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# Preventing Dysfunctional Behaviors of Those with Dementia Based on the Progressively Lowered Stress Threshold Model

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Capstone Project: Preventing Dysfunctional Behaviors of Those with  
Dementia Based  
on the Progressively Lowered Stress Threshold Model

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### Abstract

Dementia is a disease that impacts millions of people worldwide. Amongst the complications of this disease are behaviors that affect not only the individual with dementia but also their caregivers. These behaviors can be challenging especially for formal caregivers and it is important that they are taught how to prevent them. Long-term care facilities are the perfect settings for this type of education. For this reason, an educational program, including a needs assessment, PowerPoint presentation, and on-site support, was brought to a locked, assisted-living unit of Jewish Geriatric Services in Longmeadow, Massachusetts. The educational program was inspired and supported by a specific nursing model: the Progressively Lowered Stress Threshold model. This model focuses on preventing behavioral symptoms of those with dementia and it was effective in increasing the amount of learning for participants while decreasing behaviors and caregiver reactions with clinical significance.

*Keywords:* dementia, caregivers, behaviors, prevention

### **Problem Identification: Background and Significance**

According to the World Health Organization (WHO), dementia is a disease that affects an estimated 35.6 million people worldwide and that number is expected to nearly double every 20 years to 65.7 million in 2030 and 115.4 million in 2050 (WHO, 2012). This disease poses many complications including behavioral and psychological symptoms. These symptoms are non-cognitive and include: agitation, aberrant motor behavior, anxiety, elation, irritability, depression, apathy, disinhibition, delusions, hallucinations, and sleep or appetite changes (Cerejeira, 2012). The ramifications of these behaviors have had a profound impact on individuals with dementia as well as those that care for them. In a systematic review by Gaugler et al. (2009), it was found that behavioral symptoms were predictive of nursing home admissions in over half of all high quality studies reviewed. Findings have also shown that the impact on the formal caregivers of these institutions can be significant (Miyamoto et al., 2010). For this reason, it is important that attempts be made to prevent these behavioral symptoms.

The progressively lowered stress threshold (PLST) model by Hall & Buckwalter (1987) is a conceptual framework that has elements in its theoretical framework aimed at preventing challenging behaviors. The PLST model postulates that the behaviors of those with dementia can be used to establish the appropriate level of environmental stimuli, care, and support to maximize patient comfort and safety (Hall & Buckwalter, 1987). This model seeks to improve the quality of life of those with dementia (Mitty & Flores, 2007) and has been found to meet all six criteria for a nursing intervention (Gerdner et al., 1996). It was developed around the time that *A Guide to Alzheimer's Disease* and *The 36-Hour Day* were written and has been evaluated for efficacy by the Rosalyn Carter Institute for Caregiver (Smith et al., 2004; Burke et al., 2013).

Research into symptom clusters and behavioral states are the underpinning of the PLST model (Hall & Buckwalter, 1987). Cognitive, affective, and conative losses are the three categories of loss that researchers have found in the past. Hall & Buckwalter (1987) add a fourth cluster called the PLST which is centered on stress-related symptoms. The model proposes that stress-related symptoms can either be anxious or dysfunctional. These two categories of symptoms constitute the second and third types of behavior exhibited by those with ADRD, the first being baseline or a calm state which can progress to anxious if an adult with dementia feels stress. Anxiety, in turn, can advance further to dysfunctional behaviors if the stress level is allowed to continue or increase (Hall & Buckwalter, 1987). It is these dysfunctional behaviors which are the most alarming and can include: confusion, “Sundowner’s Syndrome”, agitation, combativeness, etc. Collectively, these types of behaviors represent the above mentioned fourth symptom cluster presented by Hall & Buckwalter (1987).

The catalysts for Hall & Buckwalter’s (1987) research and development of the PLST model are the stress and coping theories by Coyne & Lazarus (1981) and Selye (1980). Coyne & Lazarus view stress, in these theories, in terms of transactions between person and environment. Research by these two psychologists concluded that the way an individual appraises and copes with stress will determine the outcome of one’s emotions and ability to adapt. These researchers postulated that emotions and coping are strongly correlated with cognition, along with environmental demands. “How people appraise their ongoing commerce with the environment and how their coping selects and transforms the environment must be recognized as important to the understanding of stress and coping” (Coyne & Lazarus, 1981, p. 158). Selye (1980) asserts that individuals are exposed to stress continuously and that the absence of stress is death. Selye states that stress is not to be confused with nervous tension and an individual’s short-term and

long-term reactions to it are collectively called the general adaptation syndrome (GAS). There are three stages to the GAS and they include the alarm reaction stage, the stage of resistance, and the stage of exhaustion. These stages of the GAS are analogous to the three stages of a human's life, "childhood, adulthood and senility" and, the goal throughout a human life is to have a balance between hypo- and hyper-stress (Selye, 1980, p. 129).

The above psychological theories by Coyne & Lazarus and Selye are what fueled Hall & Buckwalter (1987) to formulate the four assumptions on which the PLST model is based. These assumptions are:

- “1. All humans require some control over their person and their environment and need some degree of unconditional positive regard.
2. All behavior is rooted and has meaning; therefore, all catastrophic and stress-related behaviors have a cause.
3. The confused or agitated patient is not comfortable and should be regarded as frightened. All patients have the right to be comfortable.
4. The patient exists in a 24-hour continuum.” (p. 401)

Hall & Buckwalter (1987) hypothesize that baseline, or calm state, behaviors can be brought about if the losses that those with ADRD have can be supported by controlling stress-related factors. These factors include: “fatigue; change of environment, caregiver, or routine; internal or external demands to function beyond the limits imposed by cortical deterioration; competing multistimulus situations; or physical stressors (e.g., acute illness, discomfort, or medication reaction” (p. 420-403).



The PLST model is most effective in the middle stages of dementia and caregivers can use these anxious behaviors to determine how much or how little stimuli is appropriate for each individual at each stage of the disease (Smith et al, 2004; Hall & Buckwalter, 1987). The authors claim that caregivers can provide more effective care if six principles are followed (Hall & Buckwalter, 1987). These principles include:

- “1. Maximize the level of safe function by supporting all areas of loss in a prosthetic manner.
2. Provide the patient with unconditional positive regard.
3. Use behaviors indicating anxiety and avoidance to determine limits of levels of activity and stimuli.
4. Teach caregivers to “listen” to the patient, evaluating verbal and nonverbal responses.
5. Modify environment to support losses and enhance safety.
6. Provide ongoing education, support, care and problem-solving for caregivers” (p. 404).

### **Review of the Literature**

#### **Methods**

The phrase “progressively lowered stress threshold” was entered into the computerized search of PubMed and Cochrane Reviews. Twenty-five and six articles were found respectively. One of the 25 articles from PubMed was not pertinent to the present review and 5 articles of the Cochrane Reviews overlapped those of PubMed. One article could not be retrieved. Amongst the systematic reviews of the Cochrane Reviews, one was found using the

above phrase. Other articles were found via reference lists of the above mentioned works. The final search yielded twenty-eight published articles which are included in this review.

### **Evidence**

It was determined through this review of the literature (ROL) that the PLST is well known and used amongst both the psychological and nursing professions. For instance, in a 21-article review it was found to be the most frequently cited theoretical framework used in musical interventions (Sherratt et al., 1997). In a review of nineteen evidence-based psychological treatments (EBTs) it was found to meet the criteria for “psychoeducational building” (Gallaher-Thompson & Coon, 2007, p. 39). Also, in a review of fourteen randomized controlled trials (RCTs) it was found to meet the criteria for EBT for older adults with dementia (Lognsdon et al., 2007). One of the RCTs of this review was a pilot study for a home-based caregiver training program in Taiwan that employed the PLST model (Huang et al., 2003). This pilot study, which went on to be a full-scale project in 2012 (Kuo et al., 2012), was critiqued in an 18-study systematic review by Cook et al. (2012) where the PLST was found to meet the criteria for being a functional analysis-based intervention. This type of intervention requires that a therapist understand the causes of an individual’s distressed behaviors and how to help a patient and his caregivers manage them (Cook et al., 2012). The goal of the above mentioned full-scale project was to train caregivers of those with ADRD to identify causative stressors of behavioral problems and offer suggestions on how to modify the environment and the events that occur prior to these problems. The overall results were an improvement in the health-related quality of life of family caregivers of those with dementia along with a decreased risk for depression (Kuo et al., 2012). This idea of modifying environments based on the PLST model was also examined in a separate study which compared the effects of a special care unit (SCU), specifically for those

with Alzheimer's, with traditional (integrated) nursing home units (Swanson et al., 1994). The intention of the SCU was to provide an environment with modified stimuli. The results of this quasi-experimental study were no significant effects on direct measures of cognitive and functional abilities of those with Alzheimer's on the SCU. However, the indirect measures of function, including spontaneous verbal and nonverbal interactions with other residents, family members, or staff, showed significant results (Swanson et al., 1994).

The PLST model has been examined in other community-based studies via training-based programs with the results of significantly less depressed caregivers and statistically significant effects on impact, burden, and satisfaction but, no difference with regards to mastery (Stolley et al., 2002; Buckwalter et al., 1999). Additionally, in a two-group randomized single blind pilot study, mood and immune outcomes of caregivers after a PLST-based intervention were evaluated with the overall results being a lack of significant effect on mood but, a significant effect on enhancement and preservation of T-cell immune function of caregivers (Garand et al., 2002).

Evidence for the PLST model can also be found in the institutional setting. For example, in a study by Gerdner et al. (2005), the frequency of agitation by those with ADRD, as postulated by the PLST, in 6 long-term care facilities in Iowa was evaluated. The results were that peak levels of agitation occurred most often at mid-morning and mid-afternoon, with the majority in mid-afternoon. The causes for such agitated behaviors was further evaluated and analyzed in a video-recorded study of nursing homes in Sweden (Ragneskog et al., 1998) with the most common causes of agitation being: "discomfort, a wish to be served immediately, conflict between patients or with nursing staff, reactions to environmental noises or sound, and invasion

of personal space” (Ragneskog et al., 1998. p. 195). These antecedents appear to all be consistent with the PLST model.

Aside from agitation, aggressive behavior has also been analyzed in the institutionalized setting through the lens of the PLST model. The analysis of one study found a non-linear relationship between cognitive impairment and verbal aggressiveness behavior (VAB) (Voyer et al., 2005), this being the first result contrary to the PLST model which states that patients with more severe cognitive impairment will have more VAB (Hall & Buckwalter, 1987). In a separate study by Oh et al. (2005), a training program based on the PLST model and gerontological and psychiatric literature was utilized in a nursing home in Korea with the mean scores of aggressive behavior not differing significantly post-intervention but, with significant improvement in staff’s ability to manage aggressive behaviors.

### **Application**

From the above evidence, it is clear that the effectiveness of the PLST model has been well evaluated but, what about its applicability? There seems to be considerable evidence to support this for caregivers in both community and clinical settings as well. It has been used in the community to educate caregivers on the management of both stress levels and disturbing behavioral symptoms of those with ADRD (Lindsey & Buckwalter, 2009; Hall, Buckwalter et al., 1995). It is postulated that this type of education could be implemented by nurses of multiple disciplines with the end result of helping improve family-competency, decreasing stress levels, and delaying nursing home admissions with its costs (Hall, Buckwalter et al., 1995). It has been incorporated into the clinical setting with suggestions on how to rapidly assess behavioral problems, how to meet a specific need, how to evaluate the success of interventions and, how to manage dysfunctional behaviors when they arise (Hall, Buckwalter et al., 1995; Hall, Gerdner et

al., 1995). The PLST model has been used in the acute care setting, specifically, with the hope of decreasing dysfunctional behaviors by attempting such interventions as minimizing demands during peak periods of the day like shift change or meal times and, maintaining consistency as much as possible by avoiding unnecessary room or roommate changes (McCloskey, 2004) .

The above applications of the PLST model to both the community and clinical arenas show its universality and this characteristic is further enforced by a body of literature by Smith et al (2005). In this article, the model is applied throughout the continuum of care for a particular individual with ADRD. Smith et al. (2005) used an amalgamation of persons with dementia named Vera Detwiler to develop a care plan based on the PLST principles throughout the progression of her disease. For instance, while Vera was at home, an intervention such as “providing a large-print month-long calendar that outlines daily routines as a visual reminder” was implemented to help “maintain safe function by supporting losses in a prosthetic manner” (Smith et al., 2005, p. 64). As Vera’s disease progressed and assisted living was necessary, interventions such as “refer to comprehensive social history in chart if question arise about habits, preferences, and behaviors” to support the PLST principle of “provide on-going education, support, care and assistance with problem-solving to caregiver” were suggested (Smith et al., 2005, p. 70). When Vera was hospitalized, this principle was satisfied by caregivers referring to the assisted living care plan. Lastly, when Vera was admitted to a nursing facility, an intervention such as “encourage participation in Vera’s favorite activities” fulfilled the principle of “modify the environment to support losses” (Smith et al., 2005, p. 77).

Universality of the PLST model throughout health care is apparent and it also appears that the model is suitable for multiple professions. Stolley et al. (1998) exemplified this by extending the six principles of care to spiritual leaders. The authors did this by using the stress-

related factors of the model to provide examples for use. For instance, for the factor, “fatigue”, (Hall & Buckwalter, 1987, p. 402) it was suggested that pastoral-care professionals plan visits at a time when it is best for the cognitively impaired individual. This time may differ from one person to another so, these professionals should ask each caregiver about what is best for each care recipient. The need for pastoral-care professionals to wear traditional religious clothing is a second example of model use; this time addressing the stress-related factor of “change in caregiver, environment or routine” (Hall & Buckwalter, 1987, p. 402).

The PLST model’s universality in different settings and professions is obvious, and its generalizability seems to be further demonstrated through its application to studied interventions such as music. Gerdner & Swanson (1993) attested to this with the application of a musical intervention to 5 patients from a health center that were known to be confused and agitated. One-hour residual effects of this intervention were examined with the findings that there was a lag time between intervention and lessened agitation. It was proposed that this may be due to the time needed for these patients to process the music. It was also proposed that temporal patterning, based on the PLST model, must be utilized in order for the music intervention to be implemented at the right time, prior to agitated behaviors occurring (Gerdner & Swanson, 1993). This idea of music as therapy for those with ADRD was further translated into a children’s picture book entitled, *Musical Memories*, which is based on the PLST model (Gerdner, in press). The premise of this book is that the possible negative behavioral and emotional responses of children, such as grandchildren, towards those with dementia can have a negative effect on such a person, and that listening to music together could be helpful (Gerdner & Buckwalter, 2013).

Application of a model to multiple settings, professions, and interventions is impressive but, what is even more impressive is when it is used to develop other models. This can be seen

with the PLST model and its use to develop several conceptual frameworks such as one to enhance the cognitive function of those with dementia (Cheung et al., 2011). The authors of this discursive paper reviewed the literature of stress and anxiety of those with dementia and integrated this information into the PLST model with the end result of a framework with three stages. The first stage postulates that as stress accumulates and stress levels are exceeded, without intervention, anxiety results. The second stage explains that as anxiety increases, depression also ensues and the combination will lead to the third stage where dysfunctional behavior occurs along with compromised cognitive functioning. The authors conclude that this expanded model can guide interventional development for those with dementia (Cheung et al., 2011).

As those with dementia experience an imbalance between sensory-stimulating and sensory-calming activities, intrapsychic discomfort results (Kovach, 2000). This idea is emulated in a second conceptual framework called the Sensoristasis Model by Kovach. This model is built on several theoretical perspectives including the PLST model. The Sensoristasis Model proposes that certain interventions can help to pace sensory-stimulating and sensory-calming activity and help delay functional decline in those with dementia. Based on the PLST model, Kovach states that symptoms of anxiety and avoidance can signal to decrease activity. Two items that Kovach states are missing from the PLST model, however, is when to increase activity or how to provide a balance between high and low environmental pressures.

As the Sensoristasis Model included the PLST model, along with other theoretical perspectives, so too does the Touch-Stress model by Kim & Buschmann (2004) employ the PLST model along with the Touch model by Hollinger & Buschman (1993). The Touch model proposes that physical touch between caregivers and patients improves emotions, behavior, and

function. The conglomerate of the two models is the basis for the Touch-Stress model which hypothesizes that touch and environmental manipulation may reduce emotional disorders and dysfunctional behaviors by those with Alzheimer's disease (AD). The authors go on to postulate that physical touch may provide relaxation and reduce discomfort which could prevent stress levels from being exceeded (Kim & Buschmann, 2004).

### **Synthesis of Literature**

The evidence of the effectiveness of the PLST model is vast. The evidence for its use appears to be stronger in the community setting than in the clinical setting. Evidence in the community includes multiple RCTs (Huang et al., 2003; Lognsdon et al., 2007; Kuo et al., 2012) with one being critiqued in a large systematic review (Cook et al., 2012). Its use in the clinical setting, however, contains no RCTs but does include studies in long-term care settings (Gerdner et al., 2005; Oh et al., 2005; Swanson, 1994).

The PLST model's applicability is just as extensive as its evidence. It has been utilized in both community and clinical settings along with its application to an individual's continuum of care throughout the lifespan of her disease (Lindsey & Buckwalter, 2009; Smith et al., 2005; McCloskey, 2004; Hall, Buckwalther et al., 1995; Hall, Gerdner et al., 1995). Multiple professions have been documented in its use and its application to other studied interventions is impressive (Stolley et al., 1998; Gerdner & Swanson, 1993). What is even more impressive is its use to develop other conceptual frameworks (Kim & Buschmann, 2004; Kovach, 2000).

### **Limitations**

The limitations for this model seem to be few. There was the one contrary finding with respect to cognitive impairment and verbal aggression (Voyer et al., 2005). In addition, has been one source of criticism by Richards & Beck (2004) who perceived the six principles of the PLST



model to not be specific enough and that the authors do not clearly state in their publications how the concepts of the model relate. Having used this model personally with a family member, however, it should be noted that its lack of specificity was helpful as adaptation in different stages of disease and environmental situations was necessary.

## **Project Description and Implementation**

### **Theoretical Framework**

The encompassing theoretical framework behind this project is Lewin's change theory which postulates that change occurs in three stages: unfreezing, moving and refreezing. Unfreezing involves preparing individuals for change by attempting to eliminate restraining forces and supporting driving forces. Moving includes encouraging individuals to embrace a new perspective by open communication and involvement by all participants. Finally, refreezing includes reinforcing this new perspective by support and assistance to its implementation. (Lewin, 1951; as cited by Lee, 2005). The theoretical framework interlaced within the Lewin's change theory, with the specific goal of lessening behavioral symptoms of those with dementia in a long-term care facility, is the above mentioned PLST model by Hall & Buckwalter (1987).

### **Community Setting and Population**

There were two settings for this project. The first was on the Garden Level of Ruth's House which is a locked, assisted-living community for those with dementia. The second setting was in the community/movie room of Ruth's House. All staff of Ruth's House of Jewish Geriatrics Services in Longmeadow, Massachusetts was invited to the educational presentation which took place in the above community/movie room on both the first and second shifts of work on two consecutive days. Staff from nursing, administration, housekeeping and the kitchen was present.

**Key Stakeholders**

The key stakeholders for this project included residents with dementia on the Garden Level, their formal caregivers, nurse managers, and the administrative staff of the above facility. The project manager was the unit manager of the Garden Level. She partnered with the University of Massachusetts, Amherst and guided and supported the student throughout the project implementation.

**Method**

As mentioned previously, the Lewin change theory was the theoretical framework for the above mentioned educational program. The “unfreezing” portion of the program began with six weeks of needs assessment on the Garden Level of Ruth’s House of the above nursing home. The assessment consisted of chart reviews of each of the 25 residents, with special attention to types of dementia; review of staff-communication log book, with special attention to the most recurrent behaviors; and direct observation of staff and residents. The observation took place in the settings of activities, meals, community events, and personal conversation. All during this period, staff shared their concerns of challenging behaviors from the residents, all of which were validated with encouragement for positive change.

The “moving” phase consisted of a practical PPT presentation that elaborated on the six principles of challenging behavior prevention (Appendix A) from the PLST model (Hall & Buckwalter, 1987) and specific suggestions for prevention of the most prevalent challenging behaviors found on the Garden Level. This information was preceded by general information on dementia, specific information on three particular dementias that were most prevalent on this unit and, the challenging behaviors that come along with this disease including delusions, hallucinations, and agitation (Lindsey & Buckwalter, 2009). The PPT presentation was provided

on the first and second shifts of two consecutive days to try to accommodate as many employees as possible. The outcomes were measured immediately following each presentation through two Likert-scale surveys. The first, the Formal Caregiver Survey, measured the amount of learning for all attendees (appendix B) and the second, the Modified Revised Memory and Behavior Problems Checklist (MRMBPC) (appendix C), measured frequency of certain behaviors and staff reactions to these behaviors based on the Revised Memory and Behavior Problems Checklist (RMBPC). The behaviors included and examined in this second survey were based on the above needs assessment. All attendees filled out both surveys. Only those that worked on the Garden Level, however, were included in a one-group, pre-test, post-test evaluation using the MRMBPC.

To satisfy the “refreezing” stage, the project adopter spent time with staff on the Garden Level, after the above mentioned PPT presentation, on both the first and second shifts for two weeks. The project adopter was available as both a resource and guide to the staff in the implementation of the principles of the PLST model. Information was also posted in the cross-over room (the room that care managers use to document and pass on report to the next shift) of this unit that reflected the main points of this model, as mentioned in the presentation (Appendix D). At the end of this two week period the project adopter individually administered post-tests, using the MRMBPC, to those that worked on the Garden Level.

### **Sample**

All employees of Ruth’s House were invited to the above educational program. Thirty-five attended, of which 19 provided direct care to residents of the Garden Level. Those included in this direct care were activities associates, care managers, nurses and, one housekeeper. The other 16 attendees represented housekeeping, dietary and; nursing, activities and care managers

that do not work on the Garden Level. There were, therefore, two samples for this educational program. The first consisted of all those that attended the presentation. The second consisted of those that provided direct care to those on the Garden level. Sample one completed the Formal Caregiver Survey and the MRMBPC but, only the results of the Formal Caregiver Survey were analyzed. Sample two also completed both the Formal Caregiver Survey and the MRMBPC yet, with all of the results being analyzed both pre- and post-intervention.

### **Protection of Human Subjects**

This quality improvement project included the involvement of human subjects but, it was not research and so, it did not require Internal Review Board (IRB) approval. With that being said, however, because the goal was for resident behavior modification, Jewish Geriatric Services received full disclosure of intent. All staff that attended the educational program complied with the Health Insurance Portability and Accountability Act (HIPAA) and only first names of residents were mentioned. Use of resident names was requested by the project manager in order to make information more relative to staff.

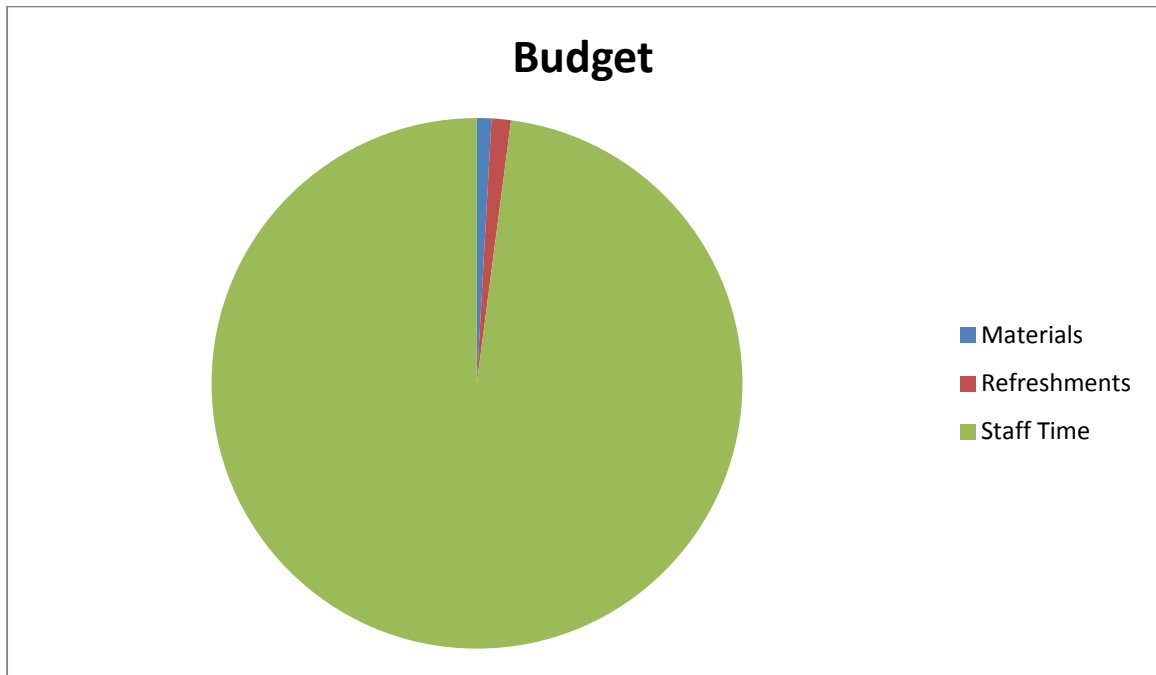
### **Budget**

The budget for this educational program was minimal as outlined below (Table 2). The majority of the budget was staff time as shown below (Figure 1). Staff time, however, did not exceed regularly scheduled shifts. All costs were absorbed by JGS.

<b>Table 1</b>	
<b><i>Budget</i></b>	
<b>NEED</b>	<b>COST</b>
<b>Materials</b>	
Paper for surveys and outcome measures	~\$15.00
Refreshments: Styrofoam cups, sm. paper plates, napkins, coffee/tea, lite pastry	~\$20.00
Community room	\$ 0.00

<b>Staff time</b>	
Time for project manager and administrative staff to review proposal (~\$100/4hrs)	~\$400.00
Time for consultation with project manager/unit manager throughout project (~\$50/4hrs)	~\$200.00
Time for project manager to review final project (~\$50/2hrs.)	~\$200.00
Time for 35 staff members to attend educational ppt. meeting (average \$25/hr. for 1 hr.)	~\$875.00
<b>Total</b>	<b>~\$1700.00</b>

**Figure 1**



**Timeline**

This quality improvement project ran from October, 2013 to May, 2014 as outlined below (Table 2). It appears that the majority of the time was spent on planning but, this accounts for interim time between meeting with JGS, obtaining final proposal approval, and formulating a final plan with the Garden Level manager (project manager). The bulk of the time was spent during the needs assessment and PPT preparation.

<b>Task</b>	<b>October</b>	<b>November</b>	<b>December</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>April</b>	<b>May</b>
<b>Plan</b>	XX	XX	XX					
<b>Needs assessment</b>				XX	XX			
<b>Invitation</b>					XX			
<b>PPT preparation</b>					XX	XX		
<b>Pretest/Intervention</b>						XX		
<b>Post intervention/ Post test</b>						XX	XX	
<b>Program write-up</b>							XX	XX

**Project Results**

**Needs Assessment**

The diagnoses of the Garden Level residents found in the needs assessment consisted of 13 individuals with generalized dementia, 5 with vascular dementia, 3 with Alzheimer’s, 2 with Lewy body dementia, 1 with multifactorial dementia, and 1 with organic brain syndrome. The four most prevalent challenging behaviors found on this unit that caused the most distress to the

caregivers were: medication refusal, personal care refusal, improper urinating and defecating, and exit-seeking behavior.

### **Participants**

The educational program attracted thirty-five participants. The positions represented were nurses (11%), care managers (49%), activities personnel (9%), kitchen personnel (9%), administration personnel (9%), housekeepers (11%), and one of unknown position (2%). All were asked to complete the formal caregiver survey and the MRMBPC and to place their position titles at the top of each. Three individuals left prior to presentation completion and one attendee did not participate in the post-program evaluation. Only the results of the MRMBPC from those that worked on the Garden Level were evaluated both pre-test and post-test.

### **Learning**

Learning was measured according to results from the Formal Caregiver Survey. Due to the above individuals not completing this form, the sample size for this outcome was thirty-one (n=31). The mean scores for each area of learning were above 3 (Table 3) which correlates to “agree” on the Likert rating scale. The highest mean score was in the area of “Increased understanding of dementia” with a value of 3.38. The area of learning with the lowest mean score was “Increased learning of prevention of challenging behaviors” with a value of 3.16. The ranges of scores were 2-4 for all areas of learning except, “Increased understanding of prevention of challenging behaviors”, which had one response of “1” (see Table 3).

### **Behavior Frequency and Reactions**

Behavior frequency and reactions were measured using the MRMBPC. The number of participants that work on the Garden Level completing the pre-test was 20, however, one chose to respond N/A (“9”) to all responses and many chose N/A for multiple behaviors and reactions. For this reason the sample sizes differed for each behavior and response (n=14 to n=19). The

number of participants completing the post-test with the MRMBPC was 16, however, due to N/A (“9”) being chosen, as with the pre-test, the sample sizes again differed (n=10 to n=16) (Table 4). The results revealed a decrease in mean behavior frequencies for 3 of the 12 behaviors with the greatest decrease in mean  $\pm$  SD for “experiencing hallucinations/delusions” from  $2.33 \pm 0.97$  to  $2.00 \pm 1.095$ . After implementing Levene’s test for equality of variance with independent pairs through SPSS, the only behavior frequency with statistical significance was “repeating questions or comments over and over” (P=0.014) (Table 5). The other behavior with a decrease in mean was “arguing, irritability, and/or complaining”. The remaining 9 behaviors showed an increase in mean frequency with one, “waking up residents at night”, showing a statistically significant increase after implementing a two-tailed equality of means test (P=0.035 for equal variances assumed & P=0.049 for equal variances not assumed).

The results for mean behavior reactions showed a decrease in reaction rating for 9 of the 12 behaviors with the greatest in “refusing personal care/medication reminders” of mean  $\pm$  SD  $2.69 \pm 0.95$  to  $1.77 \pm 1.09$  (Table 4). After again using Levene’s test for equality of variance, the only behavior showing statistical significance for reactions was “engaging in behavior that is potentially dangerous to self or others (P=0.038) (Table 5). After using two-tailed equality of means measurement, “refusing personal care/medication reminders”, showed statistically significant results (P=0.022 for equal variances assumed & 0.025 for equal variances not assumed). The other behaviors with a decrease in mean reactions were: “repeating questions or comments over and over”, “appearing anxious or worried”, “aggressive to others verbally”, “aggressive to others physically”, “crying or tearfulness”, “experiencing hallucinations/delusions” and, “arguing, irritability, and/or complaining”. Due to the number of participants who chose N/A and those who left items blank, the sample was under powered to



determine statistical significance. The decrease in 9 of the reactions could be considered clinically significant.

<b>Areas of Learning</b>	<b>Range of Scores (n=31)</b>	<b>Mean Score</b>
<b>Increased understanding of dementia</b>	2-4 (n=31)	3.38
<b>Increased understanding of why challenging behaviors occur</b>	2-4 (n=31)	3.19
<b>Increased understanding of challenging behaviors</b>	2-4 (n=31)	3.26
<b>Increased understanding of stressors for those with dementia</b>	2-4 (n=29)	3.31
<b>Increased understanding of stress thresholds</b>	2-4 (n=30)	3.23
<b>Increased understanding of prevention of challenging behaviors</b>	1-4 (n=31)	3.16
<b>Feel better prepared to prevent challenging behaviors</b>	2-4 (n=31)	3.29

Likert scale: 0=strongly disagree, 1=disagree, 2=neither agree nor disagree, 3=agree, 4=strongly agree

<b>Group Statistics</b>					
	Cohort	N	Mean	Std. Deviation	Std. Error Mean
RepeatB	Pre-test	18	3.44	.616	.145
	Post-test	16	3.25	1.125	.281
LeaveB	Pre-test	18	2.72	1.406	.331
	Post-test	15	3.07	1.223	.316
WakeB	Pre-test	16	1.56	1.263	.316
	Post-test	10	2.80	1.549	.490
TalkB	Pre-test	19	2.11	1.197	.275
	Post-test	16	2.31	1.448	.362
AnxB	Pre-test	19	2.95	.911	.209
	Post-test	16	3.13	.806	.202

DangB	Pre-test	19	1.84	1.167	.268
	Post-test	16	1.88	1.258	.315
RefuB	Pre-test	18	2.67	1.029	.243
	Post-test	13	2.85	1.144	.317
VerbagB	Pre-test	19	1.89	1.197	.275
	Post-test	16	2.19	1.167	.292
PhysagB	Pre-test	19	1.58	1.305	.299
	Post-test	15	1.67	1.397	.361
CryB	Pre-test	18	2.00	1.029	.243
	Post-test	16	2.13	1.025	.256
HallB	Pre-test	18	2.33	.970	.229
	Post-test	16	2.00	1.095	.274
ArgB	Pre-test	19	3.00	1.000	.229
	Post-test	16	2.69	1.195	.299
RepeatR	Pre-test	17	1.71	1.312	.318
	Post-test	16	1.50	1.317	.329
LeaveR	Pre-test	15	1.80	1.424	.368
	Post-test	16	1.94	1.289	.322
WakeR	Pre-test	14	1.14	1.099	.294
	Post-test	10	1.40	1.647	.521
TalkR	Pre-test	17	1.41	1.176	.285
	Post-test	16	1.50	1.592	.398
AnxR	Pre-test	17	1.94	1.088	.264
	Post-test	15	1.80	1.207	.312
DangR	Pre-test	16	2.44	1.153	.288
	Post-test	16	2.06	1.611	.403
RefuR	Pre-test	16	2.69	.946	.237
	Post-test	13	1.77	1.092	.303
VerbagR	Pre-test	16	2.06	1.289	.322
	Post-test	16	1.69	1.138	.285
PhysagR	Pre-test	16	2.25	1.438	.359
	Post-test	16	1.75	1.483	.371
CryR	Pre-test	17	1.88	1.269	.308
	Post-test	15	1.53	1.060	.274
HallR	Pre-test	17	2.00	1.323	.321
	Post-test	16	1.31	1.138	.285
ArgR	Pre-test	17	2.35	1.222	.296
	Post-test	16	1.81	1.167	.292

Likert scale frequency: 0=never occurred, 1=not in past week, 2=1 to 2 times in past week, 3=3 to 6 times in past week, 4=daily or more often, 9=don't know/not applicable. Likert scale reactions: 0=not at all, 1=a little, 2=moderately, 3=very much, 4=extremely, 9=don't know/not applicable.

**Table 5**  
**Results-MRMBPC**  
**Statistical Significance**

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
RepeatB	Equal variances assumed	6.787	.014	.635	32	.530	.194	.306	-.430	.819
	Equal variances not assumed			.614	22.629	.545	.194	.317	-.461	.850
LeaveB	Equal variances assumed	.370	.547	-.743	31	.463	-.344	.464	-1.290	.601
	Equal variances not assumed			-.752	30.927	.457	-.344	.458	-1.278	.589
WakeB	Equal variances assumed	.913	.349	-2.229	24	.035	-1.238	.555	-2.384	-.091
	Equal variances not assumed			-2.123	16.341	.049	-1.238	.583	-2.471	-.004
TalkB	Equal variances assumed	2.813	.103	-.464	33	.646	-.207	.447	-1.116	.702
	Equal variances not assumed			-.456	29.182	.652	-.207	.454	-1.136	.722
AnxB	Equal variances assumed	1.005	.323	-.605	33	.549	-.178	.294	-.775	.420
	Equal variances not assumed			-.612	32.902	.545	-.178	.290	-.769	.413
DangB	Equal variances assumed	.168	.684	-.080	33	.937	-.033	.410	-.868	.802
	Equal variances not assumed			-.080	31.036	.937	-.033	.413	-.875	.810
RefuB	Equal variances assumed	.659	.424	-.458	29	.651	-.179	.392	-.982	.623
	Equal variances not assumed			-.450	24.278	.657	-.179	.399	-1.003	.644

VerbagB	Equal variances assumed	.001	.971	-.729	33	.471	-.293	.402	-1.110	.524
	Equal variances not assumed			-.731	32.252	.470	-.293	.401	-1.109	.523
PhysagB	Equal variances assumed	.519	.476	-.189	32	.852	-.088	.465	-1.035	.859
	Equal variances not assumed			-.187	29.158	.853	-.088	.469	-1.046	.871
CryB	Equal variances assumed	.245	.624	-.354	32	.725	-.125	.353	-.844	.594
	Equal variances not assumed			-.354	31.565	.725	-.125	.353	-.844	.594
HallB	Equal variances assumed	.015	.904	.941	32	.354	.333	.354	-.388	1.055
	Equal variances not assumed			.934	30.238	.358	.333	.357	-.395	1.062
ArgB	Equal variances assumed	1.766	.193	.842	33	.406	.313	.371	-.442	1.067
	Equal variances not assumed			.829	29.383	.414	.313	.377	-.458	1.083
RepeatR	Equal variances assumed	.002	.967	.450	31	.656	.206	.458	-.728	1.139
	Equal variances not assumed			.450	30.864	.656	.206	.458	-.728	1.140
LeaveR	Equal variances assumed	.476	.496	-.282	29	.780	-.138	.487	-1.134	.859
	Equal variances not assumed			-.281	28.226	.781	-.138	.489	-1.139	.864
WakeR	Equal variances assumed	2.652	.118	-.460	22	.650	-.257	.559	-1.417	.902
	Equal variances not assumed			-.430	14.619	.673	-.257	.598	-1.534	1.020
TalkR	Equal variances assumed	2.613	.116	-.182	31	.857	-.088	.485	-1.078	.901
	Equal			-.180	27.551	.858	-.088	.490	-1.092	.915

	variances not assumed									
AnxR	Equal variances assumed	.202	.657	.348	30	.730	.141	.406	-.687	.970
	Equal variances not assumed			.346	28.466	.732	.141	.408	-.695	.977
DangR	Equal variances assumed	4.730	.038	.757	30	.455	.375	.495	-.637	1.387
	Equal variances not assumed			.757	27.170	.455	.375	.495	-.641	1.391
RefuR	Equal variances assumed	.216	.646	2.426	27	.022	.918	.379	.142	1.695
	Equal variances not assumed			2.389	23.975	.025	.918	.384	.125	1.712
VerbagR	Equal variances assumed	.008	.927	.872	30	.390	.375	.430	-.503	1.253
	Equal variances not assumed			.872	29.546	.390	.375	.430	-.504	1.254
PhysagR	Equal variances assumed	.000	1.000	.968	30	.341	.500	.516	-.555	1.555
	Equal variances not assumed			.968	29.971	.341	.500	.516	-.555	1.555
CryR	Equal variances assumed	.824	.371	.838	30	.409	.349	.417	-.502	1.200
	Equal variances not assumed			.847	29.925	.404	.349	.412	-.492	1.190
HallR	Equal variances assumed	.696	.411	1.596	31	.121	.688	.431	-.191	1.566
	Equal variances not assumed			1.603	30.766	.119	.688	.429	-.187	1.562
ArgR	Equal variances assumed	.164	.688	1.298	31	.204	.540	.416	-.309	1.390
	Equal variances not assumed			1.300	30.991	.203	.540	.416	-.308	1.389

## Discussion

### Learning

As with any educational program, one of the goals for this project was to increase knowledge. Specifically, the learning goals for employees of Ruth's House, particularly for those who work on the Garden level, were to have a greater understanding of dementia, the challenging behaviors that can arise from this disease, what increases these behaviors and, how to try to prevent them. The use of the PLST model was of great help in this endeavor. It hypothesizes that normative, baseline behavior for those with dementia could be maintained by supporting the losses of those with dementia; thus preventing the challenging behaviors that can ensue (Hall & Buckwalter, 1987). It provided the framework needed to educate formal caregivers and all those who relate to those with dementia at Ruth's House. This was proven through the high mean scores for each of the areas of learning of the Formal Caregiver Survey. All were above 3 which would correlate with agreement to learning according to the Likert scale of this outcome measure. The percentages of scores equaling 3 or 4 were 84% or greater for all areas of learning. The highest amount of learning was in the understanding of dementia and the lowest was in understanding of preventing challenging behaviors. This was somewhat disappointing as the overall goal of this project was to help prevent these challenging behaviors. However, as stated above, the mean score value was above 3 signifying agreement in learning. This indicates that additional programs are necessary to increase skill in preventing challenging behaviors.

The goal of the comment sections found on the Formal Caregiver Survey was to obtain information for future use in educational programs on dementia. However, some participants chose to use these sections to express their opinion of the presentation. All were positive with

such comments as, “I’ve learned how to deal with the stressors and trying to prevent the occurring behavior from happening” and “I enjoyed listening to the different types of dementia”.

The other comments will be reviewed in a subsequent section.

The use of the PLST model in a clinical setting is not a novel idea (Hall, 1994; McCloskey, 2004). However, the inclusion of this model in an educational program to instruct formal caregivers and other staff in an assisted-living environment, with the goal of reduction in challenging behaviors, is unique. The results in learning of this project were highly positive and encouraging, and should be considered for further educational endeavors in other institutionalized settings with the goal of preventing challenging behaviors in dementia care.

### **Behavior Frequency and Reactions**

Learning gained from a quality improvement/educational project will have no value unless the knowledge gained is put into practice and helps and all those involved. The results of this project, measured by the MRMBPC, showed clinical improvement in lessening three of twelve challenging behaviors with one showing statistical significance. This does not appear to provide highly successful results. However, two assumptions can be made from the results. First, due to the immense amount of learning gained, awareness of the behaviors found on this outcome measure may have increased, leading to an increase in noted frequency. Second, due to the minimal intervention dose of only one PPT presentation, there may not have been sufficient opportunity to produce clinical impact. As mentioned above, only one challenging behavior proved to have statistical significance in frequency decline and this is probably due to a low sample size and “don’t know/not applicable” values given for many of the elements on the outcome measure.

How one reacts to a behavior can have a profound effect on how one copes with a behavior (Coyne & Lazarus, 1981). For this reason, the results of nine out of twelve behaviors showing a decrease in reaction ratings indicates promise for this quality improvement project being successful in helping those that care for those with dementia on the Garden Level by improving coping. As with behavior frequencies, a small number of behaviors, two, showed a statistically significant result in decreasing behavior reactions. Again, this is most likely due to a small sample size and numerous “don’t know/not applicable” values.

### **Costs and Benefits**

The majority of the cost for this project was staff time. However, no extra staff time beyond schedule shifts was required. In addition, the staff was able to receive educational credit from JGS for their attendance at the above mentioned presentation. Cost for materials was negligible and was absorbed by an allotted department budget for education.

The prevalence of challenging behaviors of those with dementia and their annual cost of direct management is high (Schneider Beerl, et al., 2002; Selbaek et al., 2012) and, clinical implications for such behaviors can be serious (alz.org, 2011). Therefore, it is important to educate staff of dementia care units of the need and skills to prevent them. This was the major benefit of this project. Even though the numbers do not indicate a decrease in challenging behaviors they do indicate a high amount of learning which is the first step to prevention.

Overall, there was more benefit than cost for Ruth’s House of JGS and, more specifically to the Garden Level department. Staff members are required to attend numerous in-services throughout the year in an effort to reach maximal working potential and increase resident quality of life. So, providing this educational program free of charge satisfied this requirement with increased learning that should hope to benefit the residents and decrease caregiver strain.



## **Strengths**

Choosing appropriate frameworks and models to guide a project is essential to its success and, the choice to use both Lewin's change theory and the PLST model fit well into the goal of constructing an educational program to prevent challenging behaviors of those with dementia. Spending pre-intervention time with the prospective learners in the "unfreezing" phase proved to be beneficial in building rapport and preparing the participants for the above educational presentation. The PPT presentation in the "moving" phase was effective in encouraging the participants to embrace the knowledge of the PLST model, which was designed to educate caregivers of those with dementia. Finally, the time spent with the staff of the Garden Level post-intervention and the information left behind in the "refreezing" phase is predicted to reinforce the knowledge gained (Lewin, 1951; as cited by Lee, 2005).

Both the Centers for Disease Control (CDC) and the World Health Organization (WHO) agree that needs assessments are beneficial to improving healthcare (CDC, 2011 & WHO, 2001) and, this was a great strength for this project. The needs assessment performed allowed the project adopter to gain insight into the specific behaviors that the residents of the Garden Level exhibited, along with their diagnoses, and to discern which were the most bothersome to the staff. The needs assessment also allowed for observation of actual experiences that were portrayed in the educational program. This allowed for connection between the material presented and personal experiences which is of great importance for learners (Overson & Goldstein, 2011). This is supported by a comment shared by one of the participants; "Real life examples helped, easier to connect".

It is well known that motivation is a key dimension to any successful project (Müller & Turner, 2010) and, this is of no exception for this quality improvement project. Both the project

manager and adopter were both highly motivated to implement a successful program for effective change for the good of both the staff and the residents. The project manager went above and beyond what was expected of her and put much effort into ensuring appropriate attendance at the above PPT presentation. In addition, the project adopter was a seasoned family caregiver of a father with dementia with personal experience of the challenging behaviors that can ensue and the benefits of preventing them and, the desire to “speak up for those who cannot speak for themselves” (Proverbs 31:8 New International Version).

### **Limitations and Future Recommendations**

The MRMBPC was administered pre-test in a group setting at the time of the PPT presentation to ensure ease of completion and full attention. The post-test, however, was administered individually with the project adopter seeking out the participants who work consistently on the Garden Level. Many of the participants also work on the other assisted living unit which is where 6 of the 16 post-test participants were sought out. Most of the post-test participants completed their MRMBPC at the end or the beginning of their shifts and there was observed reluctance to complete them. Many had to be asked twice to fill out the outcome measure. This is probably due to being fatigued from shift work or its anticipation. This would be consistent with survey burden which can be common in healthcare (Klabunde et al., 2012). This caused a limitation to this project with incongruent results such as answering “n/a” for the frequency of a certain behavior while answering “extremely” for a reaction to the same behavior.

Another source of error was the lack of understanding among the participants of whose reactions they were trying to quantify on the MRMBPC; theirs or the residents. This was evident by questions to the project adopter such as, “Is this reaction my reaction or the resident’s?” This limitation can be ameliorated by a minor amendment to the modified RMBPC of adding “How

often behavior occurred” under the title of the Likert scale for behavior frequency and “How did it bother you” under reactions (Appendix E).

The “moving” phase, according to the Lewin (1951; as cited by Lee, 2005), encourages individuals to embrace a new perspective by open communication and involvement by all participants. This was attempted through means of the above PPT presentation. Although the results show that learning was achieved it appears that the majority of the behaviors actually increased. Again, this could be due to a great awareness but, it may also be assumed that the dose of intervention was not sufficient enough to produce change. For this reason, it would be suggested to increase the dose by providing serial presentations with deeper content and time for role play and discussion at each successive meeting.

Reinforcing new ideas of implementation is the backbone of “refreezing” in Lewin’s Change Theory (Lewin, 1951; as cited by Lee, 2005). This was attempted in this project by spending time with the staff post-intervention and posting summary points of the educational program. The efforts showed promise but, only lasted for two weeks which was not adequate time to properly fortify change. It would be recommended in future endeavors for longer post-intervention period of support such as one to two months.

When asked for desired information beyond what was given through the presentation on the Formal Caregiver Survey there were six comments, three of which centered on how to manage dysfunctional behaviors when they occur such as those that are “combative” and “verbally abusive”. This would make sense, as it has been found that behaviors such as these cause great burden for formal caregivers (Miyamoto et al., 2010). Therefore, strategies for

dealing with behaviors such as validation therapy and structured social interaction (Ballard et al., 2009) should be considered as supplementation to the above educational program in future use.

Lastly, sample sizes were low resulting in low power for this project. It is recommended that sample sizes be amplified to increase statistical power. One option to accomplish this would be to bring the above educational program also to the two long-term care, dementia units of JGS along with its adult daycare program. Another option would be to bring the program to multiple long-term care facilities that house specified dementia units.

## **Conclusion**

Dementia is a highly prevalent disease and is predicted to steadily increase over the years to come (WHO, 2012). The behaviors exhibited by those with this disease not only impact the individual but, also the caregivers (Gaugler et al., 2009; Miyamoto et al., 2010). The PLST model by Hall & Buckwalter (1987) provided a solid framework, along with Lewin's change theory, to provide the Garden Level of JGS with an educational, quality improvement project. The project aim was to educate the formal caregivers of those with dementia about the disease, the challenging behaviors that can arise from the disease and, how to better prevent them.

The results of this project proved a high degree of learning yet, with minimal decline in frequency of behavior noted. This would make sense as increased learning will cause increased awareness. The reactions of the formal caregivers to these behaviors improved, however, with the hope of better coping and anticipated decrease in behavior frequency in the future.

The creation and implementation of this program to educate formal caregivers of those with dementia in a locked, assisted-living unit was a novel endeavor. The PLST model has been used in long-term setting before but, not in the venue of formal caregiver training (Hall, 1994;

Hall, Gerdner et al., 1995). The results were encouraging and future use of such a program should prove to be promising in helping formal caregivers help those with dementia.

## References

- [http://www.alz.org/documents\\_custom/2013\\_facts\\_figures\\_fact\\_sheet.pdf](http://www.alz.org/documents_custom/2013_facts_figures_fact_sheet.pdf)
- [https://www.alz.org/national/documents/statements\\_antipsychotics.pdf](https://www.alz.org/national/documents/statements_antipsychotics.pdf)
- Alzheimer's Association. Alzheimer's disease facts and figures. *Alzheimers Dement.* 2012;8:131–68.
- Ballard, C. G., Gauthier, S., Cummings, J. L., Brodaty, H., Grossberg, G. T., Robert, P., & Lyketsos, C. G. (2009). Management of agitation and aggression associated with Alzheimer disease. *Nature Reviews Neurology*, 5(5), 245-255.
- Buckwalter, K. C., Gerdner, L., Kohout, F., Hall, G. R., Kelly, A., Richards, B., & Sime, M. (1999). A nursing intervention to decrease depression in family caregivers of persons with dementia. *Archives of Psychiatric Nursing*, 13(2), 80-88.
- Burke, A., Hall, G., & Tariot, P. N. (2013). The Clinical Problem of Neuropsychiatric Signs and Symptoms in Dementia. *CONTINUUM: Lifelong Learning in Neurology*, 19(2, Dementia), 382-396.
- The Center for Disease Control and Prevention (CDC) (2011). Best Practices for Community Health Needs Assessment and Implementation Strategy Development: A Review of Scientific Methods, Current Practices, and Future Potential, retrieved from <http://www.phi.org/uploads/application/files/dz9vh55o3bb2x56lcrzyel83fwfu3mvu24oqqvn5z6qaeiw2u4.pdf>
- Cerejeira, J., Lagarto, L. & Mulaetova-Ladinkska, E.B. (2012). Behavioral and psychological symptoms of dementia, doi: 10.3389/fneur.2012.00073, retrieved from [www.frontiersin.org](http://www.frontiersin.org)

- Cheung, D. S., Chien, W. T., & Lai, C. K. (2011). Conceptual framework for cognitive function enhancement in people with dementia. *Journal of Clinical Nursing*, 20(11-12), 1533-1541.
- Coyne, J. C., & Lazarus, R. S. (1980). Cognitive style, stress perception, and coping. *Handbook on stress and anxiety*, 144-158.
- Fisher, G.G., Franks, M.M., Plassmand, B.L., Brown, S.L., Potter, G.G., Llewellyn, D., Rogers, M.A.M. & Langa, K.M. (2011). Caring for Individuals with Dementia and Cognitive Impairment, Not Dementia: Findings from the Aging, Demographics, and Memory Study. *The American Geriatric Society*, 59:488–494.
- Gallagher-Thompson, D., & Coon, D. W. (2007). Evidence-based psychological treatments for distress in family caregivers of older adults. *Psychology and aging*, 22(1), 37.
- Garand, L., Buckwalter, K. C., Lubaroff, D. M., Tripp-Reimer, T., Frantz, R. A., & Ansley, T. N. (2002). A pilot study of immune and mood outcomes of a community-based intervention for dementia caregivers: the PLST intervention. *Archives of Psychiatric Nursing*, 16(4), 156.
- Gaugler, J.E., Wall, M.M., Kane, R.L., Menk, J.S., Sarsour, K., Johnston, J.A., Beusching, D. & Newcomer, R. (2011). The Effects of Incident and Persistent Behavioral Problems on Change in Caregiver Burden and Nursing Home Admission of Persons With Dementia. *Medical Care*, ISSN: 0025-7079/10/4810-0875, retrieved from: [www.lww-medicalcare.com](http://www.lww-medicalcare.com)
- Gerdner, L. A., & Buckwalter, K. C. (2013). Musical Memories: translating evidence-based gerontological nursing into a children's picture book. *Journal of gerontological nursing*, 39(1), 32-41.

- Gerdner, L. A., Buckwalter, K. C., & Hall, G. R. (2005). Temporal patterning of agitation and stressors associated with agitation: Case profiles to illustrate the progressively lowered stress threshold model. *Journal of the American Psychiatric Nurses Association*, 11(4), 215-222.
- Gerdner, L. A., Hall, G. R., & Buckwalter, K. C. (1996). Caregiver training for people with Alzheimer's based on a stress threshold model. *Journal of Nursing Scholarship*, 28(3), 241-246.
- Gerdner, L. A., & Swanson, E. A. (1993). Effects of individualized music on confused and agitated elderly patients. *Archives of psychiatric nursing*, 7(5), 284-291.
- Hall, G. R. (1994). Caring for people with Alzheimer's disease using the conceptual model of progressively lowered stress threshold in the clinical setting. *The Nursing Clinics of North America*, 29(1), 129.
- Hall, G. R., & Buckwalter, K. C. (1987). Progressively lowered stress threshold: a conceptual model for care of adults with Alzheimer's disease. *Archives of psychiatric nursing*, 1(6), 399.
- Hall, G. R., Buckwalter, K. C., Stolley, J. M., Gerdner, L. A., Garand, L., Ridgeway, S., & Crump, S. (1995). Standardized care plan: Managing Alzheimer's patients at home. *Journal of gerontological nursing*, 21(1), 37-49.
- Hall, G. R., Gerdner, L., Zwygartstauffacher, M., & Buckwalter, K. C. (1995). Principles of Nonpharmacological Management-Caring for People with Alzheimers-Disease using a Conceptual-Model. *Psychiatric Annals*, 25(7), 432-440.
- Hall, G. R., & Laloudakis, D. (1999). A behavioral approach to Alzheimer's disease. The progressively lowered stress threshold model. *Advance for nurse practitioners*, 7(7), 39.



- Hollinger, L. M., & Buschmann, M. B. T. (1993). Factors influencing the perception of touch by elderly nursing home residents and their health caregivers. *International Journal of Nursing Studies*, 30(5), 445-461.
- Huang, H. L., Shyu, Y. I. L., Chen, M. C., Chen, S. T., & Lin, L. C. (2003). A pilot study on a home-based caregiver training program for improving caregiver self-efficacy and decreasing the behavioral problems of elders with dementia in Taiwan. *International Journal of Geriatric Psychiatry*, 18(4), 337-345.
- Kim, E. J., & Buschmann, M. T. (2004). Touch-stress model and Alzheimer's disease: using touch intervention to alleviate patients' stress. *Journal of gerontological nursing*, 30(12), 33.
- Klabunde, C. N., Willis, G. B., McLeod, C. C., Dillman, D. A., Johnson, T. P., Greene, S. M., & Brown, M. L. (2012). Improving the Quality of Surveys of Physicians and Medical Groups A Research Agenda. *Evaluation & the health professions*, 35(4), 477-506.
- Kovach, C. R. (2000). Sensoristasis and imbalance in persons with dementia. *Journal of Nursing Scholarship*, 32(4), 379-384.
- Kuo, L. M., Huang, H. L., Huang, H. L., Liang, J., Chiu, Y. C., Chen, S. T., Kwok, Y. T., Hsu, W. C., & Shyu, Y. I. L. (2012). A home-based training program improves Taiwanese family caregivers' quality of life and decreases their risk for depression: a randomized controlled trial. *International journal of geriatric psychiatry*.
- Lee, T. T. (2006). Adopting a personal digital assistant system: application of Lewin's change theory. *Journal of advanced nursing*, 55(4), 487-496.
- Lindsey, P. L., & Buckwalter, K. C. (2009). Psychotic events in Alzheimer's disease: application of the PLST model. *Journal of gerontological nursing*, 35(8), 20.

- Logsdon, R. G., McCurry, S. M., & Teri, L. (2007). Evidence-based psychological treatments for disruptive behaviors in individuals with dementia. *Psychology and aging, 22*(1), 28.
- Miyamoto, Y., Tachimori, H., & Ito, H. (2010). Formal caregiver burden in dementia: impact of behavioral and psychological symptoms of dementia and activities of daily living. *Geriatric Nursing, 31*(4), 246-253.
- McCloskey, R. M. (2004). Caring for patients with dementia in an acute care environment. *Geriatric nursing (New York, NY), 25*(3), 139.
- Mitty, E., & Flores, S. (2007). Assisted living nursing practice: the language of dementia: theories and interventions. *Geriatric Nursing, 28*(5), 283-288.
- Moniz Cook, E. D., Swift, K., James, I., Malouf, R., De Vugt, M., & Verhey, F. (2012). Functional analysis-based interventions for challenging behaviour in dementia. *Cochrane Database Syst Rev, 2*.
- Müller, R., & Turner, R. (2010). Leadership competency profiles of successful project managers. *International Journal of Project Management, 28*(5), 437-448.
- Oh, H., Hur, M. H., & Eom, M. (2005). Development and analysis of the effects of caregiver training program on aggressive behavior in elders with cognitive impairment. *Taehan Kanho Hakhoe Chi, 35*(4), 745.
- Overson, C. E., & Goldstein, G. S. (2011). Skill Development for Oral Presentations and Examinations. *Your Graduate Training in Psychology: Effective Strategies for Success, 217*.
- Rafferty, A. E., & Griffin, M. A. (2006). Perceptions of organizational change: A stress and coping perspective. *Journal of Applied Psychology, 91*(5), 1154.

- Ragneskog, H., Gerdner, L. A., Josefsson, K., & Kihlgren, M. (1998). Probable reasons for expressed agitation in persons with dementia. *Clinical Nursing Research*, 7(2), 189-206.
- Richards, K. C., & Beck, C. K. (2004). Progressively lowered stress threshold model: Understanding behavioral symptoms of dementia. *Journal of the American Geriatrics Society*, 52(10), 1774-1775.
- Schnaider Beerli, M., Werner, P., Davidson, M., & Noy, S. (2002). The cost of behavioral and psychological symptoms of dementia (BPSD) in community dwelling Alzheimer's disease patients. *International journal of geriatric psychiatry*, 17(5), 403-408.
- Selbæk, G., Engedal, K., & Bergh, S. (2013). The prevalence and course of neuropsychiatric symptoms in nursing home patients with dementia: a systematic review. *Journal of the American Medical Directors Association*, 14(3), 161-169.
- Seyle, H. (1980). The stress concept today. *Handbook on stress and anxiety*, 127-143.
- Sherratt, K., Thornton, A., & Hatton, C. (2004). Music interventions for people with dementia: a review of the literature. *Aging & Mental Health*, 8(1), 3-12.
- Smith, M., Gerdner, L. A., Hall, G. R., & Buckwalter, K. C. (2004). History, development, and future of the progressively lowered stress threshold: a conceptual model for dementia care. *Journal of the American Geriatrics Society*, 52(10), 1755-1760.
- Smith, M., Hall, G.R., Gerdner, L., & Buckwalter, K. C. (2006). Application of the progressively lowered stress threshold model across the continuum of care. *Nursing Clinics of North America*, 41(1), 57-81.
- Stolley, J. M., Koenig, H., & Buckwalter, K. C. (1998). Pastoral care for the person with dementia. *Journal of health care chaplaincy*, 8(1-2), 7-23.

Stolley, J. M., Reed, D., & Buckwalter, K. C. (2002). Caregiving appraisal and interventions based on the progressively lowered stress threshold model. *American Journal of Alzheimer's Disease and Other Dementias*, 17(2), 110-120.

Teri, L., Truax, P., Logsdon, R., Uomoto, J., Zarit, S., & Vitaliano, P. P. (1992). Assessment of behavioral problems in dementia: the revised memory and behavior problems checklist. *Psychology and aging*, 7(4), 622.

Voyer, P., Verreault, R., Azizah, G. M., Desrosiers, J., Champoux, N., & Bédard, A. (2005). Prevalence of physical and verbal aggressive behaviours and associated factors among older adults in long-term care facilities. *BMC geriatrics*, 5(1), 13.

<http://www.who.int/features/factfiles/dementia/en/index.html>

World Health Organization (WHO) (2001). *Community Health Needs Assessment An introductory guide for the family health nurse in Europe*. Retrieved from:

[http://www.euro.who.int/\\_data/assets/pdf\\_file/0018/102249/E73494.pdf?ua=1](http://www.euro.who.int/_data/assets/pdf_file/0018/102249/E73494.pdf?ua=1)

Appendix A	
<i>PLST: Six Principles of Care and Interventions</i>	
Principle of Care	Intervention
1. Maximize safe function by supporting losses	<ul style="list-style-type: none"> <li>• Use an unhurried, consistent, and familiar routine.</li> <li>• Avoid attempts to reason or asking the person to “try harder.”</li> <li>• Avoid attempts to teach new skills.</li> <li>• Alternate high- and low-level stimulation activities.</li> <li>• Limit choices on the basis of ability.</li> <li>• Schedule planned rest periods during the day.</li> <li>• Adjust levels of activity and stimulation on the basis of stress responses.</li> <li>• Evaluate for possible physical stressors (e.g., urge to empty bladder or bowels, hunger, pain).</li> </ul>
2. Provide unconditional positive regard	<ul style="list-style-type: none"> <li>• Use uncomplicated, comprehensible language.</li> <li>• Use gentle touch.</li> <li>• Eliminate negative comments or corrections.</li> <li>• Make use of distraction or acceptance rather than argument.</li> <li>• Allow the person to complete self-care activities as able with minimal directions or taking over.</li> </ul>
3. Use anxiety and avoidance to gauge activity and stimulation levels	<ul style="list-style-type: none"> <li>• Look for early signs of anxious behavior (e.g., toe tapping, pacing, worried expression).</li> <li>• Keep records of activities and times of day with increased anxiety.</li> </ul>
4. Teach caregivers to observe and listen to patients	<ul style="list-style-type: none"> <li>• Listen carefully to repeated phrases or jargon.</li> <li>• Attend to repeated behaviors as expressions of anxiety (e.g., searching for lost items).</li> </ul>
5. Modify environments to support losses and enhance safety	<ul style="list-style-type: none"> <li>• Assess the environment for hazards or barriers.</li> <li>• Remove access to potentially dangerous items (e.g., guns, power tools, cleaning products, motorized vehicles).</li> <li>• Simplify the environment to reduce stimulation and potential misinterpretation (e.g., mirrors, pictures, clutter, television).</li> <li>• Provide environmental cues to increase orientation (e.g., large clocks, signs).</li> </ul>
6. Provide ongoing education, support, care, and problem solving.	<ul style="list-style-type: none"> <li>• Provide referrals to community resources for health education (physical and mental), assistance with physical care, respite, and support groups.</li> </ul>
Lindsey & Buckwalter, 2009, pg. 11	

Appendix B

**Formal Caregiver Survey**

Please answer the following questions according to the below rating scale:

Rating Scale

0=strongly disagree

1=disagree

2=neither agree nor disagree

3=agree

4=strongly agree

- 1) My understanding of dementia has increased \_\_\_\_\_
- 2) My understanding of why those with dementia have challenging behaviors has increased\_\_\_\_\_
- 3) My understanding of what the challenging behaviors of dementia are has increased \_\_\_\_\_
- 4) My understanding of the stressors that can cause challenging behaviors of those with dementia has increased\_\_\_\_\_
- 5) My understanding of what a stress threshold is for with dementia has increased\_\_\_\_\_
- 6) My understanding of how to prevent challenging behaviors of those with dementia has increased\_\_\_\_\_
- 7) I feel better prepared to prevent challenging behaviors of those with dementia \_\_\_\_\_

Please provide any coping mechanisms or strategies that you have learned to deal with challenging behaviors for those with dementia.

Any further information that you would have liked to have heard more about to prevent and manage challenging behaviors of those with dementia:

Appendix C

**Modified Revised Memory and Behavior Problems Checklist**

**Instructions**

The following is a list of behaviors residents sometime have. Please indicate if any of these behaviors have occurred during the past week with frequency. Also, indicate your reaction to these behaviors. Use the following scales for the frequency of the behavior and your reaction to it. Please read the description of the ratings below before starting.

**FREQUENCY RATINGS:**

- 0=never occurred
- 1=not in the past week
- 2=1 to 2 times in the past week
- 3=3 to 6 times in the past week
- 4=daily or more often
- 9=don't know/not applicable

**REACTION RATINGS:**

- 0=not at all
- 1=a little
- 2=moderately
- 3=very much
- 4=extremely
- 9=don't know/not applicable

	<b>Frequency</b>	<b>Reaction</b>
1. Repeating questions or comments over and over	0 1 2 3 4 9	0 1 2 3 4 9
2. Seeking to leave unit	0 1 2 3 4 9	0 1 2 3 4 9
3. Waking up residents at night	0 1 2 3 4 9	0 1 2 3 4 9
4. Talking loudly and rapidly	0 1 2 3 4 9	0 1 2 3 4 9
5. Appearing anxious or worried	0 1 2 3 4 9	0 1 2 3 4 9
6. Engaging in behavior that is potentially dangerous to self or others	0 1 2 3 4 9	0 1 2 3 4 9
7. Refusing personal care/medication reminders	0 1 2 3 4 9	0 1 2 3 4 9
8. Aggressive to others verbally	0 1 2 3 4 9	0 1 2 3 4 9
9. Aggressive to others physically	0 1 2 3 4 9	0 1 2 3 4 9
10. Crying or tearfulness	0 1 2 3 4 9	0 1 2 3 4 9
11. Experiencing hallucinations/delusions	0 1 2 3 4 9	0 1 2 3 4 9
12. Arguing, irritability, and/or complaining	0 1 2 3 4 9	0 1 2 3 4 9

## Appendix D

## Preventing Dysfunctional Behaviors

1. Try to Lessen and/or Eliminate Stressors
2. Understand and Support Them
3. Treat Them the Way You Would Want to be Treated
4. Look for Signs of Anxiety
5. Listen for Signs of Anxiety



## *Stressors for those with dementia*

Hall & Buckwalter (1987)

1. Fatigue
2. Change of environment, caregiver, or routine
3. Demands too high
4. Too much stimuli
5. Physical stressors
  - a) Pain
  - b) Infection
  - c) Bathroom
  - d) Hunger





## Appendix E

**Final Modified Revised Memory and Behavior Problems Checklist****Instructions**

The following is a list of behaviors residents sometime have. Please indicate if any of these behaviors have occurred **during the past week** with frequency. Also, indicate your reaction to these behaviors. Use the following scales for the frequency of the behavior and your reaction to it. Please read the description of the ratings below before starting.

**FREQUENCY RATINGS:**  
(How often behavior occurred)

0=never occurred  
1=not in the past week  
2=1 to 2 times in the past week  
3=3 to 6 times in the past week  
4=daily or more often  
9=don't know/not applicable

**REACTION RATINGS:**  
(How did it bother you)

0=not at all  
1=a little  
2=moderately  
3=very much  
4=extremely  
9=don't know/not applicable

	<b>Frequency</b>	<b>Reaction</b>
1. Repeating questions or comments over and over	0 1 2 3 4 9	0 1 2 3 4 9
2. Seeking to leave unit	0 1 2 3 4 9	0 1 2 3 4 9
3. Waking up residents at night	0 1 2 3 4 9	0 1 2 3 4 9
4. Talking loudly and rapidly	0 1 2 3 4 9	0 1 2 3 4 9
5. Appearing anxious or worried	0 1 2 3 4 9	0 1 2 3 4 9
6. Engaging in behavior that is potentially dangerous to self or others	0 1 2 3 4 9	0 1 2 3 4 9
7. Refusing personal care/medication reminders	0 1 2 3 4 9	0 1 2 3 4 9
8. Aggressive to others verbally	0 1 2 3 4 9	0 1 2 3 4 9
9. Aggressive to others physically	0 1 2 3 4 9	0 1 2 3 4 9
10. Crying or tearfulness	0 1 2 3 4 9	0 1 2 3 4 9
11. Experiencing hallucinations/delusions	0 1 2 3 4 9	0 1 2 3 4 9
12. Arguing, irritability, and/or complaining	0 1 2 3 4 9	0 1 2 3 4 9