

UNIVERSITY *of*
INDIANAPOLIS®

School of Occupational Therapy

Sensory Programming as Part of an Interdisciplinary Approach to Dementia Care in a

Residential VA Setting

Rachel M. Gramman

May, 2019



A capstone project submitted in partial fulfillment for the requirements of the Doctor of Occupational Therapy degree from the University of Indianapolis, School of Occupational Therapy.

Under the direction of the faculty capstone advisor:

Dr. Jennifer Fogo, PhD, OTR

A Capstone Project Entitled

Sensory Programming as Part of an Interdisciplinary Approach to Dementia Care in a
Residential VA Setting

Submitted to the School of Occupational Therapy at University of Indianapolis in partial fulfillment for the requirements of the Doctor of Occupational Therapy degree.

By

Rachel M. Gramman

Doctor of Occupational Therapy Student

Approved by:

Faculty Capstone Advisor

Date

Doctoral Capstone Coordinator

Date

Accepted on this date by the Chair of the School of Occupational Therapy:

Chair, School of Occupational Therapy

Date

Abstract

Individuals with dementia often experience sensory and occupational deprivation in long-term care facilities, and there is a need to provide opportunities for increased engagement. The purpose of this doctoral capstone experience within the VA healthcare system was to create and implement both group-based and individualized sensory programming for veterans with dementia and to educate staff members on the best use of sensory materials and techniques to improve veteran engagement. The occupational therapy student developed structured and unstructured, themed group protocols and coordinated with recreational therapy staff to plan individual sessions based on the veterans' reported leisure interests. Two veterans with dementia, one veteran with Alzheimer's disease, one veteran with Parkinson's-related dementia, and one veteran with vascular dementia were offered sensory sessions between two and five times per week for 15-30 minutes. Veterans were more likely to be *very engaged* when the session was client-centered and focused on a topic meaningful to them. Staff received education regarding theoretical background, session planning and documentation, and implementing sensory interventions to increase likelihood of continued veteran engagement and sensory stimulation following the student's departure.

Sensory Programming as Part of an Interdisciplinary Approach to Dementia Care in a Residential VA Setting

As of 2017, 50 million people worldwide were living with dementia, and with the aging population, this number is projected to increase and impact an estimated 82 million people by 2030 (World Health Organization [WHO], 2017). Healthcare providers, including occupational therapists, will continue to encounter individuals with dementia now and in the coming years. In the United States alone, over half of patients residing in long-term care facilities between 2013-2014 had the diagnosis (Harris-Kojetin et al., 2016).

Within the *Diagnostic and Statistical Manual, 5th Edition* (DSM-5), dementia is classified as a neurocognitive disorder, or NCD (Simpson, 2014). Though there are multiple etiologies including Alzheimer's disease, Vascular dementia, Dementia with Lewy bodies (DLB), and Parkinson's disease, to name a few, memory loss and decreases in functioning and independent completion of self-care activities are shared characteristics that individuals with dementia will experience, with symptoms worsening as the condition progresses (Alzheimer's Association, 2018; Atchison & Dirette, 2012; Centers for Disease Control and Prevention [CDC], 2018). Additional symptoms may include sleep disturbances, gait impairments, language difficulties, and behavioral symptoms (Alzheimer's Association, 2018; Atchison & Dirette, 2012; Choi, Budhathoki, & Gitlin, 2017).

Behavioral symptoms such as agitation, aggression, and rejection of care may appear at any stage of dementia and can co-occur in multiple combinations, with some becoming more prevalent than others based on the severity of the dementia (Choi et al., 2017). Such symptoms can be distressing for caregivers and often contribute to the decision to seek placement in a long-term care facility (Atchison & Dirette, 2012; Choi et al., 2017). However, when exploring the

agitated behaviors of patients with dementia across multiple nursing home settings, researchers found that patients experienced an average of three unmet needs such as boredom/sensory deprivation, loneliness, and need for meaningful activity (Cohen-Mansfield, Dakheel-Ali, Marx, Thein, & Regier, 2015). Researchers concluded patients' behaviors could be exacerbated, in part, from not having their needs met in this setting (Cohen-Mansfield, Dakheel-Ali et al., 2015). The researchers noted a trend among patients experiencing boredom/sensory deprivation; these patients tended to display "physical nonaggressive behaviors" more frequently (Cohen-Mansfield, Dakheel-Ali et al., 2015, p. 61). The growing prevalence of dementia diagnoses and the large number of patients in long-term care who are experiencing sensory deprivation support the need to provide sensory programming to better meet these patients' needs and increase engagement.

Literature Review

The use of sensory interventions for dementia care is not a novel idea, but because there is not a clear definition of what constitutes a sensory intervention, one could compile an extensive list of activities. After surveying more than 400 residential aged care services in Australia, researchers received responses describing the use of over 40 types of "multi-sensory interventions" (Bauer, Rayner, Koch, & Chenco, 2012). To better understand the current uses of sensory stimulation and to develop an evidence-based sensory program, the efficacy of interventions commonly utilized in dementia care were examined.

Music

In a study focused on the use of nonpharmacological methods to address behavioral symptoms related to dementia, music was among the most frequently used interventions (Cohen-Mansfield, Marx, Dakheel-Ali, & Thein, 2015). Additional studies have highlighted the ability to

create personalized sessions for patients when using music (Scales, Zimmerman, & Miller, 2018). In two studies, researchers examined the effects of providing individualized, structured, 30-minute music sessions twice weekly through use of a computer with individuals with severe dementia and found promising results (Maseda et al., 2018; Sánchez Fernández et al., 2016). For short-term impact of music interventions, Maseda et al. (2018) found that participants were more relaxed during the session, they demonstrated increased positive mood and attention, and they were more social immediately following a session as compared to before. Regarding longer-term impact, Sánchez Fernández et al. (2016) found that participants displayed less anxiety, fewer signs of depressed mood, and fewer physically nonaggressive behaviors at a follow-up eight weeks after intervention with music had ceased. Though music was beneficial when used in residential settings with individuals with dementia, facility staff seeking to implement music therapy should be aware that this intervention was also rated as requiring moderate investment, meaning that some training should be provided to the individual leading the session, and there is an associated cost of materials (Scales et al., 2018).

Massage

A review of the literature produced mixed results regarding the use of massage with individuals with dementia. After receiving a foot massage intervention, individuals with moderate to severe dementia showed less physiological signs of stress; however, a control group of participants who experienced no massage but rather had a person sit quietly in the room with them showed similar results (Moyle et al., 2014). From these findings, researchers were unable to conclude that the massage itself was effective; simply interacting with another individual may have created the stress reduction for participants (Moyle et al., 2014). Looking specifically at applying massage to help reduce behavioral symptoms of dementia, hand massage has been rated

among the most effective interventions for reducing agitation, but aromatherapy massage of patients' necks, shoulders, and arms produced short-term reduction in agitation only within the first few weeks of implementation, with no significant effect over time (Cohen-Mansfield, Marx et al., 2015; Yang, Wang, & Wang, 2016). However, the aromatherapy massage was useful for reducing depressive symptoms in participants (Yang et al., 2016). Due to this variability of how massage has been implemented, Scales et al. (2018) suggested that protocols be created prior to use.

Robotic Pets

Robotic pets have been utilized as part of a group and as an individual intervention. Following individual sessions with use of a robotic cat, caregivers of participants with dementia reported feeling that it was comforting for participants and provided a way to start a conversation (Gustafsson, Svanberg, & Müllersdorf, 2015). Additionally, two studies examined the use of a robotic seal in a group intervention and found that participants demonstrated increased communication and interaction skills following the sessions, and staff reported social benefits as well (Robinson, Broadbent, & MacDonald, 2016; Sung, Chang, Chin, & Lee, 2015). Though neither of these two studies included participants with dementia, participants did possess characteristics such as cognitive impairment that are similar to dementia symptoms, and nearly 25% of staff members in one study reported feeling that the use of robotic pets would be useful with individuals with dementia (Robinson et al., 2016; Sung et al., 2015). Despite these studies that produced generally positive results, researchers have also reported high levels of participant refusal and disinterest associated with the use of robotic pets (Cohen-Mansfield, Marx et al., 2015; Robinson et al., 2016). This should be taken into consideration in the intervention planning process.

Multisensory Stimulation Environment

A multisensory stimulation environment (MSSE) is characterized by a space, such as a sensory garden or a dedicated room, with various types of stimuli meant to impact multiple senses at one time (Maseda et al., 2018; Scales et al., 2018). Perhaps the most commonly known interpretation of this intervention is the Snoezelen[®] environment, which was created with elements such as fiberoptics, bubble tubes, and colored lighting (Berkheimer, Qian, & Malmstrom, 2017; Maseda et al., 2018). Following participation in a Snoezelen[®] intervention, individuals with dementia demonstrated increases in mood, relaxation, and alertness as well as decreases in anxiety and behavioral symptoms of dementia such as wandering, restlessness, and agitation (Anderson, Bird, Macpherson, McDonough, & Davis, 2011; Bauer et al., 2015; Berkheimer et al., 2017; Maseda et al., 2018; Sánchez Fernández et al., 2016). However, when also considering the comparison interventions in these studies, researchers found that use of music, exercise, sessions in a garden, and attention provided by a caregiver produced similar results and were more cost-effective than the Snoezelen[®] sessions (Anderson et al., 2011; Bauer et al., 2015; Berkheimer et al., 2017; Maseda et al., 2018; Sánchez Fernández et al., 2016). Additionally, need for caregiver training was suggested prior to implementation of MSSE (Collier & Jakob, 2017; Scales et al., 2018).

Sensory Groups

Among individuals with dementia, those with a perceived previous interest in group activities, lesser degree of cognitive impairment, and greater independence with completion of activities of daily living (ADLs) were more likely to attend group activity sessions and demonstrated a higher level of engagement and more positive moods throughout sessions (Cohen-Mansfield, 2017; Cohen-Mansfield, Marx et al., 2015). Activity groups have focused on

various topics such as cooking, reading, and music, to name a few, but within the field of occupational therapy, Ross (1997) created a specific group model focused on the use of sensory stimuli with the goal of participants achieving a state of “alert calmness” following completion (p. 1). Following this group model, participants progress through five stages, and stimulation activities in each stage were designed to sequentially place increasing demand on the central nervous system (Ross, 1997). The first stage, orientation, is intended to welcome participants, explain the purpose of the group, and to awaken the senses through short bursts of stimulation (Ross, 1997). Stage two, focused on movement, is meant to continue facilitating and increasing the arousal that was achieved in the first stage (Ross, 1997). The movements may include activities like exercises and dancing that can be graded to meet the needs of the participants (Ross, 1997). Stages three and four, titled “visual-motor perceptual activities” and “cognitive stimulation and function,” respectively, have been used to promote sharing, reminiscing, and other strategies to stimulate more internal focus and bring calming (Ross, 1997). The group ends with a concluding stage that should give participants a feeling of accomplishment and satisfaction (Ross, 1997). While all stages should be implemented, researchers suggested that the group leader should rely on participants’ responses to the stimuli and level of engagement to know when it is appropriate to advance to a new stage, and themes have been used to bring similar stimuli together in a session (Cruz, Marques, Barbosa, Figueiredo, & Sousa, 2013; Ross, 1997).

Guiding Theory

Due to the large number of sensory interventions available and those that could be additionally created using everyday objects in the environment, it may be difficult to decide which intervention is appropriate for a particular patient. However, coupling concepts from the

Model of Human Occupation (MOHO; Kielhofner, 2002 as cited in Cole & Tufano, 2008) and the sensory integration (SI) frame of reference may guide occupational therapy practitioners in providing client-centered care to individuals with dementia.

Central to the MOHO is the idea that each person is made up of three subsystems (Kielhofner, 2002 as cited in Cole & Tufano, 2008). The volitional subsystem refers to an individual's values, interests, and feelings of competence and how these aspects combine to determine what motivates a person to participate in occupations whereas the habituation subsystem refers to a person's roles and routines (Kielhofner, 2002 as cited in Cole & Tufano, 2008). The third subsystem is the mind-brain-body, or performance capacity, subsystem, which includes musculoskeletal, neurological, cardiopulmonary, and symbolic aspects of the person (Kielhofner, 2002 as cited in Cole & Tufano, 2008). The person, with all his or her subsystems, exists in an environment that offers input, opportunities, and barriers, and occupational performance then results from and is impacted by how the person functions within the environment (Kielhofner, 2002 as cited in Cole & Tufano, 2008).

Because of its neurocognitive impact, dementia affects the performance capacity subsystem of the person and subsequently may negatively influence occupational performance. Since there is no cure for dementia, reversing the impact on the person's subsystem is not feasible, but theorists from the SI frame of reference have offered suggestions for altering sensory input from the environment, which may support occupational performance. Jean Ayers developed the theory of SI and originally applied it to children, but it has since been used with adults as well since sensory integration is relevant across the lifespan (Cole & Tufano, 2008). Central to the theory is that, across ages, individuals receive input from their environments and must successfully process the incoming information from the stimulus in order to produce an

adaptive response (Cole & Tufano, 2008). Each individual differs and has his or her own “sensory profile,” meaning that each individual prefers and needs a different type and intensity of input to generate an adaptive response (Cole & Tufano, 2008).

Though the SI framework includes concepts of integration, processing, and modulation, the goal is most often sensory stimulation when applied with older adults (Cole & Tufano, 2008; Mytton & Haigh, 2016). Researchers have suggested that increased sensory stimulation may become more important for older adults due to age-related sensory loss; they may need more input to register a stimulus (Heyl & Wahl, 2012; Mytton & Haigh, 2016). In some cases, older adults with sensory loss began to rely more on cognitive strategies to continue functioning in their environments, but for individuals with dementia, their ability to rely on these cognitive strategies may be negatively impacted as well (Heyl & Wahl, 2012; Mytton & Haigh, 2016). For those with dementia, the environmental stimuli may become even more difficult to process, leading to sensory deprivation, a commonly unmet need for this population that can subsequently result in negative behaviors (Cohen-Mansfield, Dakheel-Ali et al., 2015). Mytton and Haigh (2016) reviewed several studies and found that, when this need was addressed, sensory stimulation was associated with increased occupational engagement and more positive mood states from patients with dementia. However, this is not to say that all of the aforementioned sensory stimulation interventions are appropriate for all individuals with dementia. The MOHO concept of volition must be considered throughout intervention planning in order to provide patients with a meaningful experience.

Though individuals with dementia often become less forthcoming with verbalizing their interests as their condition progresses to later stages, observations of their behavioral responses to stimuli, including smiling, length of attention to a stimulus, and attitude when interacting with

a stimulus, have been used to inform current interests and volition (Cohen-Mansfield, Marx, Thein, & Dakheel-Ali; 2010; Raber, Teitelman, Watts, & Kielhofner, 2010). However, staff caregivers may have a more difficult time inferring meaning from behaviors, and it is not uncommon for staff to have limited understanding of volition in patients with dementia (Raber & Stone, 2015; Raber et al., 2010). In one study, staff at an assisted-living facility demonstrated understanding of general preferences of patients, but staff's understanding of the patients' volition was "unidimensional" and unchanging, despite the fact that patients' interests had changed over time as a result of disease progression (Raber & Stone, 2015, pp. 13-14). Relying only on their knowledge of patients' past interests led staff to suggest activities that were no longer as meaningful for the patients (Raber & Stone, 2015). Raber et al. (2010) have suggested that the patients' loss of interest in a once-liked activity may be related to personal feelings of diminished capacity due to recognition that their abilities are changing. However, if a past activity of interest is modified to match the patients' new ability level, this may support continued engagement (Raber et al., 2010).

To summarize, individuals with dementia benefit from sensory stimulation, but this is not always readily available within their environments or care facilities. With education about sensory stimulation, caregivers, including staff, have demonstrated the potential to change their perspectives of patients with dementia and to increase their recognition of each patient's needs (Lykkeslet, Gjengedal, Skrondal, & Storjord, 2014). The resulting purpose of this doctoral capstone experience (DCE) within the VA system was to create and implement both group-based and individualized sensory programming for veterans with dementia and to educate staff members on best use of sensory materials and techniques in an effort to improve veteran engagement.

Needs Assessment

A preliminary needs assessment began during completion of a level two occupational therapy fieldwork rotation in the Community Living Center (CLC) at the Cincinnati VA Medical Center (CVAMC) a few months prior to the DCE. Based on observations at the time, it appeared that it was sometimes difficult for staff to engage some of the veterans with cognitive limitations in available programs. Staff confirmed this and mentioned that they had had an interest in implementing sensory programming for these individuals for a while and had begun research on the topic, but limited time and resources had contributed to non-advancement of the idea. However, grant money was recently secured, which created an opportunity for implementation and culminated in the current DCE. Once on-site, a more formal needs assessment was conducted, as detailed below.

Site Evaluation

A representative from the CVAMC is active within the VA's Innovator Network, which has "Spark, Seed, Spread" opportunities (VHA Innovation Ecosystem, n.d.). Essentially, when a new idea is "sparked" at the national level, funding is provided for it to be piloted at a "seed site" (L. Riegler, personal communication, November 19, 2018). If successful, innovators at the seed site are then given money that they may use to spread the idea to other VA locations (L. Riegler, personal communication, November 19, 2018). In this way, the CVAMC was chosen as a "spread site" and received grant funding from another VA in order to implement sensory programming related to dementia care. Because the intent was to replicate the seed site's therapeutic design at the CVAMC, the DCE student assessed the feasibility of doing so.

Location characteristics. Following a visit to the seed site, the DCE student completed a SWOT analysis to compare the two VA locations (Table 1). Whereas the seed site had a

dedicated dementia unit, the CVAMC CLC did not. Rather, the CLC was comprised of three, 16-bed units, and the beds were divided among veterans in need of short-term rehabilitation, long-term care, respite services, and hospice care (E. Higgins, personal communication, February 5, 2019; U.S. Department of Veterans Affairs, 2018). Veterans with dementia were integrated among the units, so there was not a shared living space in the CLC for veterans with dementia. Furthermore, the CLC lacked a dedicated sensory space in the facility, and unlike at the seed site where sensory programming was overseen by nursing, nursing staff shortages at the CVAMC CLC did not make this feasible. However, occupational therapy practitioners receive training in sensory integration, so programming could proceed at the CVAMC CLC under their guidance following completion of the DCE.

Sensory needs. Considering the sensory elements, it became clear during the needs assessment that, because of the logistical differences, the CVAMC would need different sensory materials than those that were in use at the seed site. The innovator at the seed site wished to order the following items for the CLC: wall murals, robotic pets, aromatherapy supplies, miscellaneous sensory items and mobile cart, a Snoezelen[®] cart, and a set of interactive dementia books (B. Abele, personal communication, January 2, 2019). However, research regarding evidence-based sensory interventions for individuals with dementia revealed little support for the use of aromatherapy for addressing behavioral symptoms of dementia and suggested that the Snoezelen[®] cart was not the most cost-effective option (Anderson et al., 2011; Bauer et al., 2015; Livingston et al., 2014). Furthermore, after viewing a Snoezelen[®] cart that was used on the mental health unit of the CVAMC, it was clear that the size of the cart would make it difficult to transport between patient rooms and would require more storage space than what was available in the CLC. Therefore, these items were removed from the list along with the wall murals, which

did not have approval from the interior design staff at the CVAMC. Following the literature review and discussions with staff, the DCE student collaborated with the registered occupational therapist (OTR) and supervising certified therapeutic recreation specialist (CTRS) to create a new wish list of sensory items. The student also conducted an inventory of supplies currently available in the CLC to ensure that there were no duplicate requests (Table 2).

Personal Communication with Site Mentors

Both an OTR and a CTRS acted as site mentors for the DCE. A second CTRS and a certified occupational therapy assistant (COTA) also provided significant input throughout the needs assessment, but final determinations for programming were made by the OTR, supervising CTRS, and the occupational therapy student (OTS).

Program logistics.

Staffing. It was determined that the sensory program would include both group and individualized sessions, and the implementation responsibilities would be shared among the two occupational therapy (OT) practitioners and three recreation therapy (RT) staff in the CLC. Group sessions would be led collaboratively, with RT staff being responsible for implementing individual sessions and OT staff acting in a consultative role to provide intervention suggestions. The RT supervisor reported that all department staff already possessed knowledge of basic sensory integration concepts, and the same was true for the OT practitioners, so the DCE student would therefore provide staff education focused mainly on the theoretical background of the DCE, research related to the topic, how to administer chosen assessments, session planning and implementation, and documentation methods.

Desired outcome. Although a review of the literature revealed that researchers have frequently used sensory interventions with individuals with dementia to address behavioral

symptoms, such as agitation and aggression, and there were multiple scales available to measure these outcomes, the CTRS mentor reported feeling that this symptom was not applicable to all members of the veteran population of interest (Anderson et al., 2011; Berkheimer et al., 2017; Cohen-Mansfield, 1991; Rosen et al., 1994; Sánchez Fernández et al., 2016; Yang et al., 2016). She requested that the DCE student implement a more inclusive outcome measure (E. Higgins, personal communication, January 8, 2019). After further search of the literature, participants' attendance, attitude, and level of participation appeared as alternative outcomes that had been studied in relation to the target population (Cohen-Mansfield, 2017). The OTS and mentors agreed that these were more applicable to the veterans with dementia residing in the CLC, so veteran engagement was chosen as a generalized outcome that encompassed multiple other outcomes noted in the literature, including agitation and interaction skills.

Frequency of sessions. For sustainability purposes, the OTR mentor requested that the sensory group occur only once per week to still accommodate the normal OT rehabilitation caseload (M. Reichle, personal communication, January 8, 2019). Even though this would have met the minimum frequency for implementing groups based on the five-stage model, Ross (1997) encouraged additional group sessions per week. To achieve this, group leadership was expanded to include RT staff, and the intended beginning frequency was increased to two 30-minute group sessions per week for two groups of veterans with dementia. Additionally, staff decided to offer 15-minute individual sessions to veterans in the afternoons on a case-by-case basis, which was an appropriate amount of time for a 1:1 multisensory intervention (Anderson et al., 2011).

Identification of key stakeholders. The chief of nursing, an infection control point of contact, supervisors and the manager within the rehabilitation care line, and the representative

from the innovation network were identified as additional key stakeholders. Ongoing communication was initiated with these individuals to determine which items could be purchased through the related grant, how these items would need to be cleaned between patient use, potential involvement of nursing staff in the sensory programming, and expectations for discontinuation of the DCE to support sustainability.

Future planning. Even though the DCE site did not have a dedicated dementia unit, the site mentors reported that there were plans for the addition of one in the coming years. The mentors requested that the DCE student compile a list of evidence-based suggestions for the interior design of the space. If a dedicated space is built, this would also increase the number of veterans with dementia who are served at the CVAMC, so the need for more specific information about dementia staging and models was also discussed. The OTS offered to compile a resource binder for the site mentors and added a section on the goal attainment scale (Appendix A) to measure the evaluation of the resources.

Veteran Assessments

Screening. Chart reviews were completed to identify veterans with dementia who were receiving LTC. Seven veterans were initially identified, but due to the mentors' desire to initially pilot the sensory programming with only a small number of participants, this list was reduced to five veterans based on input from RT staff regarding which veterans would be most appropriate. Cohen-Mansfield (2017) found that therapeutic recreation staff's perceptions of whether an individual enjoyed participating in groups was correlated with that individual's later level of engagement. In the CVAMC CLC, RT staff members were most familiar with the participation history of the identified veterans, so their recommendations were accepted, thereby determining the final program sample of five veterans which included two veterans with dementia, one

veteran with Alzheimer's disease, one veteran with Parkinson's-related dementia, and one veteran with vascular dementia. The two veterans who were excluded from the initial sample had comorbid mental health diagnoses that resulted in maladaptive behaviors, which the OTS agreed may skew data collection as these behaviors could be mistaken for dementia-related agitation.

Evaluation.

Pool Activity Level Instrument. Because the sensory programming was to be a collaborative effort between OT and RT staff, an assessment was needed that would allow staff from each discipline to provide input and produce an interpretation of results that was of value for both OT and RT staff. The Pool Activity Level Instrument (PAL; Pool, 2012) allowed for this. Furthermore, this tool was found to be valid and reliable when used with a population of older adults with dementia (Wenborn et al., 2008).

Though the PAL includes a 'Personal History Profile,' which is a list of interview questions to elicit information regarding what is meaningful to the client, the current RT evaluation contained much of the same information, so the existing evaluation was used to gather information pertaining to the veterans' activity interests (Pool, 2012). This was followed by completion of the 'PAL Checklist' to determine the cognitive ability level of the individual; the categories of cognitive ability include *planned*, *exploratory*, *sensory*, and *reflex*, with the latter categories corresponding to greater cognitive impairment (Pool, 2012). The checklist contains nine items that each focus on one activity and provides four descriptors of how a person may complete the activity (Pool, 2012). Staff simply checked which of the four statements best described the veteran, and the category with the most checks indicated the veteran's cognitive ability level (Pool, 2012). The 'PAL Activity Profile' and 'Individual Action Plan' provided RT

with leisure activity suggestions for the veteran and informed OT practitioners and nursing staff how to better set up for ADL sessions to best match the veteran's ability (Pool, 2012).

Sensory Integration Inventory Revised. For those veterans scoring at the sensory or reflex levels of ability following assessment with the PAL (Pool, 2012), additional assessment was indicated to determine sensory preferences and inform focus of individualized sensory sessions. Considering the population's cognitive limitations, it was determined that a tool based on caregiver report would be more beneficial than one requiring the veterans to self-report. The Sensory Integration Inventory Revised (SIIR) allowed for this and provided staff an opportunity to comment on several items pertaining to the following categories: tactile, vestibular, proprioception, and general reactions (Reisman & Hanschu, 1992). After completing the SIIR with a veteran, the OTS reviewed item descriptions provided by Reisman and Hanschu (1992) to infer which types of sensory interventions would be most appropriate for the veteran and then communicated this to RT staff.

Results. The OTS completed all veteran evaluations with the PAL (Pool, 2012) and SIIR (Reisman & Hanschu, 1992) during week eight of the DCE rotation. Scores based on staff report revealed that one veteran was functioning at the exploratory activity level of ability, meaning he would likely benefit from occasional cueing, especially when beginning a new activity or being in an unfamiliar environment (Pool, 2012). The remaining four veterans scored at the sensory activity level of ability, which indicated that consistent cueing and simplified instructions should be provided to increase the veterans' success with occupational engagement (Pool, 2012). For these four veterans, the SIIR was also completed to identify sensory preferences. Two veterans frequently avoided vestibular and certain tactile input whereas one veteran was reported to

frequently seek vestibular and proprioceptive input. The fourth veteran showed no preferences or aversions.

Outcome measure. The DCE student utilized staff input and a combination of items from the Cohen-Mansfield Agitation Inventory (CMAI; Cohen-Mansfield, 1991), the Pittsburgh Agitation Scale (Rosen et al., 1994), the Assessment of Communication and Interaction Skills (ACIS; Forsyth, Lai, & Kielhofner, 1999), and Anderson and colleagues' (2011) description of behavioral observations that indicated engagement to create a 4-point Likert scale for measuring veteran engagement (Appendix B).

The DCE student reviewed the veterans' charts for the month of January, but documentation from staff of various disciplines was not detailed enough to obtain sufficient information about the veterans' baseline levels of engagement during social interactions. Therefore, the DCE student proceeded with baseline data collection using the created outcome measure and observations of the veterans' daily routines and interactions during February. The measure was also used again following implementation to measure change in veteran engagement.

Comparing Needs Assessments: LTC Versus Alternative Settings

The needs assessment described above was completed in the long-term care setting with veterans with dementia. However, if the same population was encountered in a different setting, the needs assessment would likely require some degree of modification.

Acute care. Similar to how the needs assessment was conducted for the DCE, the needs assessment in the acute care setting would still begin with staff interviews or surveys regarding the current care for patients with dementia. However, rather than focusing only on therapists, the interviews would be extended to nursing staff. Nursing staff have frequent interactions with

patients in this setting, yet there is often little to no training provided regarding how to care for individuals with dementia; this may be due, in part, to the fact that the dementia diagnosis is likely not the primary reason for hospitalization (Butcher, 2018; Timmons et al., 2016). Starting with a survey to ascertain staff's concerns about caring for this patient population; what education, if any, they have received; and how confident they feel in caring for this patient population may be beneficial as part of a needs assessment.

When considering patient outcomes and how to incorporate sensory interventions in acute care, agitation was a frequently cited issue for these patients (Butcher, 2018), so rather than developing an engagement scale as was done for the DCE, an existing agitation scale such as the CMAI (Cohen-Mansfield, 1991) or Pittsburgh Agitation Scale (Rosen et al., 1994) could serve as a more appropriate outcome. Also, whereas the PAL (Pool, 2012) was used during the DCE to determine appropriate activities for patients at the DCE site, such a tool would not be needed in the acute care setting; from an occupational therapy and nursing standpoint, ADLs would be the main focus rather than leisure activities. A sensory assessment, such as the SIIR (Reisman & Hanschu, 1992) could still be used, but the resulting sensory preferences would inform ADL sessions. For instance, it may be important for nursing staff to keep lights dim and the television low to prevent agitating a patient, or staff may try using a cool washcloth or drink in the morning to stimulate the patient and increase alertness. In this way, sensory programming could still be implemented in relation to dementia care.

Adult day center. Staff at adult day centers offer a variety of services for individuals who need supervision or care throughout the day, and these include older adults with dementia (Eldercare Locator, n.d.; Dabelko-Schoeny et al., 2018). Because this setting is community-based, it follows less from the medical model, and staff are able to offer more activities to

individuals such as those offered in the CVAMC CLC. For this reason, the needs assessment at an adult day center could similarly begin with staff interviews about what types of programs are already offered and what new programs are desired. The information could be compiled in a SWOT analysis, and an inventory of current sensory materials could be created. Because the goal of increasing sensory programming would remain, individuals with dementia at an adult day center could still be evaluated using the PAL (Pool, 2012) to determine their cognitive ability level and the leisure activities that would be most appropriate for them. However, rather than using the SIIR to determine sensory preferences, the Carer's Checklist (The Mental Health Foundation, 1998) would be more appropriate. Use of the Carer's Checklist (The Mental Health Foundation, 1998) would allow for adult day center staff to provide input, but more importantly, it would allow for family caregivers to rate both behaviors of the person with dementia and how stressful this is for the caregiver. In interviews with family caregivers, Edwards (2015) found that caregiver burden was a factor that repeatedly emerged, but caregivers were often unaware of the assistance that could be provided by occupational therapy programming. The final part of the needs assessment in this setting would be to review any necessary documentation standards and determine an appropriate way of measuring outcomes.

Implementation

Sensory Sessions

Sensory sessions began during week nine of the DCE rotation. All sessions were conducted in a small room with lights dimmed to provide a calming atmosphere. To decrease distractions, only the sensory items to be used during a given session were set out. At the beginning of each session, veterans were greeted by their preferred name, and the OTS explained the purpose of the session. This was necessary due to the veterans' dementia and limited recall

from previous sessions, and it also helped to combat the anxiousness that some veterans displayed when they did not understand why they were being taken off of their units.

The veterans were each initially scheduled to attend two, 30-minute group sessions per week, but veterans often missed sessions due to illness, hospital appointments, or still being in bed at the time of attempt. In response to this, staff and the OTS decided to offer the sensory group to all five veterans five days per week beginning in week 11 in order to increase the likelihood that veterans would be able to attend and benefit from at least two sessions per week.

Depending on the needs and number of veterans in attendance, session formats varied among three types. The first format followed the Ross (1997) five-stage group model. A sample group protocol following this format may be viewed in Appendix C. This format was utilized the least due to poor receptivity from the veterans. Prior to implementation of the sensory group, many of the veterans with dementia were accustomed to spending the majority of their time alone in their rooms, and they became noticeably anxious when brought into a group setting and asked to interact with other veterans and staff in an unfamiliar environment. Frequent transitions between activities, which is indicated by the Ross (1997) model, was also particularly difficult for one veteran who tended to benefit more from consistency and setting his own pace.

To lessen the social and activity demands of group sessions, the DCE student developed and implemented a second group format where staff offered multiple activities related to a common theme, but veterans were not specifically asked to collaborate. A sample group protocol following this format may be viewed in Appendix D. Oftentimes, two veterans attended sensory group at the same time but did not interact with one another; rather they did their own activities in a manner that resembled parallel play. To ensure that veterans were still engaged in social

participation with staff, another OT or an RT staff member were always present in addition to the OTS when using this format so that enough staff were available to attend to each veteran.

In the third format, which was used most frequently and was the least structured, the DCE student offered individual sensory sessions to the veterans either in their rooms or in a dedicated space off of the unit. These sessions were typically shorter than the group sensory sessions and averaged 15 minutes in length. One benefit of this format was that the OTS could allow the veterans to have increased control. For example, the veterans were presented with multiple activities but could choose those they found most interesting or meaningful, and the veterans could switch activities as often as they desired. This approach followed the concepts related to use of Snoezelen[®] multisensory environments where the therapist enables but does not direct the patient (Haegele & Porretta, 2014).

Regardless of session format utilized, the DCE student tried to ensure that intervention sessions always included at least two kinds of input to provide multi-sensory stimulation for each veteran, and cognitive stimulation in the form of reminiscing was oftentimes combined with the sensory stimulation to provide a more meaningful experience for the veteran. For instance, a weighted gel aquarium was useful for providing tactile and proprioceptive input for the veterans, and the OTS also used the ocean scene and fish inside to prompt veterans to share stories about fishing when they were younger. Following the conclusion of each session, the OTS rated the veterans' engagement levels using the outcome measure shown in Appendix B. The DCE student continued implementing the sensory sessions five days per week through the end of the capstone experience while utilizing the veteran engagement scale.

Staff Education and Development

Nursing, OT, and RT staff had critical roles in the implementation phase of the sensory programming. As caretakers on the units, nursing staff were responsible for ensuring that the veterans were out of bed and had received medications in time to attend the sensory sessions. However, many nurses and aides experienced staff shortages, burnout, and caregiver stress, therefore, the veterans were not always ready on time. To promote nursing staff's understanding of the importance of the veterans' participation in the program, the DCE student educated nursing staff regarding the benefits of sensory stimulation for individuals with dementia and the benefits of the veterans spending time outside of their rooms and off the unit. Once staff developed a greater understanding of this, they were more willing to consistently encourage the veterans and assist them out of bed in the morning.

The DCE student met with OT and RT staff early in the rotation to provide education regarding evidence-based practice principles and the advantages of using sensory interventions with older adults with dementia, so, when implementation began, OT and RT staff had already developed an understanding of the benefits of veteran participation. However, after sessions started and staff began co-leading groups with the OTS, the OTS educated staff on proper use of sensory products and discussed which types of stimulation could be achieved through use of each product. During sessions, the OTS engaged staff in discussion about the veterans' observable behaviors and how those behaviors would be rated on the engagement scale. This served to enhance staff's understanding of how to properly document after implementing a session and also developed their ability to recognize when a veteran was showing signs of overstimulation, which indicated that the session should be terminated because the veteran's tolerance had been reached.

Student Leadership

To ensure effective implementation, the DCE student relied on leadership skills including organization, communication, and decision-making. The OTS communicated with nursing staff each morning and delivered schedules to the units to ensure that veterans were out of bed at the requested time. If nursing staff experienced difficulty motivating a veteran or if a veteran was agitated by the request from nursing, the OTS entered the veteran's room with nursing staff to facilitate conversation and provide encouragement. The OTS also planned all sessions and communicated the plan to the OT or RT staff member who was assisting with implementation that day.

After two weeks of implementing sessions, the DCE student organized a spreadsheet and compiled and reviewed the data on veteran attendance, engagement ratings, and reactions to certain types of stimuli. In doing so, the OTS recognized the need to adjust both formatting and scheduling in order to increase effectiveness of sensory sessions and requested to meet with both the OTR and CTRS mentors. The OTS proposed changes, including advocating for the addition of more individual sessions. Once the mentors agreed to expand programming to five days per week beginning in week 11, the OTS created additional session formats and outlines and reconfigured groupings of veterans. To better engage the veterans, the OTS reviewed the RT admission evaluations for each veteran and then planned session themes based on the veterans' indicated interests. For instance, two of the veterans liked old country western music whereas two other veterans preferred jazz, and three of the five veterans had experience with gardening. Using such information, the OTS rearranged groups based on who had similar past interests and used this to invite veterans to attend sessions they would be most interested in. Based on which veterans were then in attendance on a given day, the OTS chose which format to utilize and

which types of sensory materials would be best to present to each veteran to increase the likelihood of them engaging.

Project Outcomes

Veteran Outcomes

The OTS utilized the outcome measure for veteran engagement, shown in Appendix B, to gather data at baseline and following implementation of each sensory session. Engagement ratings were based on the DCE student's behavioral observations of the veterans.

At baseline, in the five months leading up to implementation of sensory sessions, the veterans each participated inconsistently in outings and social, physical, cognitive, and affective groups offered by RT staff. After reviewing RT documentation for each veteran and conducting direct behavioral observations in February, the OTS found that only one veteran had recently displayed 'disturbed/disengaged' behaviors. The majority of the time when participating in RT groups, the veterans with dementia collectively tended to display 'engaged' behaviors. However, this was often evidenced by interacting with materials such as craft supplies rather than interacting with staff or other veterans who were present. For two of the five veterans, these periods of engagement were often coupled with periods of 'neutral' behaviors within the same session as they tended to doze or spend time just scanning the environment. The last category, 'very engaged,' depended on the setting and the activity being offered. Though each veteran had displayed moments of being 'very engaged,' these were infrequent and never lasted throughout the full session. For instance, when the veterans did initiate conversation, it was typically to request assistance or to state a need to return to their rooms and was rarely related to the focus of the group session.

When implementation of sensory sessions began in March, the DCE student documented veteran engagement following each group and individual session. All five veterans demonstrated ‘engaged’ behaviors for every sensory session in which they participated with the exception of one veteran who was agitated, or ‘disturbed/disengaged,’ during one of his sessions. However, compared to baseline data, which indicated the veterans often engaged just with materials, the veterans now engaged with and interacted more with staff during the implementation phase. Two of the five participants did continue to demonstrate ‘neutral’ behaviors at times during their sessions, but these behaviors were only temporary and were still shared with periods of engagement. Of note, these neutral behaviors were less likely to occur in sessions focused on the veterans’ indicated past interests. When the topic was meaningful to them, veterans were more likely to be rated as ‘very engaged,’ and all of the veterans demonstrated ‘very engaged’ behaviors in 60-100% of the sessions they participated in.

Staff Outcomes

Staff outcomes were related to the DCE focus of education and were measured by goal two on the goal attainment scale (Appendix A). As described above, the DCE student educated OT and RT staff on identifying veterans with dementia who may benefit from sensory interventions, planning individual and group sensory sessions to meet the veterans’ needs, and documenting veteran engagement following the sessions in preparation for staff taking over these duties from the OTS after the student’s departure. Due to the OTR’s role as the evaluating therapist, the DCE student also educated the OTR on administration and interpretation of scores of both chosen assessment tools. Since education was provided to staff from these two disciplines within the CLC, this was rated a “0” on the goal attainment scale, which indicated that the most likely outcome was met.

Discontinuation

Planning for Sustainability

Continuous quality improvement. To achieve ongoing veteran engagement in sensory sessions following completion of the DCE rotation, the OTS reflected back on the first three weeks of the implementation phase and applied continuous quality improvement principles to increase efficiency and the likelihood of success moving forward. Considering Lean Six Sigma principles for improving quality performance by identifying areas of inefficiency and seeking improvements, the OTS identified waiting, human capital, and transportation as sources of waste and addressed them accordingly (McMichael, 2016).

Waiting. During implementation, veterans often missed sessions or received shortened sessions due to getting out of bed late. This resulted in the OTS and other staff waiting in the sensory room with no veteran participants at the specified session time. Consequently, this created a loss of productivity for therapy staff and negatively impacted patient care schedules for other veterans in need of OT rehabilitation appointments. Both the OTR and CTRS mentor expressed concerns that, if the sensory group could not proceed at the scheduled time, staff would not be available at another time of day, which was a threat to sustainability of the program. To address this issue, the DCE student spoke with nursing staff and began delivering printed patient schedules to the unit nursing stations at least two hours in advance of the scheduled session time to ensure that nursing staff were given ample time to provide assistance to each veteran who was expected to attend the morning sensory group. When the schedule was clearly communicated, veterans were more likely to be ready to attend on time, and OT and RT staff spent less time waiting.

Transportation and human capital. Throughout the implementation phase, the OTS transported all veterans to and from their units to the dedicated sensory space. This often meant moving between floors in the CLC and making multiple trips to the same unit, which was not efficient and would not be feasible for therapy staff to continue following the DCE student's departure. While the implementation of more individual sessions partially addressed this issue, transportation of sensory materials then became a greater source of waste since many individual sessions were conducted in the veterans' personal rooms, with the OTS transporting items from the sensory space to the unit and back. To address these issues, the DCE student placed all sensory items on a mobile cart so that staff could move efficiently from room to room for individual sessions without needing to retrieve different sensory items each time. Also, for days when veterans needed to be transported off of their units to the sensory space for group sessions, the OTR contacted the volunteer coordinator and requested that volunteers assist with this aspect of the programming. There were typically several volunteers already sitting at the desk in the lobby, so it was a waste of human capital to not ask them for help. The coordinator was willing to assign volunteers so that, in the future, staff will now be able to save time by not having to transport patients themselves.

Staff resources. To increase the likelihood of continued implementation at the end of the DCE, the OTS ensured that the OT and RT staff had resources available to guide them as program leaders. First, the OTS created a flowchart to assist staff with identifying which veterans would be appropriate to participate in sensory sessions and how evaluation should proceed. Moving to the intervention phase, the OTS organized items on the sensory cart according to type of stimulation and created a laminated full inventory list for staff to refer to when choosing sensory materials. The OTS also developed 12 session protocols, including five based on the

Ross (1997) group model, which staff could utilize or use as examples for planning their own sessions in the future. Lastly, the DCE student created discipline-specific documentation templates and entered them into the electronic system to increase efficiency and consistency of staff documentation. This consistency was key when collecting program data for purposes of meeting the grant objectives, and the OTS created a spreadsheet for data tracking with all necessary information included. This spreadsheet was shared with OT and RT staff prior to the student's departure and was approved by the grant leaders.

Considering future planning and sustainability, the DCE student also ensured that staff had resources available should they wish to expand programming. Though there was only a small number of veterans with dementia currently residing in the CLC, there were veterans with other cognitive disorders who may benefit from participating in the sensory programming as well. The PAL (Pool, 2012) assessment is suitable for use with these individuals if staff want immediate expansion. To plan for long-term expansion and the potential addition of a dedicated dementia unit, the OTS developed a resource binder with additional information about dementia-specific models and assessment tools, environmental suggestions for interior design, and dementia-related certifications that staff could seek to obtain for competency.

Responding to Society's Needs

Individuals with dementia unfortunately often experience both sensory and occupational deprivation while in care facilities (Cohen-Mansfield, Dakheel-Ali et al., 2015; Morgan-Brown, Brangan, McMahon, & Murphy, 2018). When studying five LTC units in Ireland, researchers found that facility staff often only interacted with patients when providing assistance at mealtimes or with self-care; the result was that "residents spent on average 37.6% of their time engaged and 62.4% of their time not engaged while in the communal sitting rooms" (Morgan-

Brown et al., 2018, p. 5). Furthermore, researchers noted that, when patients with dementia experienced unmet needs such as sensory deprivation or a need for meaningful activity, this exacerbated agitated behaviors (Cohen-Mansfield, Dakheel-Ali et al., 2015). To respond to these needs, the DCE student implemented programming to simultaneously provide sensory stimulation to the veterans while also engaging with them. The goal was to bring the veterans off of their units and increase their activity and social participation thereby decreasing occupational deprivation that can occur in the residential setting. Through the process of evaluation and implementation, staff also appeared to become more responsive to the veterans' individual needs, and it was important for staff to recognize the autonomy that individuals with dementia are still able to exhibit. Based on positive outcome ratings, the implementation of sensory programming seemed beneficial to both staff and residents within the CLC.

Overall Learning

Communication

Throughout the DCE, the OTS used various communication strategies when interacting with the management team, OT and RT staff who were directly involved in implementation, other health providers, and the veteran participants. At the beginning of the DCE, grant details were still being finalized for purchasing sensory materials. Since a speech language pathologist (SLP) in another department of the CVAMC had secured the grant, the DCE student communicated with her and other members of the innovation network via phone and email correspondence to ensure that the DCE program would meet grant objectives and to discuss inventory. The OTS also called a retailer to discuss purchased sensory products and communicated all of this information back to the OTR and CTRS mentors. Weekly meetings were set for the DCE student and mentors to discuss progress of the project, and oral

communication was the primary mode used. Oral communication was most appropriate since all parties were providing input, and it was more effective to hold face-to-face discussions when making decisions about the project. However, when these decisions then needed to be communicated to upper management, the OTS typically utilized written communication in the form of emails or printed outlines and agendas so that management would have a record of the progress that they could refer back to as needed since they were not as directly involved and were located in the main hospital rather than in the CLC.

After implementation began, communication was primarily oral. Involved OT and RT staff had adjoining offices, so it was most effective to communicate scheduling needs and patient updates face-to-face as needed, especially since staff were in and out of their offices throughout the day and emails were not always readily accessible. These varied staff schedules also resulted in the need for the DCE student to revise the staff education goals that were on the original memorandum of understanding. While it was initially anticipated that the DCE student would provide an in-service or review handouts and issue surveys to staff, it became clear that educating staff in this way was not as effective as group discussion during a staff meeting and providing hands-on education during implementation of sensory sessions. Formatting was altered to make it more meaningful for staff. Following education, staff reported greater understanding of the importance of providing sensory stimulation for the veterans with dementia and how to create an individualized care plan based on each veteran's needs.

Communication also varied from one veteran to the next. While engaging them, the OTS found that one veteran had a difficult time hearing and responded better to nonverbal gesturing to understand what the OTS wished for him to do. However, some veterans very much enjoyed conversing and reminiscing with the OTS, so much more oral communication was used during

their sessions. Once the OTS discovered how staff and the veterans learned best, this resulted in enhanced communication and better success with implementation.

Leadership

A key leadership skill developed throughout the DCE was communication. As described above, the OTS was responsible for communicating information to several groups in the organization. However, not all of the involved individuals were OTs, so the OTS had to learn how to present information in a way that individuals from multiple disciplines could understand. Besides adapting to respond to different learning styles, it was also important to consider personalities and the management hierarchy to determine which information needed to be delivered to each person in order to help them see the benefit of adding sensory programming to the organization. For upper management, the DCE student presented information about staffing needs to support sustainability, but when talking to the grant representatives, topics focused more on expenditures and plans for data collection. Stemming from this, the OTS also learned to resolve conflicts among individuals by listening to concerns from all involved parties and then responding in a way that addressed concerns from individuals at multiple levels in the organization. This ability to recognize and respond to potential barriers early in the planning process and to create a space for teamwork is a leadership skill that will directly translate into practice as an OTR.

Advocacy

During the early planning phase, the DCE student focused on advocating for the need for sensory programming through presentation of research findings. After management recognized the benefit of sensory programming for the veterans and allowed for the project to proceed with the involvement of both OT and RT staff, it became necessary to advocate for the role of OT. All

group programming at the CLC was conducted by only RT staff with the exception of one gaming and one exercise group. In order to ensure that OT maintained a role in the sensory programming, the OTS advocated for the evaluations to be completed by the OTR and that OT staff would then provide suggestions to RT staff who could work with the veterans. Moving into the implementation phase, advocating for the veterans then became the primary focus throughout the remainder of the DCE. The OTS spoke with nursing staff on countless occasions about the importance of veterans partaking in activities and group programs in order to support occupational justice and prevent deprivation.

References

- Alzheimer's Association. (2018). 2018 Alzheimer's disease facts and figures. *Alzheimer's & Dementia*, 14(3), 367- 429.
- Anderson, K., Bird, M., Macpherson, S., McDonough, V., & Davis, T. (2011). Findings from a pilot investigation of the effectiveness of a Snoezelen room in residential care: Should we be engaging with our residents more? *Geriatric Nursing (New York, N.Y.)*, 32(3), 166-77. doi:10.1016/j.gerinurse.2010.12.011
- Atchison, B. J. & Dirette, D. K. (2012). *Conditions in occupational therapy: Effect on occupational performance*, (4th ed.). Baltimore, MD: Lippincott Williams & Wilkins
- Bauer, M., Rayner, J., Koch, S., & Chenco, C. (2012). The use of multi-sensory interventions to manage dementia-related behaviours in the residential aged care setting: A survey of one Australian state. *Journal of Clinical Nursing*, 21(21-22), 3061-3069. doi:10.1111/j.1365-2702.2012.04306.x
- Bauer, M., Rayner, J., Tang, J., Koch, S., While, C., & O'Keefe, F. (2015). An evaluation of Snoezelen® compared to 'common best practice' for allaying the symptoms of wandering and restlessness among residents with dementia in aged care facilities. *Geriatric Nursing*, 36(6), 462-466. doi:10.1016/j.gerinurse.2015.07.005
- Berkheimer, S., Qian, C., & Malmstrom, T. (2017). Snoezelen therapy as an intervention to reduce agitation in nursing home patients with dementia: A pilot study. *Journal of the American Medical Directors Association*, 18(12), 1089-1091.
<http://dx.doi.org/10.1016/j.jamda.2017.09.009>
- Butcher, L. (2018). Caring for patients with dementia in the acute care setting. *British Journal of Nursing*, 27(7), 358-362. doi:10.12968/bjon.2018.27.7.358

Centers for Disease Control and Prevention. (2018). *Alzheimer's disease and related dementias*.

Retrieved from <https://www.cdc.gov/features/alzheimers-disease-dementia/index.html>

Choi, S., Budhathoki, C., & Gitlin, L. (2017). Co-occurrence and predictors of three commonly occurring behavioral symptoms in dementia: Agitation, aggression, and rejection of care. *The American Journal of Geriatric Psychiatry, 25*(5), 459-468.

doi:10.1016/j.jagp.2016.10.013

Cohen-Mansfield, J. (1991). *Instruction manual for the Cohen-Mansfield Agitation Inventory (CMAI)*. Rockville, MD: The Research Institute of the Hebrew Home of Greater Washington

Cohen-Mansfield, J. (2017). Activity groups for persons with dementia: Personal predictors of participation, engagement and mood. *Psychiatry Research, 257*, 375-380.

doi:10.1016/j.psychres.2017.07.045

Cohen-Mansfield, J., Dakheel-Ali, M., Marx, M., Thein, K., & Regier, N. (2015). Which unmet needs contribute to behavior problems in persons with advanced dementia? *Psychiatry Research, 228*(1), 59-64. doi:10.1016/j.psychres.2015.03.043

Cohen-Mansfield, J., Marx, M., Dakheel-Ali, M., & Thein, K. (2015). The use and utility of specific nonpharmacological interventions for behavioral symptoms in dementia: An exploratory study. *The American Journal of Geriatric Psychiatry*.

doi:10.1016/j.jagp.2014.06.006

Cohen-Mansfield, J., Marx, M., Thein, K., & Dakheel-Ali, M. (2010). The impact of past and present preferences on stimulus engagement in nursing home residents with dementia. *Aging & Mental Health, 14*(1), 67-73. doi:10.1080/13607860902845574

Cole, M. & Tufano, R. (2008). *Applied theories in occupational therapy: A practical approach*. Thorofare, NJ: SLACK Incorporated.

Collier, L., & Jakob, A. (2017). The multisensory environment (MSE) in dementia care: Examining its role and quality from a user perspective. *Health Environments Research & Design Journal (HERD)*, 10(5), 39–51. <https://doi.org/10.1177/1937586716683508>

Cruz, J., Marques, A., Barbosa, A., Figueiredo, D., Sousa, L. X. (2013). Making sense(s) in dementia: A multisensory and motor-based group activity program. *American Journal of Alzheimer's Disease and Other Dementias*, 28(2), 137-146. doi: 10.1177/1533317512473194

Dabelko-Schoeny, H., Shin, J., Kowal, E., Overcash, J., Caterino, J., & Happ, M. (2018). Staff perceptions of adult day centers providing post-acute care for persons with dementia. *Journal of Applied Gerontology*, 1-20. doi:10.1177/0733464818757001

Edwards, M. (2015). Family caregivers for people with dementia and the role of occupational therapy. *Physical & Occupational Therapy in Geriatrics*, 33(3), 220–232. <https://doi.org/10.3109/02703181.2015.1031926>

Eldercare Locator. (n.d.). Adult day care. Retrieved from https://eldercare.acl.gov/Public/Resources/Factsheets/Adult_Day_Care.aspx

Forsyth, K., Lai, J-S., & Kielhofner, G. (1999). The assessment of communication and interaction skills (acis): Measurement properties. *The British Journal of Occupational Therapy*, 62(2), 69-74. doi:10.1177/030802269906200208

Gustafsson, C., Svanberg, C., & Müllersdorf, M. (2015). Using a robotic cat in dementia care: A pilot study. *Journal of Gerontological Nursing*, 41(10), 46-56. doi:10.3928/00989134-20150806-44

- Haegele, J., & Porretta, D. (2014). Snoezelen multisensory environment. *Palaestra*, 28(4).
- Harris-Kojetin, L., Sengupta, M., Park-Lee, E., Valverde, R., Caffrey, C., Rome, V., & Lendon, J. (2016). Long-term care providers and services users in the United States: Data from the national study of long-term care providers, 2013-2014. *Vital & Health Statistics, Series 3*(38), v-105.
- Heyl, V., & Wahl, H.-W. (2012). Managing daily life with age-related sensory loss: Cognitive resources gain in importance. *Psychology and Aging*, 27(2), 510–521.
<https://doi.org/10.1037/a0025471>
- Livingston, G., Kelly, L., Lewis-Holmes, E., Baio, G., Morris, S., Patel, N., . . . Cooper, C. (2014). A systematic review of the clinical effectiveness and cost-effectiveness of sensory, psychological and behavioural interventions for managing agitation in older adults with dementia. *Health Technology Assessment*, 18(39), v-226.
doi:10.3310/hta18390
- Lykkeslet, E., Gjengedal, E., Skrondal, T., & Storjord, M. (2014). Sensory stimulation - A way of creating mutual relations in dementia care. *International Journal of Qualitative Studies on Health and Well-Being*, 9, 23888-23888. doi:10.3402/qhw.v9.23888
- Maseda, A., Cibeira, N., Lorenzo-López, L., González-Abraldes, I., Buján, A., Labra, C., & Millán-Calenti, J. (2018). Multisensory stimulation and individualized music sessions on older adults with severe dementia: Effects on mood, behavior, and biomedical parameters. *Journal of Alzheimers Disease*, 63(4), 1415-1425.
- McMichael, L. (2016). *Intro to strategic planning and continuous quality improvement tools: A lean six sigma approach for occupational therapists*. Unpublished PowerPoint, Community Health Network.

- Morgan-Brown, M., Brangan, J., McMahon, R., & Murphy, B. (2018). Engagement and social interaction in dementia care settings. a call for occupational and social justice. *Health & Social Care in the Community*, 27(2), 1-9. doi:10.1111/hsc.12658
- Moyle, W., Cooke, M., Beattie, E., Shum, D., O'Dwyer, S., Barrett, S., & Sung, B. (2014). Foot massage and physiological stress in people with dementia: A randomized controlled trial. *The Journal of Alternative and Complementary Medicine*, 20(4), 305-311. doi:10.1089/acm.2013.0177
- Mytton, C., & Haigh, J. (2016). Sensory interventions to support the wellbeing of people with dementia: A critical review. *British Journal of Occupational Therapy*, 79(2), 120-126. doi:10.1177/0308022615598996
- Pool, J. (2012). *The pool activity level (PAL) instrument for occupational profiling*, (4th ed.). London, UK: Jessica Kingsley Publishers
- Raber, C., & Stone, M. (2015). An exploration of volition: Caregiver perceptions of persons with dementia. *The Open Journal of Occupational Therapy*, 3(1). doi:10.15453/2168-6408.1075
- Raber, C., Teitelman, J., Watts, J., & Kielhofner, G. (2010). A phenomenological study of volition in everyday occupations of older people with dementia. *British Journal of Occupational Therapy*, 73(11), 498-506. doi:10.4276/030802210X12892992239116
- Reisman, J. E., & Hanschu, B. (1992). *Sensory Integration Inventory - Revised for individuals with developmental disabilities: User's guide*. PDP Press
- Robinson, H., Broadbent, E., & MacDonald, B. (2016). Group sessions with Paro in a nursing home: Structure, observations and interviews. *Australasian Journal on Ageing*, 35(2), 106-12. doi:10.1111/ajag.12199

Rosen, J., Burgio, L., Kollar, M., Cain, M., Allison, M., Fogleman, M., . . . Zubenko, G. S.

(1994). The Pittsburgh Agitation Scale: A user-friendly instrument for rating agitation in dementia patients. *The American Journal of Geriatric Psychiatry*, 2(1), 52-59. <http://dx.doi.org/10.1097/00019442-199400210-00008>

Ross, M. (1997). *Integrative group therapy: Mobilizing coping abilities with the five-stage group*. AOTA, Inc.: Bethesda, MD.

Sánchez Fernández, A., Maseda, A., Marante Moar, P., Labra, C., Lorenzo-López, L., & Millán-Calenti, J. (2016). Comparing the effects of multisensory stimulation and individualized music sessions on elderly people with severe dementia: A randomized controlled trial. *Journal of Alzheimers Disease*, 52(1), 303-315.

Scales, K., Zimmerman, S., & Miller, S. (2018). Evidence-based nonpharmacological practices to address behavioral and psychological symptoms of dementia. *The Gerontologist*, 58(Suppl_1), 102. doi:10.1093/geront/gnx167

Simpson, J. (2014). DSM-5 and neurocognitive disorders. *Journal of the American Academy of Psychiatry and the Law Online*, 42(2), 159-164.

Sung, H., Chang, S., Chin, M., & Lee, W. (2015). Robot-assisted therapy for improving social interactions and activity participation among institutionalized older adults: A pilot study. *Asia-Pacific Psychiatry*, 7(1), 1–6. <https://doi.org/10.1111/appy.12131>

Timmons, S., O'Shea, E., O'Neill, D., Gallagher, P., De, S., McArdle, D., . . . Kennelly, S. (2016). Acute hospital dementia care: Results from a national audit. *Bmc Geriatrics*, 16, 113-113. doi:10.1186/s12877-016-0293-3

The Mental Health Foundation. (1998). *Carers' checklist: Appendix*. Retrieved from <https://www.mentalhealth.org.uk/publications/carers-checklist>

U.S. Department of Veterans Affairs. (2018). *Cincinnati VA Medical Center: Community living center*. Retrieved from

https://www.cincinnati.va.gov/services/gec_community_living_center.asp

VHA Innovation Ecosystem. (n.d.). *Spark, seed, spread: Introducing VA's innovators network designed by employees for veterans*. Retrieved from

<https://medium.com/vainnovation/spark-seed-spread-c8554cc36a4e>

Wenborn, J., Challis, D., Pool, J., Burgess, J., Elliott, N., & Orrell, M. (2008). Assessing the validity and reliability of the Pool Activity Level (PAL) Checklist for use with older people with dementia. *Aging & Mental Health, 12*(2), 202–211.

<https://doi.org/10.1080/13607860801984375>

World Health Organization. (2017). *Dementia*. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/dementia>

Yang, Y., Wang, C., & Wang, J. (2016). Effect of aromatherapy massage on agitation and depressive mood in individuals with dementia. *Journal of Gerontological Nursing, 42*(9), 38-46.

Table 1

SWOT Analysis

SWOT Category	Chillicothe VA	Cincinnati VA
Strengths	Dedicated dementia unit	Both OT and RT staff are invested in developing sensory programming and sustaining it
	Interdisciplinary involvement (psychology, nursing, recreation therapy)	Grant has been secured for the purchase of sensory equipment/materials
	Therapeutic design used throughout the environment (murals, virtual fish tank, pictures relevant to time periods when veterans were younger)	Sensory programming has been done within the mental health unit in the main hospital, so staff with past experience can act as valuable resources
	Have reported positive outcomes such as reduced falls and problem behaviors	RT currently offers multiple groups that may be able to be adapted
	Dedicated sensory room	Bird aviaries on-site
Weaknesses	No involvement of OT practitioners	Lack of a dedicated dementia unit
	Staff may direct veterans to a sensory area on the unit but then leave them and do not necessarily engage with the veterans	Lack of a dedicated sensory space Small population of veterans with dementia who are divided among three units in the facility
Opportunities	Nurses and the RT have access to the sensory room and can take patients there to interact with them	Staff currently report having a difficult time engaging veterans with dementia, so implementing sensory programming is an opportunity to better serve

these veterans

With the interdisciplinary dedication from OT and RT, there is the opportunity to provide both individualized and group sensory sessions

Possibility of building a new dementia unit in the future

Threats

RT reported that robotic pets were good in the beginning but have since become less of a focus

No pre- and post-assessments are being used

No screening process is in place to determine which veterans would be most appropriate

Shortage of staff – there are only two OT practitioners within the facility, so it may be difficult to provide group sessions with veterans with dementia in addition to providing treatment for all veterans in need of short-term rehab; nursing currently has 17 open positions within the facility, so nurses are being overworked and have no time to fill out additional paperwork or record observations of veterans

Table 2

Sensory Materials

Current CLC Inventory	Items Available from the Mental Health Unit	Items Requested through Grant Funds	Items Requested through RT Budget
Assorted games (bingo, cards, checkers, dominoes, memory games)	Boomwhackers	Assorted DVDs	Color-changing sphere
	Essential oils	Bubble panel	Conversation cards
	Megapods (2)	Bubble tube	Follow Your Nose
Balloons	Squish balls	Fidget kit	Projector and discs
Bean bags		Gel aquarium	Sound machine
Color morph lights (3)		Gel floor tile	Tactile discs
Disco light		Newton's light up cradle	Weighted blankets
Dumbbell shape filled with water and objects		Sand in Motion	Yacker Tracker (3)
		Scentscapes	
Jingle bell stick		Water Dancing Speakers	
Maraca (1)			
Miscellaneous fidgets			
Noisemakers with beads (2)			
Peg and loop manipulative			
Puzzles, assorted (4)			
Reminiscence items			

ROM dances

Textured balls

Textured fabric
swatches

Textured hand
mittens (3)

Topic beach ball

Touch-N-Tell
(2)

Traffic signal
lamp

Water and glitter
tubes (3)

Wiggly Giggly
ball

Wooden
manipulatives
(2)

Wooden
pegboard and
shaped pegs

Appendix A.

DCE Goal Attainment Scale

Level of Expected Outcome	Goal 1	Goal 2	Goal 3	Goal 4
+2 Much more than expected	Cognitive and sensory evaluations (if appropriate) completed with 7+ veterans	OT student provides staff education for staff from 4+ disciplines within the CLC	7+ group protocols completed by OT student	Resource binder rated as “extremely satisfactory” per report of DCE mentors
+1 More than expected	Cognitive and sensory evaluations (if appropriate) completed with 6 veterans	OT student provides staff education for staff from 3 disciplines within the CLC	6 group protocols created by OT student	Resource binder rated as “very satisfactory” per report of DCE mentors
0 Most likely outcome	Cognitive and sensory evaluations (if appropriate) completed with 5 veterans	OT student provides staff education for staff from 2 disciplines within the CLC	5 group protocols created by OT student	Resource binder rated as “satisfactory” by DCE mentors
-1 Less than expected	Cognitive and sensory evaluations (if appropriate) completed with 4 veterans	OT student provides staff education for staff from 1 discipline within the CLC	4 group protocols created by OT student	Resource binder rated as “less than satisfactory” per report of DCE mentors
-2 Much less than expected	Cognitive and sensory evaluations (if appropriate) completed with 3 or fewer veterans	OT student provides staff education for no staff within the CLC	3 or fewer group protocols created by OT student	Resource binder rated as “not at all satisfactory” per report of DCE mentors

Appendix B.

DCE Outcome Measure for Veteran Engagement

1	2	3	4
Disturbed/Disengaged	Neutral	Engaged	Very Engaged
Pacing/restlessness	Scanning the environment (e.g.,	Responding to conversation initiated	Laughing
Calling/Yelling out/Moaning	Following others or noises with eyes, but no conversation)	by another	Smiling
Crying/teary	Dozing/sleeping	Describing the materials	Initiating conversation/ Asking questions
Wandering		Interacting with materials by touching them	Pointing/Gesturing
Verbal aggression		Indicating interest (focused attention, but no conversation)	Eye contact
Screaming			Singing (if applicable)
Making verbal sexual advances			Collaborating with others (if applicable)
Cursing			
Threats			
Constant unwarranted request for attention or help			
Physical aggression			
Hitting			
Kicking			
Grabbing onto people			
Pushing			
Throwing things			
Biting			
Scratching			
Spitting			
Hurting self or others			
Destroying property			
Making physical sexual advances			
Withdrawn			

Appendix C.

Sample Ross (1997) Five-Stage Model Group Protocol

Group Title: OT/RT Sensory Group

Theme: Sports

Supplies:

- 2# Dumbbell or Senior Fitnessize
- 3 different textured balls
- Wiggly Giggly ball
- Beanbags + target
- Megapod
- Device to access music
- Old sports photos

Description:

- Stage I: Orientation
 - Pass a weight around the circle and allow members to introduce themselves
 - Pass 3 textured balls around the circle for tactile input
 - Pass around the wiggly giggly ball; have members say their favorite sport
- Stage II: Movement
 - UE Exercises
 - May go through motions associated with different sports (pitching a baseball, shooting a basketball, throwing a football, etc)
 - Allow each participant to choose a movement and the rest of the group members follow
- Stage III: Visual-Motor Perceptual Activities
 - Throwing with accuracy: tossing a bean bag at a target
 - Matching game on the Megapod-uses sports images (start with 6 squares)
- Stage IV: Cognitive Stimulation and Function
 - Reminiscence: old photos
 - Play “Take Me Out to the Ballgame” on speakers
- Stage V: Closing
 - Pass the weight around the circle again and have each member say their favorite part of the session

Alternative Suggestions:

- To make Stage III more difficult, have vets throw bean bags into something
- If vet is unable to reach/touch screen in Stage IV, have them point or tell you which one they want to choose
- Scents of types of ballpark foods or leather (baseball glove) could be added to stimulate sense of smell

Types of Stimulation Provided: Tactile, proprioceptive, visual, and auditory

Appendix D.

Sample Themed, Unstructured Group Protocol

Group Title: OT/RT Sensory Group

Theme: The Ocean

Possible Activities:

- Sand in Motion
 - Visual Stimulation
- Gel Aquarium
 - Visual Stimulation
 - Tactile Stimulation (gel)
 - Proprioceptive Stimulation (place on vet's lap)
- Dancing Water Speakers
 - Visual Stimulation
 - Auditory Stimulation
- ROM
 - Proprioceptive Stimulation
 - Moving feet in the water (ankle pumps)
 - Bringing water to face (elbow flexion/extension)
 - Throwing water into the air (shoulder flexion/extension)
- "Paint the Ocean" DVD
 - Visual Stimulation
 - Auditory Stimulation
- Bubble Tube
 - Visual Stimulation
- Bubble Panel
 - Visual Stimulation
 - Auditory Stimulation
 - Tactile Stimulation (vibration)

Types of Stimulation Potentially Provided: Tactile, proprioceptive, visual, and auditory