Decreasing problematic behaviors in dementia inpatients: The effects of flexible schedules and staff training

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DECREASING PROBLEMATIC BEHAVIORS
IN DEMENTIA INPATIENTS: THE EFFECTS OF
FLEXIBLE SCHEDULES AND STAFF TRAINING

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B.A., The University of Montana, 1990

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requirements for the degree of
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Date
The purpose of the present study was to examine the efficacy of a treatment program designed to reduce problematic behaviors in elderly nursing home patients diagnosed as having dementia of the Alzheimer's type or a related disorder. The treatment program consisted of two components: a staff training program coupled with the implementation of individualized, flexible daily schedules for the patients. Aspects of patient behavior that were examined included agitated behavior, dependent behavior related to activities of daily living, falling, and cognitive functioning. A within-subjects, pretreatment versus posttreatment design was used. Results indicated that the treatment program effected a significant reduction in the amount and severity of the worst type of agitated behavior -- physical aggression against others. Scores on dependent behavior showed a significant increase from pretreatment to posttreatment, indicating that subjects were less able to perform self-care activities of daily living in the posttreatment phase. Similarly, Dementia Rating Scale scores showed a significant decline from pretreatment to posttreatment, indicating that subjects were at a lower level of cognitive functioning during the posttreatment phase. There was no significant change for falling. Finally, it was found that cognitive functioning was related to activities of daily living in that subjects with greater cognitive impairment were more likely to have difficulties with activities of daily living. Potential explanations and implications of these findings are discussed. The results of the present study represent an important step toward improving the quality of life for dementia patients as well as for nursing staff who work with them.
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Dementia

Recent estimates indicate that approximately 15 percent of the United States population over age 65 (approximately 3.7 million people) suffers from some form of dementia (Fryer, 1983; Mortimer, Schuman, & French, 1981). The most common type of irreversible dementia is dementia of the Alzheimer's type (DAT), accounting for approximately 50 to 75 percent of all dementia cases (Fryer, 1983; Skoog, Nilsson, Palmertz, Andreasson, & Svanborg, 1993).

Another major cause of dementia is multi-infarct dementia. In this condition, a succession of small strokes accumulate throughout the brain over time, resulting in deteriorated functioning (Brophy, 1988; Skoog et al., 1993). It has been reported that from 10 to 50 percent of dementia cases result from multi-infarct dementia (Brophy, 1988; Skoog et al., 1993).

Early symptoms of DAT include impaired judgment, personality changes, language deficits, and memory loss (Adams & Victor, 1989; Moss & Albert, 1988). Deterioration continues relentlessly over a period of months or years. Eventually, DAT victims become disoriented, bedridden, and reduced to a vegetative existence (Adams & Victor, 1989). Resistance to disease is lowered and death usually results from pneumonia or some other illness (Brophy, 1988). The clinical picture for other types of dementia is much the
same as that for DAT. Because of the chronic and debilitating nature of dementia, patients may lose their ability to function without assistance. Therefore, institutionalization is often part of the care continuum. Approximately 30 to 40 percent of all nursing home residents suffer from DAT or a related disorder (Kosich & Growdon, 1982).

**Dementia and Loss of Autonomy**

Dementias are often regarded as disorders of memory and cognitive function whose major impact is a decreasing ability to cope with the environment because of intellectual impairment. While impaired cognitive ability is of major importance, it is often the behavioral disturbances associated with dementia that limit the ability of caregivers to manage nursing home residents with dementia. One of the most frequently observed effects of institutionalization of the elderly, including those with dementia, is the loss of independent functioning, or autonomy (Langer & Rodin, 1976; Collopy, 1990; Namazi & Johnson, 1992; Seligman, 1992). Recently, efforts have been made to examine the conditions that affect independent functioning. Such research includes efforts to understand the cognitive mechanisms and social interactions which may affect independence in nursing home residents (Baltes & Zerbe, 1976; Barton, Baltes, & Orzech, 1980; Langer & Rodin, 1976; Namazi & Johnson, 1992; Rodin & Langer, 1977). While
autonomy and freedom of choice for long-term care residents have been the focus of many empirical studies, these issues have not been investigated for residents suffering from dementia.

The loss of independent functioning in many nursing home residents may not be solely the result of biological decline but may be to some extent the result of an environment that predisposes them toward and reinforces dependent behavior. As residents lose the ability to carry out certain activities on their own, caregivers may find that it is easier to do things for them, thereby decreasing their sense of control. This lost sense of control may lead to a variety of negative emotional and cognitive responses.

Dependent behavior in the gerontological literature is often discussed in terms of helplessness (Seligman, 1975, 1992; Rodin, 1986). One aspect of helplessness is an individual's sense of personal control (i.e., whether they see themselves as controlling, or controlled by, their environments; Rotter, 1990). According to Rotter, helpless people often perceive that control is external, and this perception may deepen their feelings of resignation. This is precisely what Seligman (1975, 1992) found in experiments with both animals and people. It has been demonstrated in laboratory studies that when an animal learns it has no control over its environment, there is an impaired ability to detect response-outcome contingencies in
later situations. This results in a response-initiation deficit which may result from learning that responses are ineffective (Overmier & Seligman, 1967; Maier, Seligman, & Solomon, 1969; Seligman, 1992). Faced with repeated events over which they have no control, people also come to feel helpless, hopeless, and depressed. Seligman (1975) termed this "learned helplessness". According to Seligman, the expectation that an outcome is not contingent on one's behavior: (1) reduces the motivation to control the outcome; (2) interferes with learning that responding controls the outcome; and, (3) produces fear for as long as the subject is uncertain of the uncontrollability of the outcome and eventually produces depression. Exposure to uncontrollable events has a variety of negative effects in humans, including impaired problem-solving, increased passivity, anxiety, hostility, and depression, as well as increased susceptibility to disease and unhappiness, particularly in the elderly (Langer & Rodin, 1976; Miller & Seligman, 1975; Rodin & Langer, 1977; Rodin, 1986; Seligman, 1992).

Seligman (1992) suggests that when the elderly are institutionalized they learn that their responses are ineffective and they are forced to rely upon others for their basic care. Seligman (1992) further states that "what produces self-esteem and a sense of competence and protects against depression, is not only the absolute quality of the experience, but the perception that one's own actions
controlled the experience." Elderly residents may be able to make decisions but may not be able to execute them independently. As residents become less able to carry out certain activities on their own, they may lose decisional capacity over them because caregivers may not elicit choices or ignore them when they are voiced (Collopy, 1990). Faced with a loss of control, residents may stop responding and become dependent on those who provide care. In the end, residents may feel that they are fed, dressed, and cared for as a child might be (Collopy, 1990).

Research designed to enhance decision-making and the sense of control in nondemented elderly nursing home residents has been shown to be effective. Harel (1981) suggests that choices as well as responsibilities within a nursing home are important determinants of life satisfaction, morale, and satisfaction with treatment. Addressing the issues of personal control and responsibility, Rodin and Langer (1977) demonstrated the beneficial effects both mentally and physically of enhancing a sense of control and independence among the institutionalized elderly. The residents of one floor of a nursing home (experimental condition) were told that they would be responsible for decisions about movie selections, room arrangement, visiting, and so forth. In addition, experimental subjects were given a small plant as a gift, which they were told to care for as they wished. The
residents of the other floor (control condition) were told that the staff would be responsible for all decisions. Control subjects were also given a small plant, but were told that a staff member would take care of the plant. Thus, the control group was given substantially less control over their lives and possessions. After 3 weeks, staff members were asked to complete a questionnaire about the residents. Compared to the control group, the experimental group showed much greater improvement in their activity level, alertness, and general happiness. The members of the experimental group were also much more likely to participate in social activities within the nursing home. Moreover, in a follow-up 18 months later, 15 percent of the experimental group had died compared to 30 percent of the control group (Rodin & Langer, 1977). Schulz (1976) showed that increased prediction and control over a series of visits from college students had a significant positive impact on the activity, satisfaction, and health of nondemented elderly people in nursing homes. Schulz found, however, that long-term benefits depend on the ability to continue to exert control. Termination of the visits served to make the loss of control more pronounced, leading to even greater unhealthiness than among subjects never exposed to the control-relevant intervention.

Barton, Baltes, and Orzech (1980) suggested that the operant model provides a paradigm for understanding the
interdependencies between behavior and environment in institutional settings. In the operant model, behavior is assumed to be acquired and maintained by environmental antecedents and consequences. Utilizing an operant-observational design whereby resident-staff interactions could be observed and recorded, Barton et al. (1980) found that nursing home staff showed more dependence-supportive than independence-supportive behavior, with dependence-supportive acts being approximately four times as frequent. This finding was supported in other studies as well (Baltes, Honn, Barton, Orzech, & Lago, 1983; Baltes, 1988). Using operant perspectives, this finding was interpreted by Barton et al. (1980) as presenting a schedule of frequent, continuous staff reinforcement for dependent behavior. Residents could expect reinforcement to be more likely whenever they acted dependently. Such a conclusion supports the finding by Moody, Baron, and Monk (1970) that staff interactions with elderly residents typically convey an anticipation and acceptance of dependent behavior. This lends further support to the notion that nursing home residents are often expected and encouraged to fulfill the "sick role" as their social role (MacDonald & Butler, 1974). Along similar lines, Volpe and Kastenbaum (1967) worked with a group of older men who were so physically and psychologically incapacitated that they required complete nursing care. These men could not perform any activities of
daily living; they were agitated, incontinent, and had a record of striking at each other and tearing off their clothes. Volpe and Kastenbaum provided games, cards, a record player, and a decorated bulletin board for the men. The men were dressed in white shirts and ties (their customary attire prior to institutionalization) and at 2 p.m. each day they were served beer with crackers and cheese. Within a month there was a noticeable difference in the group's behavior. The amount of medication they required dropped significantly and social responsiveness markedly increased. The men requested and participated in parties and dances. The improvement in these men was attributed to their being treated with dignity as responsible individuals and to resulting expectancies of reciprocal gratification on the part of the patients and staff members. In essence, the expectation and demand characteristics of the ward had been changed to those of a social situation instead of a medical one. The expectancy and reinforcement of "normal" social behaviors brought about marked behavioral changes in a relatively short time.

**Flexible Schedules**

Frequently overlooked in institutional research is the notion that how a person's day is organized may contribute to his or her quality of life (Brown, 1991). Few people have identical daily routines; for example, some people prefer to work early in the day while others choose to work
later and sleep through the morning. Many institutional programs, including nursing homes, do not take lifestyle preferences into consideration when designing daily activities or schedules (Brown, 1991). Bannerman, Sheldon, Sherman, and Harchik (1990) suggest that rigid schedules do not allow residents to have choices in such matters as the order or timing of daily activities. While some routines are necessary to the operation of an institutional treatment program, there also need to be opportunities for flexibility. According to Brown (1991) changes in the institutional activity schedule may have significant effects on behavior and systematic changes may be viewed as a behavioral treatment plan. Brown suggested that the format of a person's schedule should assist staff members in understanding and carrying out behavioral strategies within the context of naturally occurring routines. Brown tested the effect of individualized activity schedules on problematic behaviors in developmentally disabled individuals with such diagnoses as mild mental retardation, autism with severe retardation, and autism without retardation. Problem behaviors included verbal abuse (e.g., cursing, accusing people of sexual, physical, and psychological abuse), aggression toward other people, self-injury, inappropriate urination, spitting, and noncompliance with staff requests. Schedules were manipulated to suit individual preferences for the order of routines throughout
the day, the form of specific activities, and the amount of
time between successive activities. The results indicated
that systematic changes in the presentation and structure of
daily routines had a significant impact on behavior.
Problematic behaviors decreased and participation in daily
activity routines increased for every subject in the study.
Berkman and Meyer (1988) demonstrated that allowing
developmentally disabled people to choose such things as
when to do laundry or what to have for supper was effective
not only in reducing severe self-injurious behavior, but
also in increasing their desire to assume control over more
aspects of their daily lives. To date, this type of study
has not been conducted in a nursing home setting nor with
dementia patients. According to Cottrell and Schulz (1993),
investigation has focused on the cognitive impairment
associated with dementia rather than on psychosocial factors
that may affect the well-being and behavior of the dementia
patient. Moreover, the high incidence of cognitive
impairment in nursing home residents may foster the belief
that the exercise of choice is beyond their capacity (Iris,
1988). Although the ability to make decisions may be
increasingly impaired during the course of dementia,
individuals may benefit from being able to make whatever
choices they are capable of making.

Staff Education
Previous research suggests that the behavior of nursing staff has tremendous impact on the well-being of residents (Barton et al., 1980; Baltes et al., 1983; Seligman, 1992). For example, agitation is a common problem in the nursing home setting (Cohen-Mansfield, 1986) and may be related to the finding that staff members encourage dependent behavior (Hoffman, Platt, & Barry, 1987). This may be especially true for the dementia patient, who is often viewed as "helpless" because of the deterioration of cognitive abilities (Namazi & Johnson, 1992). Communication difficulties, both in expressing oneself and in understanding the conversation of others, can lead to frustrations in both the patient and the caregiver (Hoffman et al., 1987). Caregivers may find that it is easier to do everything for the patient and may even try to anticipate the needs of the patient in order to avoid frustration. Dementia patients may be unable to verbalize their needs and choices; staff members may interpret this as an inability to make choices rather than the inability to express them. According to Hoffman et al. (1987) dementia patients often cannot understand the complexities of normal conversation. This may frustrate and depress them, causing withdrawal and/or acting out. According to Cottrell and Schulz (1993), dementia patients may also become depressed due to experiencing repeated failure. Research suggests that the depression, which some dementia patients experience, is
associated more directly with a decline in functional status than with a decline in the patient's cognitive abilities (Cottrell & Schulz, 1993; Pearson, Teri, Reifler, & Raskind, 1989). One problem is that caregivers often do not receive education or training related to the emotional and behavioral problems of patients with dementia. Special skills are required to work with patients with DAT and related disorders. For example, specialized training should focus on techniques that help maximize the abilities that remain, how to communicate, and how to respond to agitation and depression (Dippel & Hutton, 1991).

The impaired cognitive abilities of the dementia patient require simple behavioral techniques. For example, staff could be trained to not reinforce or encourage problematic behavior, such as agitation. In this way, extinction or perhaps a reduction of agitation may occur. Positive responses to appropriate behavior encourage the patient to repeat desirable kinds of behavior and frequent repetition may offset to some degree the defects in memory and recall (Hoffman et al., 1987). In addition, nursing staff could be trained to encourage and assist independent functioning of the residents. However, the literature suggests that nursing home staff are typically not properly trained to deal with behavior problems nor to facilitate functioning of dementia patients (Block, Boczkowski, Hansen, & Vanderbeck, 1987; Burgio & Burgio,

**Staff Training**

Because nursing staff are in direct contact with patients, they potentially may be invaluable agents of behavioral modification (Burgio & Burgio, 1986; 1990). Many times, however, they are unprepared to deal with the cognitive and behavioral changes associated with dementia. While recent works (e.g., Beck & Heacock, 1988) offer guidelines for care, there is a lack of research investigating either interventions or programmatic changes which would maximize the remaining capabilities of dementia patients while maintaining the individuality and personal lifestyle of each patient.

Sperbeck and Whitbourne (1981) trained nursing staff to be more aware of dependency-reinforcing conditions and to develop behavior management plans for reducing functional dependency in nursing home residents. Sperbeck and Whitbourne concluded that to the extent that behavior management training may reduce the amount of time spent reinforcing dependence, the staff can be free to engage in necessary supportive behaviors, such as encouraging independent functioning of the residents. By training nursing assistants to use reinforcers such as wine and cigarettes, Mishara and Kastenbaum (1974) increased various appropriate behaviors in chronic, psychogeriatric patients. Likewise, Nigl and Jackson (1981) taught nursing assistants
to use behavior management procedures to increase social responses in psychogeriatric patients. The authors reported good skill acquisition among the nursing assistants. Unfortunately, none of the studies described formal procedures for maintaining staff behaviors over time.

Many staff training models have been developed and evaluated in nongeriatric settings such as psychiatric institutions and institutions for the developmentally disabled (Burgio & Burgio, 1990). The applicability of these methods to geriatric, long-term care facilities is largely unknown. Similarities between geriatric and nongeriatric institutional settings suggest that with some modifications, many of the procedures can be employed to enhance staff productivity and improve the quality of life for elderly individuals in these settings (Burgio & Burgio, 1990). For example, Block et al. (1987) trained nursing home aides in theory and techniques of behavior management. These authors found that after training, the aides were able to assist in the design of behavioral interventions for nondemented residents and were more likely to recognize when problematic behaviors were being maintained by staff attention. Training programs that stress methods of assisting demented patients without "taking over" could promote more effective functioning and independence for the patients while decreasing those situations that lead to problematic behaviors such as agitation and combativeness.
The Present Study

The purpose of the present study was to evaluate the effect of individualized, flexible daily schedules on problematic behaviors (dependent behavior, agitation, and falling) in elderly nursing home patients diagnosed as having dementia of the Alzheimer's type or a related disorder. Previous research indicates that nursing home schedules are designed for institutional efficiency rather than for independent functioning of the residents (Brown, 1991; Namazi & Johnson, 1992). It has been shown in other institutionalized populations (e.g., developmentally disabled and mentally handicapped) that individualization of schedules to reflect personal lifestyles and choices decreases problematic behaviors (Bannerman, et al., 1990; Berkman & Meyer, 1988; Brown, 1991). However, individualized schedules have not been studied quantitatively in dementia patients.

Successful implementation of this treatment program would have been difficult unless staff performance was both developed and maintained (Kazdin, 1973). Therefore, a staff training program was coupled with the implementation of the flexible schedules. Nursing staff was provided with education regarding the abilities of dementia patients and the importance of individual schedules. In addition, behavior management techniques designed to enhance the level of independent functioning appropriate for each patient were
taught. One goal of the training was for the patients to be re-trained in activities of daily living, such as grooming and eating. Patients were encouraged to participate in these activities as much as possible. While some regimentation was necessary, the daily schedules of the patients were as individualized and flexible as possible.

Preliminary observations at the nursing home selected for the present study indicated that the most common problematic behaviors of dementia patients were dependency, agitation, and falling. These behaviors tended to be associated with activities of daily living (e.g., toileting, dressing, and eating) and scheduled activities (e.g., going to bed either for a nap or for the night). It is possible that a regimented routine that did not account for an individual’s natural schedule was an important contributor to these events. For example, the majority of falls occurred between the hours of 3:00 p.m. and 6:00 a.m.; over 50 percent of these falls occurred when patients were trying to crawl out of their beds. Perhaps the schedule of frequent naps and early bedtimes did not coincide with the decreased biological need for sleep in elderly individuals (Reynolds, Hoch, Stack, & Campbell, 1988) or their personal sleep cycles. Therefore, many patients may have been awakening earlier and attempting to leave their beds, resulting in falls. It may also be that the patients were aware of their declining ability and felt frustrated when they were not
allowed to participate in even their most basic self-care routines, leading to episodes of "acting out". For example, the practice in this nursing home was to have all patients out of bed and in the dining room for breakfast by 7:00 a.m. With individualized, flexible scheduling, patients were allowed to remain in bed until a time that was determined to be consistent with their individual sleep patterns.

Cognitive functioning was measured using the Dementia Rating Scale (DRS; Mattis, 1988) in order to: (1) characterize the cognitive status of the subject sample prior to and following implementation of the treatment program, (2) document any changes in cognitive status of the sample from pretreatment to posttreatment, (3) examine the relationship between cognitive status and expression of problematic behaviors prior to and following treatment, and (4) examine the relationship between cognitive status and response to the experimental treatment. These relationships currently have not been established. However, Teri, Borson, Kiyak, and Yamagishi (1989) demonstrated that the Conceptualization Subscale on the DRS approached statistically significant association with the number of problematic behaviors and the persistence of these behaviors in a moderately impaired sample of community-residing dementia patients. Teri et al. further suggested that age may be more important than level of cognitive functioning in predicting difficulties with activities of daily living.
Smith, Mandarino, McCormick, and Severson (1993), however, found that Dementia Rating Scale scores were more strongly associated with functional losses than with behavioral disturbances in community-residing dementia patients. Based on previous research with nondemented nursing home residents and other institutionalized populations, it was hypothesized that the proposed treatment program of staff training and individualized scheduling would result in more independent behavior, less agitated behavior, and fewer falls in the patients. It was further predicted that there would be a positive relationship between cognitive functioning and response to treatment, such that subjects with higher scores on the Dementia Rating Scale would show better response to the treatment program.

METHOD

General Paradigm

The present study was designed to test the effect of the treatment program on problematic behaviors in patients with dementia of the Alzheimer's type or a related disorder. Aspects of patient behavior that were measured included agitated behavior, dependent behavior related to activities of daily living, falling, and cognitive functioning.

The experimental procedures are specified in the following sections. First, the experimental design of the present study is detailed. Next, the subjects and setting are characterized. Following, the dependent measures are
described. Finally, the experimental treatment will be described.

**Experimental Design**

From the perspective of experimental design, it would have been ideal to use random assignment and place the subjects in either a control group or an experimental group. However, this was not possible due to several issues related to conducting research in this applied setting. For example, there were insufficient staff resources to simultaneously carry out two separate programs on this unit. It would have been difficult for staff to remember which subject was in which condition, leading to inconsistency in the application of the treatment program and in the maintenance of control. Moreover, all subjects are housed on the same unit and interact with staff and other residents throughout the day. Because of this high level of interaction, the experimental condition could not be implemented in isolation from the control condition. This ruled out a multiple baseline design. If the treatment program was successful in decreasing the number of problematic behaviors on the unit, it would have been unethical to implement the treatment program, then later return to the institutional schedule, therefore ruling out an ABA design. Finally, it would not be informative to compare subjects with residents in other units who do not have dementia.
Given the limitations noted above, a within-subjects, pretest - posttest design was used. Data were collected on four dependent measures: dependent behavior, agitated behavior, incidents of falling, and cognitive functioning. The pretreatment phase lasted four weeks. During this period, staff training was conducted. In addition, cognitive functioning was assessed once during this phase; data for all other measures (dependent behavior, falling, agitated behavior) were collected over a period of two weeks prior to implementation of the treatment program. Next, the treatment period began. During this period, the flexible schedules were implemented and the staff began utilizing the behavioral techniques they learned during training sessions. Four weeks after implementation of the treatment program, posttreatment measures were obtained for dependent behavior, falling, and agitated behavior over a two week period. Cognitive functioning was measured once during the posttreatment phase (see Table 1). The treatment program

Table 1. Experimental design (over weeks).

<table>
<thead>
<tr>
<th>Staff Training</th>
<th>Flexible Schedules/Behavioral Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Diagram]</td>
<td></td>
</tr>
<tr>
<td>pretests</td>
<td>posttests</td>
</tr>
<tr>
<td>1 2 3 4</td>
<td>5 6 7 8 9 10</td>
</tr>
</tbody>
</table>
remains in effect at the present time.

Subjects and Setting

The setting for the present study was the Bratsberg unit at Immanuel Lutheran Home located in Kalispell, Montana. This unit housed 54 patients diagnosed by their individual physicians as having dementia of the Alzheimer's type or a related dementing disorder. Informed consent was obtained from the legal representatives of 42 patients as well as from the patients themselves where appropriate (see Appendix A). However, two of the subjects passed away and one subject moved to another unit prior to implementation of the treatment program. Additionally, four subjects passed away prior to collection of posttest data. Therefore, data were collected for the remaining 35 subjects. The subjects had resided in the unit from 4 months to 1 year.

Diagnoses and number of subjects affected included: dementia/senile degeneration (15); dementia of the Alzheimer's type (14); arteriosclerotic vascular disease (3); internal hydrocephalus (1); chronic cerebrovascular insufficiency syndrome (1); and, left parietal stroke (1).

The Dementia Rating Scale (DRS; Mattis, 1988) was administered in order to characterize the cognitive functioning of the subjects. The DRS was administered once during the pretreatment phase and once during the posttreatment phase in order to document any changes in the cognitive functioning of the subjects from pretreatment to
posttreatment. The DRS was developed as a brief measure of cognitive impairment. Based on the performance of normal elderly subjects, the cutoff score on the DRS indicative of dementia is a DRS total score of 123 (Mattis, 1988). None of the subjects in the present study obtained scores above the cutoff score. In addition, the DRS has been used to test subjects diagnosed as having dementia of the Alzheimer's type (Coblentz, Mattis, Zingesser, Kasoff, Wisniewski, & Katzman, 1973); the mean total score obtained by these subjects was 79.55 (SD = 33.98). The mean pretreatment total DRS score for the subjects in the present study is substantially below that of Coblentz et al., indicating that these subjects had severe cognitive deficits even when compared to other subjects with dementia of the Alzheimer's type. Table 2 lists subject demographics including age, Dementia Rating Scale total scores, and education.

Table 2. Subject demographics.

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>DRS</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M</strong></td>
<td>87.29</td>
<td>37.77</td>
<td>12.29</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>6.50</td>
<td>32.82</td>
<td>2.09</td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>74 - 99</td>
<td>0 - 103</td>
<td>8 - 16</td>
</tr>
</tbody>
</table>

Medication regime. Twenty-five subjects were receiving medications during collection of pretreatment data; twenty-one subjects received medications during collection of
posttreatment data. Medications administered, including pharmaceutical classification (Ford, 1988), number of subjects receiving each medication during the pretreatment and posttreatment periods, total number of medications pretreatment and posttreatment, and purpose of prescription are listed in Table 3.

Table 3. Medication regime.

<table>
<thead>
<tr>
<th>Medication</th>
<th>N(pre)</th>
<th>N(post)</th>
<th>Category/Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ativan</td>
<td>2</td>
<td>1</td>
<td>antianxiety</td>
</tr>
<tr>
<td>Benadryl</td>
<td>2</td>
<td>3</td>
<td>antihistamine (insomnia)</td>
</tr>
<tr>
<td>Cardizem</td>
<td>1</td>
<td>1</td>
<td>antianginal</td>
</tr>
<tr>
<td>Coumadin</td>
<td>1</td>
<td>1</td>
<td>anticoagulant</td>
</tr>
<tr>
<td>Dalmane</td>
<td>0</td>
<td>1</td>
<td>antianxiety (insomnia)</td>
</tr>
<tr>
<td>Darvocet-N</td>
<td>2</td>
<td>1</td>
<td>narcotic analgesic</td>
</tr>
<tr>
<td>Dilantin</td>
<td>3</td>
<td>3</td>
<td>anticonvulsant</td>
</tr>
<tr>
<td>Desyrel</td>
<td>1</td>
<td>0</td>
<td>antidepressant</td>
</tr>
<tr>
<td>Doxepin</td>
<td>1</td>
<td>1</td>
<td>antidepresant</td>
</tr>
<tr>
<td>Haldol</td>
<td>1</td>
<td>1</td>
<td>antipsychotic</td>
</tr>
<tr>
<td>Inderal</td>
<td>1</td>
<td>1</td>
<td>antihypertensive</td>
</tr>
<tr>
<td>Lasix</td>
<td>5</td>
<td>4</td>
<td>diuretic</td>
</tr>
<tr>
<td>Mellaril</td>
<td>3</td>
<td>2</td>
<td>antipsychotic (agitation)</td>
</tr>
<tr>
<td>Trilafon</td>
<td>1</td>
<td>0</td>
<td>antipsychotic (agitation)</td>
</tr>
<tr>
<td>Aldomet</td>
<td>1</td>
<td>1</td>
<td>antihypertensive</td>
</tr>
<tr>
<td>Nitrobid</td>
<td>1</td>
<td>1</td>
<td>antianginal</td>
</tr>
<tr>
<td>Prozac</td>
<td>1</td>
<td>0</td>
<td>antidepressant</td>
</tr>
<tr>
<td>Serax</td>
<td>1</td>
<td>0</td>
<td>antianxiety</td>
</tr>
<tr>
<td>Valium</td>
<td>1</td>
<td>0</td>
<td>antianxiety</td>
</tr>
<tr>
<td>Synthroid</td>
<td>1</td>
<td>1</td>
<td>hormone replacement</td>
</tr>
<tr>
<td>Zantac</td>
<td>2</td>
<td>1</td>
<td>ulcer</td>
</tr>
</tbody>
</table>

Total 32 24

Dependent Measures

Dependent Behavior. Dependent behavior was evaluated using the Activities of Daily Living (ADL) checklist (see Appendix B). Dependent behavior was rated on a Likert-type scale from 1 to 5 (1 = not dependent, 5 = totally dependent). Ratings were obtained for each subject twice per day: once
during the day shift and again during the evening shift. This measure was not evaluated by staff on the night shift because the majority of subjects remained in bed throughout this shift.

A dependent behavior score was derived for each subject based on scores on the ADL checklist. Because not all of the subjects performed every behavior in every category of the ADL checklist (e.g., most of the females do not shave), an average performance score was calculated for each category of behavior in which a subject did engage. These average scores were then summed for a daily performance score. Daily performance scores could range from 40 (completely independent) to 200 (completely dependent). In other words, higher scores on the ADL checklist reflect greater impairment in self-care abilities.

**Agitated Behavior.** Agitated behavior was assessed by nursing staff three times per day on the day, evening, and night shifts using the Overt Aggression Scale (see Appendix C; Yudofsky, Silver, Jackson, Endicott, & Williams, 1986). The Overt Aggression Scale allows for assessment of total number of agitated behaviors, type of agitated behavior, and severity of agitated behavior (Burns, Folstein, Brandt, & Folstein, 1990).

**Total agitated behavior.** Total agitated behavior was assessed for each subject by summing the daily occurrences of all agitated behavior. Instances of agitated behavior
were documented on the Overt Aggression Scale by nursing staff on the day, evening, and night shifts.

**Type of agitated behavior.** For each subject, any instance of agitated behavior was documented according to the following criteria: verbal aggression (e.g., shouting, cursing); physical aggression against objects (e.g., throwing clothes); physical aggression against other people (e.g., kicking, spitting, biting); and, physical aggression against self (e.g., picking or scratching skin). This allowed for assessment of the type of agitated behavior exhibited by the subjects (see Appendix C).

**Severity of agitated behavior.** The Overt Aggression Scale allows for documentation of the severity of agitated behavior. Within each type of agitated behavior, four representative behaviors are listed in ascending order of severity (see Appendix C). For example, a mild form of verbal aggression would be making loud noises; making clear threats of violence towards others would be a severe form. For physical aggression against objects, slamming doors is mild; throwing objects is severe. For physical aggression against self, picking or scratching one’s skin is mild; self-mutilation is severe. Likewise, physical aggression against others ranges from mild (making threatening gestures) to severe (attacking others causing severe physical injury). Therefore, the severity of behaviors can be rated on a scale ranging from 1 (mild) to 4 (severe).
Falls. Number of falls for each subject was assessed from the institution incident reports. These reports were completed by the charge nurses on each shift as necessary. Falls included those that were witnessed as well as those that were suspected.

Cognitive Functioning. Cognitive functioning of the subjects was assessed using the Dementia Rating Scale (Mattis, 1988). It yields a total score and five subscale scores: Attention, Initiation and Perseveration, Construction, Conceptualization, and Memory. It has been shown to have good discriminant validity between normal and cognitively impaired groups, good overall reliability, and a strong correlation with overall functioning (Mattis, 1976). During the administration of this test, subjects were asked to perform the following tasks: recall numbers, name items, imitate movements, draw pictures, and remember verbal and nonverbal material. Performance on this test was scored according to standard procedures (Mattis, 1988).

Cognitive functioning was assessed once prior to and once following the implementation of the treatment program in order to document any changes in cognitive functioning of the subjects between the pretreatment and posttreatment periods. In order to examine the relationship between cognitive functioning and expression of problematic behaviors prior to implementation of the treatment program, Pearson correlation coefficients were computed between the

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six scores yielded by the pretreatment Dementia Rating Scale and pretest measures of dependent behavior, agitated behavior, and falls.

The relationship between cognitive functioning and expression of problematic behaviors following implementation of the treatment program was examined by computing the Pearson correlation coefficients between the posttreatment Dementia Rating Scale scores and posttreatment measures of dependent behavior, agitated behavior, and falls. The relationship between the subject’s cognitive functioning prior to the treatment program and their response to treatment was also examined. As an index of the subject’s response to treatment, the difference between a subject’s pretreatment score and posttreatment score on measures of agitation, dependency, and falls was computed. These difference scores were then correlated with the six scores obtained on the Dementia Rating Scale during the pretreatment phase.

**Experimental Treatment**

The following is a description of the two components of the treatment program. **Staff Training.** Nurses and nursing assistants were trained in 8 one-hour sessions by the principal investigator and two registered nurses who are on staff at the facility. The training program consisted of two phases: (1) the educational phase which lasted for two sessions (Sessions...
One and Two), and (2) the skill acquisition phase which lasted for six sessions (Sessions Three through Eight). Throughout the training sessions, three major themes were stressed: (1) Approach behavior from the patient's perspective; (2) Focus on changing staff behavior; and, (3) Encourage and enhance choice making by the patient.

Specific content of the eight training sessions was as follows:

Session One: Content focused on increasing staff knowledge of dementia patient's abilities and behaviors. Sensory abilities, changes in the nervous system, overall health, and cognitive changes associated with dementing disorders were discussed. Emphasis was placed on the importance of identifying the cognitive and physical limitations of the subjects as well as how to enhance their remaining abilities.

Session Two: Principles of learning and behavior were introduced, along with common behavioral techniques such as shaping, modeling, and extinction. Additionally, staff members were asked to describe patient behaviors they considered problematic.

Session Three: The trainers role-played various situations in which a patient may be reinforced for dependent behavior. Incorrect approaches and techniques were demonstrated, followed by correct approaches and techniques. For example, patients may fail to complete an
activity because they lose track of the sequence of events or because instructions given to them are too complicated. Staff was trained to give step-by-step instructions and to give only one piece of information in each instruction as opposed to completing the activity for the patient.

Session Four: Staff members were assigned partners. One partner portrayed a patient and the other portrayed a nursing assistant. The patient was "handicapped" (e.g., gloves on hands to simulate movement difficulties; music played on a headset to simulate auditory impairments; glasses to restrict field of vision). The nursing assistant was assigned an activity of daily living (e.g., brushing teeth) with which to assist the "handicapped" patient. Staff was encouraged to let patients remain as independent as possible, providing the minimal amount of supervision or assistance needed rather than taking over the activity. Trainers evaluated and commented on procedures used. Alternative techniques were suggested and practiced as necessary. All staff members role-played both patient and nursing assistant.

Session Five: The trainers role-played various improper and proper approaches to patients who are exhibiting problematic behavior. Emphasis was placed on the situational determinants of problematic behavior. One trainer acted as patient, the other acted as aide. For example, in one scenario the patient was awakened by the
aide who was obviously rushing through her duties. The patient exhibited physical aggression, causing the aide to become frustrated and leave the room. In demonstrating the proper approach, the aide realized that her behavior was causing the patient to become agitated; the aide asked the patient if she was ready to get up or if she would like a cup of coffee in bed prior to arising.

Session Six: The trainers acted out problematic behaviors such as cursing, spitting, and kicking. Staff members were instructed to act as if the trainers were patients and approach the situations as they normally would. Feedback was given regarding the individual approaches used and, when appropriate, alternative approaches were suggested and modeled.

Session Seven: Two trainers acted as aides and one trainer acted as patient. Emphasis was again placed on situational determinants of problematic behavior, such as "talking over" the patient, forcing the patient to move too quickly, and ignoring statements made by the patient. Trainers asked staff members for feedback following each scenario.

Session Eight: Trainers provided feedback to the staff members concerning changes they observed during the training. In addition, staff members were asked to relate how they believed the training would affect their interactions with the patients.
Flexible Schedules. At Immanuel Lutheran Home, each shift was assigned duties to be performed at specified times throughout the day. For example, all patients were to be out of bed and in the dining room for breakfast by 7:00 a.m.; all patients were taken to the bathroom every two hours; and, many patients were put to bed for naps at 9:30 a.m. and then gotten out of bed again at 10:30 a.m. to prepare for lunch. This schedule contained components which could be made more flexible for each subject. For example, getting up, going to the dining room or eating in one's own room, going to the toilet, and taking naps may be determined by individual preferences and individual routines developed over a lifetime. It may be, for example, that Subject 1 prefers to stay in bed until 8:00 a.m., have a cup of coffee in bed, then get up and watch television. Subject 2, on the other hand, may prefer to get up at 6:00 a.m., have a light breakfast, and sit in an easy chair for a mid-morning nap rather than returning to bed.

During the training sessions, staff members were instructed in the use of communication techniques designed to offer subjects the opportunity to make choices. For example, rather than saying, "It's time to go to lunch", a staff member might say, "We are having lunch now. We would like you to join us." These individualized, flexible schedules were encouraged and maintained as much as possible by the staff members. Staff members were asked to develop
individualized schedules for each subject. For example, staff monitored the approximate times subjects were engaging in particular behaviors, such as waking up and going to the toilet. Staff was encouraged to be adaptable to meet the personal schedules of individual subjects, as opposed to the subjects being fit into the institutional schedule. When the experimental treatment was implemented, these individualized, flexible schedules were utilized for each subject.

RESULTS

Medication Changes

Table 4 lists medication changes that occurred for subjects between the pretreatment and posttreatment phases. Included are the total number of medications received by each subject in the two conditions as well as the specific changes made. For the vast majority of subjects (94%), the number of medications, or the dosage, decreased or remained the same. Only two subjects received more medications in the posttreatment phase (one Benadryl, one Dalmane). Ten subjects received fewer medications and two subjects received lower dosages of medications in the posttreatment phase than in the pretreatment phase. There was no change in medications from pretreatment to posttreatment in the remaining 23 subjects.
Table 4. Medication changes.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Pre</th>
<th>Post</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>5</td>
<td>discontinued Mellaril</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>discontinued Prozac</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>0</td>
<td>discontinued Lasix, Desyrel</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>3</td>
<td>added Dalmane</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>2</td>
<td>decreased Haldol:.5 mg to .25 mg</td>
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<tr>
<td>11</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
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<td>15</td>
<td>0</td>
<td>0</td>
<td></td>
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</tr>
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<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>18</td>
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<td>0</td>
<td>discontinued Valium</td>
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<tr>
<td>19</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
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<td>1</td>
<td>2</td>
<td>added Benadryl</td>
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<tr>
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<td>1</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>1</td>
<td>0</td>
<td>discontinued Zantac</td>
</tr>
<tr>
<td>23</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>2</td>
<td>1</td>
<td>discontinued Serax</td>
</tr>
<tr>
<td>26</td>
<td>1</td>
<td>0</td>
<td>discontinued Darvocet-N</td>
</tr>
<tr>
<td>28</td>
<td>1</td>
<td>1</td>
<td>decreased Mellaril:10 mg tid* to 10 mg bid+</td>
</tr>
<tr>
<td>29</td>
<td>5</td>
<td>3</td>
<td>discontinued Ativan, Trilafon</td>
</tr>
<tr>
<td>30</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>31</td>
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<td>1</td>
<td></td>
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<td></td>
</tr>
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<td>1</td>
<td>1</td>
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</tr>
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<td>36</td>
<td>1</td>
<td>1</td>
<td></td>
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<td>37</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>0</td>
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<td></td>
</tr>
</tbody>
</table>

*tid = three times per day, +bid = twice per day

Dependent Behavior

A one-way analysis of variance for repeated measures was conducted for pretreatment versus posttreatment scores on the Activities of Daily Living checklist. The calculated $F$ ratio was statistically significant, $F(1, 34) = 7.53, p <$
. As illustrated in Figure 1, examination of subject's pretreatment ($M = 1896.26$) versus posttreatment ($M = 1989.31$) scores indicated a decline in functional status from pretreatment to posttreatment. Thus, subjects in this sample were less able to perform self-care activities of daily living in the posttreatment phase.

![Figure 1](image.png)

**Agitated Behavior**

Total agitated behavior. For the 14 subjects who exhibited agitated behavior in the pretreatment phase, the
posttreatment phase, or both, the results of a one-way repeated measures analysis of variance indicated no significant differences between total agitated behavior pretreatment versus total agitated behavior posttreatment, \( F(1, 13) = 0.942, p > .05 \). Although inspection of the data (as shown in Figure 2) indicates a decrease in the total occurrence of agitated behavior (overall pretreatment total = 76, \( M = 5.43 \); overall posttreatment total = 49, \( M = 3.5 \)), this reduction failed to achieve statistical significance.
Type of agitated behavior. A one-way repeated measures analysis of variance was used to compare the type of agitated behavior expressed in the pretreatment phase versus the posttreatment phase. The analysis revealed significant differences, $F(7, 91) = 3.21, p < .05$.

Figure 3 illustrates the pretreatment versus posttreatment comparisons for type of agitated behavior. Posthoc analysis (Tukey’s Studentized Range [HSD] test, $p < .05$) indicated that during the pretreatment phase, the most common types of
agitated behavior were verbal aggression and physical aggression against others. The analysis revealed that physical aggression against others decreased significantly from the pretreatment phase to the posttreatment phase; no other pretreatment versus posttreatment comparisons were significant. Therefore, during the posttreatment phase, verbal aggression was significantly higher than any other type of agitated behavior.

**Severity of agitated behavior.** Mean severity ratings for each subject for each type of agitated behavior were also analyzed using a one-way repeated measures analysis of variance. The analysis revealed significant differences between mean severity ratings in the pretreatment phase versus mean severity ratings in the posttreatment phase, \( F(7, 91) = 5.69, p < .05. \)

Tukey’s Studentized Range \( [H \text{ } \text{ test} (p < .05) \) revealed that in the pretreatment phase, the severity of verbal aggression and physical aggression against others was significantly higher than physical aggression against objects and physical aggression against self. The severity of physical aggression against others was significantly reduced from the pretreatment phase to the posttreatment phase; no other pretreatment versus posttreatment comparisons were significant. Therefore, severity of verbal aggression was significantly higher than any other type of agitated behavior in the posttreatment phase. Figure 4

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illustrates the pretreatment versus posttreatment comparisons.

**Falls**

The results of a one-way repeated measures analysis of variance indicated no significant differences between the number of falls occurring in the pretreatment phase versus the number of falls occurring in the posttreatment phase, $F(1, 5) = 0.048, p > .05$. Inspection of the data, as presented in Figure 5, indicates that the number of falls
was relatively small in both conditions.

**Cognitive Functioning**

Changes in cognitive functioning: Pretreatment versus Posttreatment. A one-way analysis of variance for repeated measures was used to compare total DRS scores pretreatment versus total DRS scores posttreatment. The obtained $F$ ratio was significant, $F (1, 34) = 6.83, p < .05$. As illustrated in Figure 6, examination of the subject's pretreatment ($M = 37.8$) versus posttreatment ($M = 33.0$) scores indicated a
decline in cognitive status from pretreatment to posttreatment. Thus, subjects in this sample were at a lower level of cognitive functioning during the posttreatment phase.

Relationship of problematic behaviors to level of cognitive functioning: Pretreatment. To evaluate the relationship between cognitive functioning and expression of problematic behaviors during the pretreatment phase, Pearson correlations were calculated between the six Dementia Rating
Scale scores obtained during the pretreatment phase and pretreatment measures of agitated behavior, dependent behavior, and falls.

As illustrated in Table 5, significant associations were obtained between all scores on the pretreatment Dementia Rating Scale and dependent behavior as measured by activities of daily living. These results indicate that during the pretreatment phase subjects with greater cognitive impairment were more likely to have difficulties with activities of daily living.

Only the Attention subscale was significantly correlated with number of falls ($r = -0.334$), indicating that subjects with lower scores on Attention experienced more falls. Furthermore, correlations between cognitive functioning and agitated behavior indicate that neither the Dementia Rating Scale total score nor any subscores were significantly related to expression of agitated behavior (see Table 5).

Table 5. Pretreatment correlations.

<table>
<thead>
<tr>
<th></th>
<th>ATT</th>
<th>I/P</th>
<th>CONS</th>
<th>CONC</th>
<th>MEM</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADL</td>
<td>$-0.825^*$</td>
<td>$-0.693^*$</td>
<td>$-0.638^*$</td>
<td>$-0.720^*$</td>
<td>$-0.539^*$</td>
<td>$-0.824^*$</td>
</tr>
<tr>
<td>Agitation</td>
<td>$-0.080$</td>
<td>$-0.022$</td>
<td>$-0.121$</td>
<td>$-0.190$</td>
<td>$-0.123$</td>
<td>$-0.109$</td>
</tr>
<tr>
<td>Falls</td>
<td>$-0.334^*$</td>
<td>$-0.226$</td>
<td>$-0.177$</td>
<td>$-0.226$</td>
<td>$-0.192$</td>
<td>$-0.291$</td>
</tr>
</tbody>
</table>

Relationship of problematic behaviors to level of cognitive functioning: Posttreatment. Data were analyzed using Pearson correlations to investigate the relationship between
posttreatment cognitive functioning and expression of problematic behaviors during the posttreatment phase. Table 6 illustrates these relationships.

In the posttreatment phase, significant associations were obtained between all scores on the posttreatment Dementia Rating Scale and dependent behavior as measured by activities of daily living. These results indicate that during the posttreatment phase subjects with greater cognitive impairment were more likely to have difficulties with activities of daily living.

Two DRS subscales, Initiation/Perseveration ($r = -0.302$) and Conceptualization ($r = -0.304$), were significantly related to the number of agitated behaviors reported in the posttreatment condition. Subjects with lower scores on the Initiation/Perseveration and Conceptualization subtests exhibited more behavioral problems.

Table 6. Posttreatment correlations.

<table>
<thead>
<tr>
<th></th>
<th>ATT</th>
<th>I/P</th>
<th>CONS</th>
<th>CONC</th>
<th>MEM</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADL</td>
<td>-.706*</td>
<td>-.759*</td>
<td>-.565*</td>
<td>-.628*</td>
<td>-.301*</td>
<td>-.710*</td>
</tr>
<tr>
<td>Agitation</td>
<td>.114</td>
<td>-.302*</td>
<td>-.236</td>
<td>-.304*</td>
<td>-.054</td>
<td>.180</td>
</tr>
<tr>
<td>Falls</td>
<td>.277</td>
<td>.024</td>
<td>-.151</td>
<td>-.054</td>
<td>.287</td>
<td>.172</td>
</tr>
</tbody>
</table>

No other cognitive scores were significantly correlated with agitated behavior (see Table 6). Additionally, no cognitive scores were significantly correlated with number of falls during the posttreatment phase.
Relationship of response to treatment to level of cognitive functioning. For activities of daily living, significant negative correlations were obtained between the Attention ($r = -.312$) and Memory ($r = -.406$) subscales of the DRS obtained during the pretreatment phase and response to treatment. Subjects with lower scores on Attention and Memory showed a greater change toward increased dependency from the pretreatment phase to the posttreatment phase (see Table 7).

In terms of agitated behavior, the Conceptualization subscale was significantly related to the difference in agitated behavior between pretreatment and posttreatment phases ($r = -.303$). This indicates that subjects with lower Conceptualization scores showed a greater response to treatment as indexed by a larger difference between pretreatment and posttreatment incidents of agitated behavior. That is, for these subjects the total number of incidents during the pretreatment phase was larger than the total number of incidents in the posttreatment phase.

Table 7. Response to treatment.

<table>
<thead>
<tr>
<th></th>
<th>ATT</th>
<th>I/P</th>
<th>CONS</th>
<th>CONC</th>
<th>MEM</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADL</td>
<td>-.312*</td>
<td>.067</td>
<td>-.104</td>
<td>-.243</td>
<td>-.406*</td>
<td>-.238</td>
</tr>
<tr>
<td>Agitation</td>
<td>-.188</td>
<td>-.069</td>
<td>-.153</td>
<td>-.303*</td>
<td>-.144</td>
<td>-.214</td>
</tr>
<tr>
<td>Falls</td>
<td>-.261</td>
<td>-.251</td>
<td>-.108</td>
<td>-.116</td>
<td>-.312*</td>
<td>-.236</td>
</tr>
</tbody>
</table>

No cognitive scores were significantly related to the
difference in the number of falls from the pretreatment phase to the posttreatment phase.

DISCUSSION

It was predicted that the treatment program would result in a decrease in the total number of agitated behaviors from the pretreatment phase to the posttreatment phase. Although there was a reduction in the total number of agitated behaviors from 76 to 49 (a 36% reduction), this was not a statistically significant difference. This may be related to the small changes in agitated behavior experienced by many subjects (e.g., from 5 pretreatment to 3 posttreatment). These small decreases may have offset the more substantial decreases seen in the remaining subjects who exhibited more agitated behaviors. For example, one subject displayed a dramatic response to the treatment program. This subject had a total of 22 incidents of agitated behavior in the pretreatment phase. During the posttreatment phase, the number was reduced to 5 incidents. This finding supports previous research (Berkman & Meyer, 1988; Brown, 1991) in which severely developmentally disabled individuals with serious behavior problems were more responsive to treatment programs similar to that designed for the present study than were less severely afflicted individuals.

While no significant differences were found in the total number of agitated behaviors, the nature of agitated
behavior was affected. During the pretreatment phase, verbal aggression and physical aggression against others were the most prevalent types. A particularly important finding was the significant reduction in one type of agitated behavior following the implementation of the treatment program--physical aggression against others. According to nursing staff, physical aggression against others constitutes the most undesirable type of problematic behavior expressed by these patients. Moreover, the severity of physical aggression against others was significantly reduced. During the pretreatment phase, there was a tendency for instances of physical aggression to involve subjects striking, kicking, or pushing other people ($M$ physical aggression against others rating = 1.42). During the posttreatment phase, the tendency was toward subjects making threatening gestures, swinging at people, or grabbing at clothing ($M$ physical aggression against other rating = .59). While verbal aggression remained high in both the pretreatment and posttreatment phases, there was not an increase in verbal aggression associated with the decrease in aggression against others as reported in previous studies with nondemented elderly nursing home residents (Hall, Price, Shindling, Peizer, & Massey, 1973).

An additional finding was that subjects with lower scores on the Conceptualization subscale showed greater response to the treatment program in terms of agitated
behavior. In other words, subjects with lower pretreatment
Conceptualization scores showed the greatest decrease in
agitated behavior. It may be that these subjects, as
suggested by Teri et al. (1989), were more frustrated by
environmental factors, such as rigid institutional
schedules, and resorted to agitated behavior as a means of
expressing their discomfort with the situation. This would
suggest that these subjects would show the greatest
favorable response to a program that decreased the impact of
environmental factors. Once the environmental influences
were reduced, the number of agitated behaviors may have been
more representative of the nature of the disease. It is
also possible that these subjects cannot adjust to new
routines and the demands of an institutional schedule.
Therefore, a more flexible schedule may have reduced their
confusion and/or frustration and resulted in the decreased
expression of agitated behavior.

Another interesting finding of the present study is
that during the pretreatment phase, there was no
correlation between any pretreatment DRS subscale and the
expression of agitated behavior during the pretreatment
phase; however, posttreatment DRS subscales of
Initiation/Perseveration and Conceptualization were
correlated with the expression of agitated behavior during
the posttreatment phase. The posttreatment data support the
hypothesis of Teri et al. that the Conceptualization
Subscale is related to the expression of agitated behavior. Teri et al. hypothesized that patients with decreased conceptual abilities may be less likely to solve problems effectively and therefore are more likely to behave inappropriately. It is possible that during the pretreatment phase, expression of agitated behavior was related to environmental factors (e.g., rigid schedules, staff interactions) as well as to cognitive status. The treatment program reduced the impact of environmental factors such that the relationship between cognitive status and agitated behavior emerges.

Contrary to the predicted results, dependent behavior increased from the pretreatment phase to the posttreatment phase, indicating that subjects in this sample became less able to perform self-care activities. However, dementias are progressive debilitating diseases and patients may very well be expected to show a decline in functioning over time. Also, the subjects in the present study were in the advanced stages of their dementing illnesses; in fact, four subjects died prior to collection of posttreatment data. Therefore, it is likely that the decline in self-care performance is related to the severity of the subject’s disease. The significant decline in cognitive status from the pretreatment phase to the posttreatment phase supports the idea of deterioration being due to the disease process. This notion is also supported by the finding that subjects
with lower scores on the DRS subscales of Attention and Memory showed greater change toward increased dependency than did subjects with higher scores on these subscales. Most activities of daily living require the ability to complete a sequence of events. For example, getting dressed requires deciding which clothes to wear, putting the clothing on, buttoning, zipping, etc. Patients with impaired cognitive functioning may not remember the sequence, or they may have attentional difficulties and forget what they are doing before the task is completed.

Another possibility for the increase in dependent behavior is that staff members did not continue to utilize the skills designed to enhance patient's individual functioning acquired during the training sessions. As patient's abilities decline, staff may find that it is more difficult to utilize these skills. For example, these patients may have greater difficulty paying attention to instructions provided by staff members, requiring an increased amount of time to complete self-care routines. It may be that due to the need to maintain institutional efficiency, staff members were unable to give patients enough extra time to complete activities independently. The turnover in staff between the two measurement periods may also have been a factor. New staff members did not receive the formal training program; therefore, they may have provided more assistance to the subjects and consequently
rated subjects as more dependent. However, the significant difference between the pretreatment and posttreatment Dementia Rating Scale scores documents the decline in cognitive status of the subjects. This decline suggests that the increased dependence exhibited by the subjects is more likely related to the disease process than to problems with staff ratings.

Reisberg, Ferris, and Crook (1982) suggested that the progression of dementia of the Alzheimer's type and related disorders occurs in stages identifiable by behavioral disturbances such as anxiety, agitation, and previously nonexistent violent behavior. In addition, Reisberg et al. suggested that for an individual suffering from Alzheimer's, cognitive status is most closely related to behavioral disturbances. However, Smith et al. (1993) found that cognitive impairment in this population is more strongly associated with functional losses than with behavioral disturbances. The finding of the present study that all scores obtained on the pretreatment Dementia Rating Scale were significantly correlated with activities of daily living, while few agitated behaviors were correlated with DRS scores, provides support for the findings of Smith et al.

The lack of significant findings related to falls may be due to the low occurrence of this behavior in both conditions. There was a total of 5 falls in the
pretreatment phase and a total of 6 falls in the
posttreatment phase. This indicates that falling may not
have been as much of a problem as staff indicated prior to
implementation of the treatment program. The significant
correlation between the Attention subscale and number of
falls during the pretreatment phase may be indicative of a
trend. Those subjects who have difficulty attending to
their surroundings may fall more than subjects without this
difficulty. The lack of a significant relationship between
cognitive functioning and response to treatment in terms of
falling may be due to the small number of subjects who
experienced falls. A larger subject sample or a longer
observation period would perhaps help establish this
relationship more fully.

Overall, it would appear that the most significant
effect of the treatment program was in reducing the amount
and severity of the worst form of agitated behavior
expressed by the subjects -- physical aggression against
others. This suggests that the combination of
individualized, flexible schedules and staff training is an
effective method for reducing that type of problematic
behavior in patients with advanced dementias. The design of
the present study makes it difficult to determine the exact
relationships between the treatment program and the
dependent measures. Decreased agitation may be the result
of either flexible schedules or staff training (or perhaps a
combination of the two). Further research could be designed to test these components separately.

In terms of staff training, an increased understanding of the cognitive problems associated with dementia could have influenced staff’s expectations of patient behavior. Enhanced social interactions between patients and staff may strongly influence the behavior of both patients and staff in a positive manner (Nigl & Jackson, 1981). Staff attempts to control patient behavior prior to the treatment program may have triggered anger and agitated behaviors. Staff reactions to patient behavior may also have served to escalate agitated behavior during the pretreatment phase. Following training, staff may have been more aware of the situational determinants of agitated behavior and learned how to prevent these behaviors. Staff motivation is likely a key factor and crucial ingredient for this type of institutional program to be effective.

Individualized, flexible daily schedules have been shown to be effective in decreasing problematic behaviors in other populations, such as institutionalized mentally retarded and autistic subjects (Bannerman et al., 1990; Brown, 1991). Nursing homes often do not take lifestyle preferences into consideration when designing daily schedules for the patients. One problem frequently mentioned by nursing staff was patient’s either refusing to get out of bed in the morning or becoming agitated when
staff attempted to get them up. Dementia patients who cannot adjust to a new routine, such as that experienced in a nursing home, may rely more on habits and preferences established over a lifetime. Some patients may resent having to get up early and express this resentment through agitated behaviors. For example, one subject had worked nights as a registered nurse for most of her adult life. When staff attempted to get her out of bed in the morning, this subject would become so highly physically aggressive that it required three or four staff members to get her out of bed. After the implementation of flexible daily schedules, staff reported that this subject was allowed to remain in bed as late as she desired, which often would be into the afternoon. However, when she was ready to get up, she was cooperative with staff and frequently interacted with them in a more positive manner. The expression of choices and autonomy are frequently curtailed in the nursing home, especially for dementia patients (Namazi & Johnson, 1992). Flexible daily schedules, in which the patient’s choices in daily routines are encouraged, offer patients the opportunity to make relevant decisions regarding their daily living and may reduce conflict.

Another methodological limitation is the dependence on nursing assistants for the collection of data regarding behavioral problems. This limitation is difficult to resolve and is characteristic of this field of study (Teri...
et al., 1989). Some patients may be rated as having more problems due to staff bias rather than actual incidents. However, this would appear to be unlikely in the present study. When other measures of behavioral problems were examined (i.e., incident reports and patient charts as documented by supervisory nursing staff), there was support for an accurate portrayal of behavior as indexed by the nursing assistants. Still, a measure of interrater reliability would enhance the findings of the present study.

Replication of the findings of the present study in another setting would lend support for the efficacy of this type of treatment program for dementia patients. Future research could be designed to test the influence of staff training and flexible schedules in a more systematic manner. A pretest-posttest control group design with randomization of treatments, for example, would be particularly informative.

The success of the treatment program in affecting the nature of agitated behavior is remarkable given the severity of cognitive impairment in this sample. Moreover, the treatment program reduced agitated behavior in spite of the significant decline in patient’s cognitive and functional status. The decrease in the type of aggressive behavior perhaps more than any other measure demonstrates the efficacy of the treatment program. To the best of our knowledge this is the first time a quantitative study of
this type of treatment program has been conducted with dementia subjects. Further work is needed to verify these encouraging results. Nevertheless, the results of the present study represent an important step toward improving the quality of life for advanced dementia patients as well as for the staff who work with them.
References


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APPENDIX.

Consent Form.

The purpose of this research project is to determine whether individualized, flexible schedules decrease dependent behavior, agitation, and number of falls in residents of the Bratsberg area of Immanuel Lutheran Home. In addition, staff will be trained in behavioral techniques designed to encourage independent functioning as much as possible.

The test that the subjects will take does not involve any risk to them. It will take approximately 15-45 minutes to complete the testing. Subjects may request breaks at any time if they are uncomfortable from sitting too long or for any other reasons. In addition, examiners will periodically ask subjects if they are uncomfortable or if they would like to take a break from testing. If any subject indicates or displays discomfort with the situation, testing will be discontinued. Regarding flexible scheduling, subjects will be observed by staff in a manner that is consistent with current routine. If any subject indicates discomfort with flexible scheduling, staff will be instructed to return to the usual routine.

The scores on the tests will be kept confidential. Subject names will never be used in any report of this experiment. Only a subject number will be included on the scoring sheets. No one but the experimenters will have
access to the scores and all data will be kept in a locked filing cabinet.

The benefits of this research include increased self-esteem and self-confidence of the subjects and enhancement of their quality of life. This research will also provide valuable information regarding this subject population.

You are free to ask questions at any time during the research project. You are also free to withdraw your consent for participation at any time during the project. Please feel free to ask questions at any time before, during, or after the project. If you should have any questions, feel free to contact Dr. Stuart Hall at 243-5667 or Connie Cross-Becker at 243-4521.
APPENDIX B

Activities of Daily Living Checklist

Resident:__________________________________________

Date:__________

Please rate the resident for each category according to the following scale:

1 = not dependent
2 = requires minimal assistance
3 = requires moderate assistance
4 = requires almost full assistance
5 = totally dependent

Rate the resident for the ADLs on your shift. If an ADL does not pertain to your shift, write N/A in the space provided.

DRESSING:

undergarments
socks
shoes
shirt/blouse/dress (e.g., puts on)
shirt/blouse/dress (e.g., zips)
slacks/trousers/sweats
(slacks/trousers/sweats)

EATING:

uses fork
uses knife
uses spoon
feeds self
drinks liquids

BATHING:

washes body
washes hair
dries body
dries hair

GROOMING:

brushes teeth
brushes/combs hair
washes face
washes hands
shaves
APPENDIX C
Overt Aggression Scale

Resident: ________________________________________
Date: ___________________ 
Shift: ___________________

AGGRESSIVE BEHAVIOR (Check all that apply)

Verbal Aggression
___ Makes loud noises, shouts angrily
___ Yells mild personal insults, e.g., "You're stupid!"
___ Curses viciously, uses foul language in anger, makes moderate threats to others or self.
___ Makes clear threats of violence towards others or self (e.g., "I'm going to kill you!") or requests help to control self.

Physical Aggression Against Objects
___ Slams doors, scatters clothing, makes a mess
___ Throws objects down, kicks furniture without breaking it, marks the wall
___ Breaks objects, smashes windows
___ Throws objects dangerously

Physical Aggression Against Self
___ Picks or scratches skin, hits self, pulls hair
___ Bangs head, hits fist into objects, throws self onto floor or into objects
___ Small cuts or bruises
___ Mutilates self, causes deep cuts, bites that bleed, internal injury, fracture, loss of consciousness, loss of teeth

Physical Aggression Against Other People
___ Makes threatening gestures, swings at people, grabs at clothes
___ Strikes, kicks, pushes, pulls hair, spits
___ Attacks others causing mild-moderate injury (bruises, sprains, welts, puncture wounds)
___ Attacks others causing severe physical injury (broken bones, deep lacerations, internal injury)
Appendix D

Observations: Pretreatment versus Posttreatment

The following behavioral changes were noted by staff members:

Subject 1: Male
Pretreatment: Noted to be combative, especially during activities of daily living. Spent time pacing the halls, wandering into other patient's rooms.
Posttreatment: Combativeness decreased. Staff gives him tasks to complete, such as sweeping the halls, raking leaves, and watering plants in the outdoor garden.

Subject 2: Female
Pretreatment: Restrained at all times. Verbally abusive to staff and other patients.
Posttreatment: No longer restrained. No verbal abuse noted.

Subject 6: Female
Pretreatment: Frequently inquires if staff has seen her relatives, especially mother. Staff responds with reality orientation (e.g., "Your mother has been dead for years.") Patient becomes agitated and combative.
Posttreatment: Staff found that the best method of de-escalation is to take patient for a walk outside. Staff also learned to respond to inquiries with validation (e.g., "You must miss your mother. Tell me about her.")

Subject 12: Female
Pretreatment: Yelled with little abatement during all shifts. Fed in room due to agitation. Restrained at all times. Volunteers were frustrated trying to interact with patient.
Posttreatment: Less frequent calling out. Eating in dining room. Attending 3-4 activities per week. Restrained in wheelchair only. Often asks for something to keep her busy; staff has patient fold towels. Patient reports that she "likes to feel useful."
Subject 19: Male  
Pretreatment: Receives Mellaril for aggressive and sexually inappropriate behavior.  
Posttreatment: Allowed to set own schedule. Sleeps late in the morning. Disposition improved; no problem behaviors noted. Mellaril discontinued.

Subject 20: Male  
Pretreatment: Periodic and spontaneous outbursts related to wanting a job.  
Posttreatment: Staff has learned that the most effective way to de-escalate patient’s agitation is to listen and let him speak his mind. Staff member reading to him also serves to calm patient.

Subject 25: Female  
Pretreatment: Combative most days. Frustrated with staff. Often requires more than one staff member to assist with activities of daily living. Totally dependent. Continuous rocking movements.  
Posttreatment: Positive changes noted. Less combative. Allowed to sleep as late as she wants. One staff member able to assist with ADLs. Feeds self with encouragement. Attends 2-3 activities per week.

Subject 29: Female  
Pretreatment: Eats in room. Spends most of day in room; excessively noisy. Dependent for all activities of daily living.  
Posttreatment: Eating in dining room. Attends 2-3 activities per week. Feeds self with encouragement. Wheels self in hallway and interacts with other patients.

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