities of daily living, (ADL).
There is evidence that Montessori methods can be used successfully to help elders to retain their eating skills and increase body weight, (Wu, Lin, Wu, Lin & Lui, 2014; Wu & Lin, 2013), as well as increase helping and engaging activity in elders, (Femia, 2006). While this list is not exhaustive, it does give a glimpse of how Montessori methods could help elders who live with dementia. As an anecdotal example observed by the researcher, a new resident came into a care home with a strong desire to keep things clean and regularly tried to take cups from other residents, causing difficult situations and even some fights. This person was directed to only take the cups when they were set in a designated place and then take them to another place to be washed. This person was confined to wheelchair. The person still had the skills needed to pick up dishes and place them in alternate places. Using the Montessori Method, she was taught to gather all cups that were along the hand rails and put them into the cleaning container, while other residents were taught to put cups they were finished with out on the hand rails for collection. Using a Montessori method allowed this person to feel useful and to continue to keep the home clean for everyone, and had the added benefit of that individual no longer trying to take cups from other residents and only gathering them once they had been placed in the designated collection spots. Montessori methods are so compelling because they use the skills and capacities that the client has and expand on them, and they have also been used to help elders to engage in daily activities, (Femia, 2006; Camp et al., 1997).

According to Camp et al. (1997), Montessori methods have been used regularly for more than half a century to train children in all areas of daily living. Camp et al. (1997) paired children aged 2 to 4 years with elders suffering from dementia. The reason for the pairing in this manner was to ensure that the children were at a lower level of development than the elders, so that the elders could act as mentors to the children. The elders were between the ages of 70 and 96, and several were in special care units in a nursing home. The pairing of elders and children was done by apparent match in developmental level. The elders were given seven Montessori-based tasks and measured at baseline ability and each was given one point for completing the skill correctly with little or no cueing. The skills were taught by trained adult helpers to the elders, who then taught the children. The results were dramatic. The children learned all of the Montessori material being taught by elders with moderate to severe dementia, but the real gains were made by the elders themselves. The team observed the eight elderly participants for 5-minute intervals in the times before, during, and after they were scheduled to work with the children to check the frequency and duration of disengagement. At baseline, the elders were disengaged approximately 71% of the time and after training disengagement was as low as 53% on mornings that training was not occurring. However, while the children were learning from them, during the same time periods of the day, the elders had no instances of disengagement, agitation, anxiety, confusion, or other behaviour that was considered to be disruptive or possibly dangerous. The elders with dementia became more engaged in life in general and engaged as mentors in teaching Montessori skills to children, (1997). People need to feel useful, and Montessori methods can help elders retain skills and even learn new ones despite any mental decline, (Camp et al., 1997; Femia, 2006). While the camp study was considered a success because the children were able to learn the skills that the elders were trying to teach them within the time allotted, this may be difficult to replicate due to the manpower required to train, record data, and evaluate the process and results. The intergenerational study has not done previously and has not yet been replicated.
Music Therapy in the Treatment of Dementia

Music is personal to whoever listens to it and has the ability to evoke strong emotions in the listener, which could be either positive or negative; this personalized response to music could be the reason for so many different approaches to music therapy. Much research exists that explores the values of myriad forms of group music therapy including in various environments for treatment to types, duration, timing, and combination music therapy taking place in a client’s room, or common area at a long-term care facility or individually in a private home in the community. Music therapy has been described as active, including singing, dance, playing instruments, clapping hands, etc. and passive, including listening to music or watching videos. Any of these types of music therapy could be done with just one participant in a case study or with a number of participants in a group treatment plan. According to Blackburn and Bradshaw (2014), music therapy is the evidence-based use of music as an intervention where the targets are to achieve personalized goals in a therapeutic relationship; it is a process which is goal directed, based on knowledge to help the client improve health and relationships through shared experiences. Blackburn and Bradshaw further state that there are only two official types of music therapy, active (playing an instrument or singing) and passive (listening to music). In these types of official music therapy the music selections are usually individualized to the patient’s preference.

By targeting the music preferences that make the listeners feel good, it may be possible to change their mental status at the time of hearing the music (McNab, E. 2010; Matthews, 2015). The use of music therapy for people in palliative care has traditionally focused on psycho-social-emotional parameters of coping and self-expression, and has been shown to improve self-acceptance, anxiety and depression scales for people in palliative care (McNab, 2010). In a randomized control trial of 66 (35 in control group & 31 in therapy group) elders conducted by Lee, Chan and Mok (2010), listening to Medical Resonance Therapy Music, created by classical composer and musicologist Peter Hubner, for 30 minutes a day, over a four-week period was evaluated. The music consisted of “simple repetitive rhythms, predictable dynamics, low pitch, slow tempos (60–80 beats/minute), consonance of harmony and lack of percussive instrumental, vocal timbres and lyrics” The results showed that structured music therapy changed the listeners’ mood and helped them to relax, associate with positive memories, decrease agitation, thus improving their quality of life (Lee, Chan & Mok, 2010). Lee, Chan and Mok found that the elders’ quality of life continued to improve even as cognitive abilities continued to decrease. Quality of life questionnaires were self or caregiver administered as the measure to identify change in the participants; the results showed that there was a significant difference with the music group indicating a better quality of life. The sample size was relatively small and the music group was two different types of music with no distinction between the active (playing), and passive (listening) participants, so it is not known if there is any difference between the different music therapies. Since the QOL questions were self or caregiver administered and not completed by a researcher, there could be a great deal of bias in the music groups’ answers.

The burden of helping those living with dementia is increasing at a very high rate and there is a need to find as many options as possible for supporting their caregivers’ (Särkämö et al., 2013; Ridder et al., 2013). A recent study in Finland investigated several elders living with dementia and discovered that all forms of musical intervention used led to improvements in the participants’ depression and agitation scores thus improving quality of life, including decreasing depression and agitation (Särkämö et al., 2013). Särkämö et al. conducted a randomized control study on 89 persons with dementia in which they coached the caregivers to use either
care as usual, singing, or music listening as part of daily care of the person with dementia. The study was a 10-week trial of the three conditions. The sessions consisted of combining the music with intervention of music exercises at home. Both the elders and their caregivers were regularly assessed by the researchers on quality of life. The Mini Mental State Examination (MMSE) for general cognition, orientation, and short-term and working memory as well as the Wechsler Adult Intelligence Scale 2nd edition (WAIS II) and Wechsler Memory Scale III, (WMS III), to recall a short story immediately, and after 20 minutes, recall number sequences forward and in reverse, notice similarities between two words, and to put coloured blocks together to make designs. MMSE is a measure intended to assess the cognition of persons with deterioration to the mind; frequently used to assess the damage to one’s brain after head trauma, it is also fairly accurate when assessing the severity of an elder’s cognitive decline, which is classed in four groupings; normal, mild decline, moderate, and severe decline; this test allows the researchers to identify the severity of the dementia for each of the participants. Relative to care as usual, in both the music listening and singing groups, the final analysis for the elder participants with dementia was they showed improved executive function and short-term memory and the caregivers reported improved well-being. Särkämö et al. used quality of life and mood scale scores for the participants in their study and found a universal improvement in both measures, indicating that the music therapy was successful in enhancing mood and quality of life for both the elderly and their caregivers. The study looked at elders who were living in the community with assistance from family or other caregivers. This study should be replicated with a population living in long-term care facilities.

Blackburn and Bradshaw (2014) believe that the methodology of music therapy studies to date has not been sufficiently rigorous, so more and better studies are needed to assess the efficacy of music therapy. When methodology was not strong for many cases it has caused a limiting effect on the generalizability and the strength of the musical interventions (Vasionyte, I., & Madison, G. 2012). A meta-analysis by Vasionyte and Madison (2012), examined several musical interventions, encompassing nearly 500 elders, aimed at improving the quality of life for persons living with dementia. The meta-analysis included only those studies where a music therapist was involved in the process, eliminating any professional therapy type. Specific elements of music were also narrowed to four parts, melody, rhythm, sound, and harmony. Many of studies were similar in the way they used the music, but with unique focus to the aspect of the dementia that was being treated, for example, cardiovascular responses, brain rhythms, muscle force, and pain. What Vasionyte and Madison concluded was that music therapy is an intervention with no known side-effects that can be recommended for reducing depression in, and improving quality of life for those living with dementia. Vasionyte and Madison caution that while the results seem promising, there is also the problem that only published studies were included, most of which had weak research designs, so there is need for more rigorous research in this area. Another consideration is that the term “therapy” needs to be clearly defined because some of the music “therapy” was noted when the client showed a response or connection to the music being played at the time of observation.

Since medication has a range of negative side effects, there are many reasons to want to try to pioneer new treatments or to perfect the alternative treatments that are less harmful to the person living with mental decline or lower quality of life as a result of that deterioration. A study conducted in Norway and Denmark, a group of 42 people living with were treated with prescribed music therapy which included singing, instrumental, listening and even dancing, along with their usual care, over six-week intervals (Ridder, Stige, Qvale, & Gold 2013). Clients...
were assigned to either a music therapy group or a care as usual group, and then switched at the halfway point of data collection. The Alzheimer’s Disease-Related Quality of Life scale, (ADQoL) was completed by a researcher, who was blind to the study, via telephone with the proxy respondent and used as an outcome measure of the participants’ quality of life changes (Ritter et al. 2013). Ritter et al. were able to show a reduction of agitation, fewer medication increases (two were actually decreased during music therapy), and overall improved quality of life for the all of their clients who continued with the music therapy for the full six weeks of the intervention. There is some room for speculation with this study because the answers and evaluations were completed by a proxy rather than the client themselves, but it may not have been possible to get full answers from those with moderate to severe dementia.

Clearly, music therapy has some promise in helping to improve the quality of life for those living with dementia, but studies specifying how the music therapy is to be administered, who would administer it, where, time allotted for therapy, etc., would be needed to validate any particular musical therapy type. Some of the music therapy studies used validated instruments such as the Mini Mental State Exam or the (ADQoL), but the choice of using only proxy persons to answer questions makes the results suspect at best. While the author of this review realized that many who have severe dementia may not be able to answer accurately, the studies could be started with those who could answer, comparing their answers to those of proxy persons, to show the efficacy of such studies. More scientific studies need to be completed, and replicated with larger sample sizes for any specific music therapy to be considered a full treatment option. Another limitation is the different definitions of the word therapy by different disciplines; therapy in a medical trade might mean just the medicine prescribed, while in psychology it might mean a step by step direction to improve the life of the client and have no medicine at all, this distinction could confuse the practical results for the search of therapy options in the literature. In the case of this paper it did produce many thousands of reports or sources, but most were ruled out due to poorly defined terms.

A Glimpse Into Combining Music and Montessori

In 1997, Camp et al., showed how Montessori teaching, in general, could be used to teach elders new skills even as their mental capacity declined, including moderate and severe dementia and illustrated how that same group was able to teach young children those same skills by matching the developmental skill level of the elders with the children aged 2-4 years. Since the skill and developmental level of very young children are hypothesized to be similar to that of elders who have dementia, it is fair to consider that other areas may also be parallel, including the addition of music to Montessori teaching.

In a study of 200 Canadian students, aged 2-5 years, who were attending Montessori schools in Ontario, Canada, researchers showed how the addition of music to Montessori teaching methods improved learning outcomes (Harris, 2007). A pre-test was not done because the children would learn things as they progress naturally; however they were grouped randomly by age so that the post-tests would show where the greatest gains were. The control group received standard Montessori teaching, while the experimental group also received the musical teaching for six consecutive months. The main effect was statistically significant, \( F(1, 184) = 526.31, p < .001 \); this means that there were noticeably better scores for the children who had music enriched Montessori as opposed to the children who had regular Montessori teaching. The fact that the children were able to learn better with music added to their curriculum is promising
because it offers some potential insight in how to manage dementia symptoms using Montessori methods from this same age group (Femia, 2006; Wu & Lin, 2013). Much of the preliminary research seems to suggest that both music and Montessori methods can have a positive impact on the lives of people who are living with dementia, there may be some connection between the two, such that combining them may prove to have an even greater positive impact than either alone.

**Chapter III Method**

An academic literature review was chosen as the project format. In the decision-making process for the type of literature review being used several online resources were consulted. The resources viewed in the decision-making process included, Wikipedia, Google, Google Scholar, University of Richmond Writing Center, University of Toledo Library Guides, and St. Lawrence College’s online LibGuides. There are several types of literature reviews that could be applied to this topic including a systematic review; however, the best type of review for the purpose of this thesis paper is a scoping review because it allows gaps and inconsistencies in literature to be highlighted while still remaining focused on the research question, and includes a broader range of research information (Arksey and O’Malley (2005); Dijkers, 2015). The shape of a scoping review is similar to a systematic review, however a systematic review is used to find the size of a known effect; where scoping is trying to identify options from multiple streams and find any connections or clear lines of thinking in the research or if there is any effect at all. This type of review can be biased to the researcher’s own point of view, however in this case that is not necessarily a weakness because the findings will help identify, articulate, clarify, and focus future research questions.

Step two was to search for the peer-reviewed articles and other sources, (gray literature) of relevant material providing information; the two tables show the search pattern and results for articles and information consulted for this review. While not all of the sources listed were cited in this review, all were searched and considered for content and 50 sources were actually consulted for this project, and 26 of those were cited in this paper.

The aim of this paper originally was to review any research involving the combination of Montessori and music therapy to increase the positive effects of both in the outcome. The search parameters for articles began with keywords of dementia, Alzheimer’s, music and Montessori. The various keywords were arranged in multiple orders to ensure the best applicable references could be obtained. Searches were completed at St. Lawrence College Kingston, through online portals via the internet, using EBSCOhost, Gael, Google scholar and other online resources including Wikipedia (just for a definition of Montessori teaching), Statistic Canada, the Alzheimer’s Association, and the Alzheimer’s Society of Canada. A final search was conducted with the assistance of a library specialist at St. Lawrence College; this final search was to ensure that all resources available for the paper were taken advantage of.

Each search was conducted keeping time frame considerations in mind so that information from more than 15 years ago would not be considered unless the research was considered to be objective and followed a scientific process. The 15-year constraint was chosen so that the bulk of the material being considered would have current practices and procedures.
and limit the number of articles gathered; however another search of the topics was run, going back 50 years, to ensure that no pertinent or important information was missed by limiting the search to a 15 year window.

Table 1

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Note: the above search results include the 28 sources cited in the body of this paper and the other 10 that were consulted for support information.

Table 2

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<tr>
<td>Music &amp; Montessori Combined Treatment (ECE)</td>
<td>1</td>
<td>0</td>
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<tr>
<td>Music &amp; Montessori Combined Treatment (Elderly)</td>
<td>0</td>
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<tr>
<td>Total Resources Consulted</td>
<td>46</td>
<td>22</td>
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Note: the above table of search results includes all 68 sources reviewed, but not necessarily cited in the body of this paper.

Table 1 shows the chosen selections list result of the search for key terms used in the paper; these were primarily the sources that fit into the 15-year time constraint. The author was concerned that there was a limited amount of material available for two of the search ranges, (Montessori for dementia and combining Montessori and music) within the primary search so a second search was conducted which encompassed 50 years to ensure no sources were missed; although these sources were not cited, they were consulted and noted in Appendix A. The second search, depicted in table 2, presents the additional sources that were gleaned for facts and opinions to inform what the proposed treatment plan might look like as well as to inform regarding what common practice looks like for the current treatment of dementia in long-term care.

**Inclusion Criteria**

Due to the fact that there are always new materials becoming available, part of the inclusion criteria was, that the articles selected as support evidence for combining music and Montessori methods, had to contain objective evidence that either music therapy or Montessori
therapy was effective. The articles needed to include how the research was conducted, who was involved, (participants and researchers), what process was used to gain an objective finding, and be peer reviewed within the past 15 years; 10 of the primary sources, which were focused on and cited in this paper, were summarized and included in Appendix B. “Gray literature” was also used to clarify what the different therapies look like in practice and who would implement them, and to learn about institutional context for employing these methods. A Statistics Canada’s article entitled Alzheimer’s disease and other dementias in Canada was chosen as a primary source of “gray literature” because it provided the general information regarding the number of people living with various dementias, how dementia is usually treated including medication and alternate therapies, and how those alternate therapies are being administered on a daily basis in multiple settings. The Alzheimer’s Society of Canada and the Alzheimer’s Association were consulted because they also contain many up-to-date entries regarding how to identify true forms of dementia, variations of medical treatment and how alternative treatments would look in practice. The use of this “gray literature” also aided in assessing the social validity of the therapy being administered by gleaning the information from these credible and well-known sources, even though they were not all peer-reviewed. All the “gray literature” was accessed by using Google and Google Scholar to search for the keywords, “dementia, signs and symptoms of dementia, and treatment of dementia”.

In Appendix A, the complete list of additional sources which were consulted, but not cited for this paper are listed for the reader to consider as support material, and Appendix B displays the summaries some of the top studies included to consider the use of Montessori and music in the treatment of dementia symptoms.

Exclusion Criteria

Materials covering multiple topics, (connecting music or Montessori to more than one other method), were excluded because of time constraints; however, if the article combined music with only one other intervention or the use of Montessori methods with only one other intervention, the article was not excluded. Articles that were more than 15 years old and contained no unique or important information were excluded, however another search of the topics was run, going back 50 years, to ensure that no pertinent or important information was missed by limiting the search to a 15-year window. The older materials, from the 50-year search, shown in table1.2, were largely excluded due to the age of the material except for two pivotal sources by Camp and Camp et al..

Materials where the methodology was not clear or where too many variables were being considered at one time were excluded because it was not clear what the intervention was targeting. Gray literature that was opinionated, instead of giving clear policy or procedure, was reviewed for relevance and excluded so that the final report would contain as little subjective
information as possible. In appendix B, only some of the primary sources for this paper were summarized, all others were excluded from the summary due to report deadlines.

Chapter IV Results

In spite of the fact that the search for sources, using Montessori training to help elders, produced hundreds of results, there were very few that were intended to help with the symptoms of agitation and depression specifically. The search through library, database, and online resources only produced 17 that were relevant to this project, and of those 17, only 9 contained information that could be incorporated to produce the larger picture pointing to the idea of combining Montessori with another form of therapy to improve the overall outcome.

The results of the search for a combination program including both, the Montessori Method and a targeted music program, was that no published studies were found for the elderly in either of the two searches, the 15-year search, or the 50-year search. No studies of the 24 reviewed in the last 15 years and 39 reviewed from the last 50 years had any program combining music and Montessori training for elders, and only one article was found in any database combining the two treatments. The entire thesis consulted sources representing 26% Montessori training, 39% were various forms of music therapy, and only 0.02% were a combination of Montessori and music; the combination being the primary search consideration for this thesis, however the only combination discovered was related to young children.

The purpose of this literature review was to discover what information there is to support the efficacy of adding music to Montessori training methods for elders to improve the overall outcome and provide an alternative treatment option to help elders to retain some of their skills or learn new skills even as their cognitive ability declines. A scoping review with the constriction of 15 years was initially chosen and then expanded to include an additional 35 years for a combined total of a 50-year range, of the broadest array of literature possible while remaining focussed on the research question of reducing depression and anxiety in elders who are living with dementia. The reason the study was expanded to include information back as far as 50 years was because of the lack of material combining the treatment protocols being explored for this paper.

Chapter V: Discussion

The purpose of this literature review was to discover what information there is to support the efficacy of adding music to Montessori training methods for elders to improve the overall outcome and provide an alternative treatment option to help elders to retain some of their skills or learn new skills even as their cognitive ability declines. A scoping review, with a time limit of 15 years was originally selected to ensure that the information was the recent and relevant. However, a lack of information with respect to Montessori teaching combined with music required a more extensive search, so the time frame was broadened to 50 years and was chosen to search the broadest array of literature possible while remaining focussed on the research question. There are very few published studies on the use of Montessori with the elderly, and
although there are several different types of music therapy studies with the elderly, there are none that combine the two methods.

Overall, the available evidence suggests that Montessori learning methods show promise in helping elders with dementia to retain skills and even learn some new ones (Femia, 2006; Camp et al., 1997; Wu & Lin, 2013), and that music therapy is helpful in lowering agitation and depression scores for elders (Vasionyte, I., & Madison, G. 2012; Blackburn and Bradshaw, 2014; Matthews, S. 2016; Ritter et al. 2013). There is also some indication that the addition of music therapy to Montessori learning could improve the overall outcome in the areas of general cognition, attention, and executive function, (Harris, 2007; Särkämö et al., 2014; Camp et al., 1997). There is clearly room for more research in the area because the crossover of using Montessori skills was started with children and successfully transferred to dementia sufferers. Since the original crossover was successful, it is very likely that other areas of parallel exist. There is currently no research into the possibility of adding music to Montessori teaching for elders with dementia, but there are several avenues available that could be beneficial, such as the metered music used by Lee, Chan and Mok, (2010), or it could just be based on the personal preference of the elder, or even playing musical instruments as part of the Montessori teaching. A good place to begin would be to use a similar setup to Harris’s combination study with children in 2007 where Harris was able to help children to improve their overall math scores by adding musical training to the traditional Montessori teaching, because as Camp et al. (1997) illustrated, there is a developmental parallel between the learning of 2-5-year-old children and learning with the mental decline caused by dementia.

**Implications for the Behavioural Psychology Field**

Montessori training for elders living with dementia is an encouraging area for psychology because Montessori uses errorless training, by modelling, shaping, and positive reinforcement. In future research, playing musical instruments could be a starting point in Montessori training by using the same modeling and shaping techniques that are often used by psychologists and therapists to teach young children. Behaviourists could do a task analysis and break each step of playing down into simple steps and then reinforce each step as it is learned.

**Strengths**

There is a broad body of information in this paper that is taken from several sources including libraries, online databases, web searches and personal observations. The type of literature included in this paper were several peer reviewed publications, gray literature and general knowledge publications such as Statistics Canada or Alzheimer’s Association. Since the literature was not all from one source it made this paper a well-rounded examination of the available information. Due to the 15-year limit to the choice of primary articles selected, all of the information being used or considered was up to date, so the latest research practices were demonstrated.

**Limitations**

Some limiting factors were the 15-year constraint on the choice of primary articles selected for up-to-date information, and the small number of published studies specific to the topic of combining music with Montessori training. While there were numerous studies...
published on music-therapy with elders, the methods for measuring results were not consistent. For instance, some studies used basic quality of life questionnaires (Lee, Chan & Mok, 2010), some used general observations recorded by staff or family (Ridder, Stige, Qvale, & Gold 2013). On the other hand, the Montessori published studies were very few in all of the combined databases and the measures were very consistent and used known scientific measures such as the MMSE. The most limiting factor for this review is the fact that there are no published articles, gray literature or other materials available that illustrate any form of combining music and Montessori for people living with dementia in long-term care. It is possible that the limitation of time to the 15-year range was a factor in the lack of these articles, however the search was extended to a 50-year range to ensure that nothing was missed. Perhaps the online and library resources just did not have any of the materials that might have indicated some research in this area.

**Multilevel Challenges**

**Client challenges** would include not understanding what is being asked of them; depending on the degree of dementia, the client may not be able to comprehend what is being asked of them, which would make it difficult to implement any Montessori based program. Another challenge is trying to combine two different treatment approaches at a time is the possibility of not doing either well; this could make the client more resistant to change and the client’s family may get involved to stop the program. A third difficulty at the client level is family involvement; many elders with dementia have family making all of their primary decisions for them, so if the family isn’t convinced that this new approach will benefit their family member they may not encourage the elder to participate, or even convince the elder that there is no need for them to try.

**Program challenges** would include integrity of the combined program. For example, all of the music therapists would need to be taught the same information as well as being trained in Montessori Methods and how those methods apply to elders with dementia. If elders are living in a long-term care facility it may be difficult to coordinate these activities because if there are emergencies, a staff away sick, or a host of other possible daily problems that could impact timelines, there may not be able to be regularly scheduled time for individuals to participate. Complications of daily life in a care facility may make it so that therapy would need to be conducted in group sessions, in this case how big the groups could be and where in the facility would be acceptable for training may impact the ability to have a successful group. If the elder is living in the community with family, then it may be simpler to have a set routine to assist with consistency of training.

If the program is run in multiple facilities or homes it might be difficult to maintain treatment integrity because of different staff or volunteers running the program. Also, if there are people who do not like the music that is chosen or the activity, then the program may get altered from the initial program intended and successful design.

**Organization challenges** for implementing any Montessori or music based program would include the costs involved with training staff in the additional areas and helping staff to understand why this additional training is necessary. If the organization is large enough there may be room to try new ideas to help the elderly, but if the organization is small and funding is low, there may not be any way to facilitate the program.
If the logistics could be worked out, then there is evidence to suggest Montessori training would be helpful for elders with dementia feeding themselves even after this skill has been lost, (Wu & Lin, 2013) and for staying connected to the community (Camp et al., 1997), which would help the organization caring for them to have efficient programs. Elders being able to keep feeding themselves would free up nurses for other duties, while giving the elder some degree of control of their own life, thereby, reducing depression and agitation, and improving their quality of life.

Societal challenges a combination Montessori/music program might include a reluctance to try new things and most people are comfortable with the way things are being done. However, if the benefits are shown for the elders and other members of society such as the very young children, then it may be possible to overcome any resistance.

Montessori methods appear to support learning goals for children and adults throughout all stages of life and development, even as mental deterioration occurs due to dementia (Napoletan, 2013). The intergenerational Montessori teaching tested by Camp et al. (1997) would have the societal benefit of teaching young children to respect elders; even those living in care facilities. If music and Montessori could be used together they could help elders stay connected to the community, and retain the feeling of being needed as they help others, (Camp et al., 1997).

Some strengths of a program combining music and Montessori training is that there is no other program like it anywhere in literature and it would be adaptable to any situation, age, individual or group. A music with Montessori program would be adjustable to the situation of any elder and could be used by anyone who could be trained. The methods of Montessori skill acquisition are simple enough that even children could follow them. Another great benefit of a music with Montessori program is that even if it is done in an uncontrolled manner, there are no dangerous side-effects or possible drug interactions; it is not possible to overdose if it is used more than prescribed.

Recommendations for Future Research

There appears to be no research into this method at this point in time and there is sufficient evidence to support a pilot program combining music and Montessori training due to the success of the trial program by Camp et al., (1997), in which Camp et al. were successful at improving the QOL for those living with dementia by having the elders act as mentors for children aged 2-4, by matching the developmental stages of the children and the elders. With the success of the Camp et al. program there is reason to believe that a program combining music with Montessori for elders would be beneficial due to the success of the Harris program in 2007 where children aged 2-5 years improved their math skills with the use of a Montessori-music program.
References


B. S. Plake, J. C. Impara, & R. A. Spies (Eds.), The fifteenth mental measurements yearbook. 2003.


Total words: 7895
Lit review words: 3280
Appendix A

Other Resources Consulted


## Appendix B

<table>
<thead>
<tr>
<th>Author/Year/Title</th>
<th>Methods/Information Section</th>
<th>Results OR Conclusions</th>
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<td>Hua-Shan Wu &amp; Li-Chan Lin, 2013; The moderating effect of nutritional status on depressive symptoms in veteran elders with dementia: a spaced retrieval combined with Montessori-based activities <em>Journal of Advanced Nursing</em></td>
<td>3 groups of participants: 25 in fixed group; 38 in individualized group; 27 in control group receiving treatment as usual. At least 20 participants were needed in each group to get a significance of .05 and 80% power. Montessori methods for errorless learning were used to improve the eating ability &amp; nutrition of veterans suffering from dementia and living in institutions. It was believed that the symptoms of depression could be alleviated if the body mass &amp; nutrition of the veteran could be improved. Pre- &amp; post-test scores for the Mini Nutritional Index, the Chinese version of the mini mental status as well as the Cornell Scale for Depression in Dementia were all used to compare any changes. Follow-up results were taken over a period of 1, 3, &amp; 6 month follow ups.</td>
<td>Both the fixed group &amp; the individualized group showed improvements in their eating ability &amp; nutrition over time. There was also a correlation between the Mini Nutritional Index score improvements and the improvement of the depression symptoms. The results show that Montessori based activities can be used to help improve nutrition and there appears to be a direct relationship in decreasing depression symptoms as the physical health improves. There were continued signs of improvement at the 3 &amp; 6 months’ marks for most of the participants.</td>
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<td>Cameron J. Camp, PhD, Katherine S. Judge, BA, Carol A. Bye, BS, Kathleen M. Fox, BA, Jay Bowden, BA, Michael Bell, BA, Kristin Valencic, BA, &amp; Jeanne M. Mattern, PhD <em>An Intergenerational Program for Persons With Dementia Using Montessori Methods The Gerontologist Vol. 37, No. 5, 688-692</em></td>
<td>Children aged 2-5 were paired with elders of the same developmental ability. Researchers would train the elders with dementia how to complete each Montessori based skill &amp; help each pair to understand how Montessori training worked before intergenerational contact took place. Older adults didn’t always remember working with each child, but they did get better at demonstrating each skill.</td>
<td>Procedural memory seems strong in spite of dementia causing deterioration of the episodic memory; therefore, the elders were able to become proficient in demonstrating the skills they were to teach the children. All of the children in the study were able to learn the skills successfully that the elders were teaching them. The most amazing part of this study is that all of the elders were showing levels of disengagement up to as much</td>
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<td>Inclusion for elders was a score of more than 5 on the MMSE &amp; have expressed an interest in working with the children. Exclusion criteria were if the elder was unable to speak English, was blind, or had (within the month prior), displayed bad behaviour such as verbal or physical aggression. Training sessions were once per week for 30-45 minutes each week and more than 75 sessions. The activities were kept in the same place and circumstances. Children were between the ages of 2 and 5 and were from the on-site daycare where staff children spend their days. Staff were present as the elders trained the children in the method, but provided very little assistance. The elders acted as mentors for the children &amp; were more engaged in everyday activities.</td>
<td>as 70% prior to the start of the program; once the children were learning from the elders, the levels of disengagement dropped to 0. This indicates that there is need to feel belonging and to be needed. This is also an indication of improved quality of life for the individual living with moderate to severe dementia.</td>
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<td>42 elders were placed into random active music groups, 6 week trials &amp; standard care. All participants were given an opportunity to participate in the music treatment at some point. Outcome measures were focused on quality of life, agitation &amp; medication use. Fidelity was addressed with a 4-point decision tree filled out by the music therapist after each session. MMSE was used to measure level of dementia &amp; functioning.</td>
<td>Agitation with disruptive behavior increased with care as usual, but decreased with music therapy. “The difference at $6.77 (95% \text{ CI} [12.71, 0.83])$ was significant ($p = 0.027$), with a medium effect size $(0.50)$.” This means that they saw a clear difference for those who participated in the music therapy sessions. There was also a significant increase in the prescription of psychotropic medication, ($p=0.002$) during standard care that was not seen during music therapy care.</td>
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<th>Author/Year/Title</th>
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<td>Särkämö, T., Tervaniemi, M., Laitinen, S., Numminen, A., Kurki, M., Johnson, J. K., &amp; Rantanen, P. (2014). Cognitive, emotional, and social benefits of regular musical activities in early dementia: Randomized controlled study. The Gerontologist, 54(4), 634-650. doi:10.1093/geront/gnt100</td>
<td>89 persons with disability/caregiver dyads were chosen &amp; randomly placed into groups; 10 weeks of singing coaching, music listening coaching &amp; care as usual (control group). Singing &amp; music listening of familiar songs together with occasional vocal lessons &amp; reminiscing about the music were the coaching component. All persons with disabilities were given neurological assessments including mood tests, quality of life, &amp; cognitive function. Additionally, the well-being of caregivers was assessed with questionnaires.</td>
<td>Both music groups improved orientation, mood &amp; remote episodic memory. Singing improved short-term &amp; working memory as well as improving the overall well-being of the caregivers. Music listening had an overall positive effect on quality of life. The implications of this study are that the regular application of music groups singing &amp; listening to familiar music can help with the retention of memory &amp; improve the quality of life.</td>
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<td>Padilla, R. (2011). Effectiveness of Environment-Based Interventions for People With Alzheimer's Disease and Related Dementias. American Journal of Occupational Therapy, 65(5), 514-522. doi:10.5014/ajot.2011.002600</td>
<td>Systematic literature review on the effectiveness of environmental interventions on emotional state, performance &amp; cognition of persons with Alzheimer's disease. 33 reports meeting the inclusion criteria were selected, however those criteria were never identified.</td>
<td>The search indicates that there may be a reduction in agitation when using Snoezelen, aromatherapy &amp; ambient music. Padilla further indicates that Montessori Methods are helpful in utilizing the remaining skills of the individual who is living with dementia.</td>
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<td>Napoletan, A. (2015, December 11). How can Montessori methods help Alzheimer's? [Alzheimer's.net. Retrieved January 06, 2017, from <a href="http://www.alzheimers.net/2013-08-14/montessori-methods-for-alzheimers/">http://www.alzheimers.net/2013-08-14/montessori-methods-for-alzheimers/</a></td>
<td>Journalistic item outlining how Montessori training helps in the treatment of Alzheimer’s disease. Napoletan, explains how Montessori training can be used to bring meaning, hope &amp; joy to the lives of those living with dementia &amp; their caregivers.</td>
<td>Outlines how presenting clients with familiar items, such as herbs, can help someone who is know for difficult behaviours, to become kind &amp; gentle while reminiscing about their mother’s garden. Another, who had been know to be withdrawn, was suddenly vibrant when he viewed a tackle box; he began talking about how he loved to go fishing all his life. Use of Montessori is limited only by what the person can imagine.</td>
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<td>Blackburn, R., &amp; Bradshaw, T. (2014).</td>
<td>Literature review to determine non-pharmacological treatments, in long-term care settings, for treatment of dementia symptoms. Articles were gathered from electronic sources &amp; were from 2010 &amp; newer.</td>
<td>Most of the outcomes were favourable in that they all appeared to be successful in using music therapy to reduce the symptoms of dementia such as agitation &amp; depression. Blackburn &amp; Bradshaw caution that, while the studies do indicate favourable results when using music therapy to treat dementia symptoms, the methodology was weak in many cases because it was not based on evidence from literature reviews or the measures were too subjective to be used with the dementia demographic.</td>
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