POST-OCCUPANCY EVALUATION OF A SPECIAL CARE UNIT USING DEMENTIA-SPECIFIC DESIGN CRITERIA

by

SUSAN J. TORGRUDE

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ABSTRACT

The number of people with dementia is growing, and nursing homes have become primary places for care of individuals with moderate to severe dementia. In response to this care need, facilities are creating special dementia care units. While the development of such units is increasing, there is limited research to guide environmental design. Some authors have responded with general design suggestions which, in a few cases, specifically address special care units. Although these efforts offer information, the suggested criteria and guidelines principally remain hypotheses needing further research. Additionally, written reports contain conflicting information, inconsistent terminology, and little information regarding caregiver opinions about design. Clearer information is needed, including family and staff caregiver perceptions about appropriate environmental design.

The first purpose of the study was to use dementia-specific design criteria to guide identification of environmental design issues in a nursing home's existing special care unit. To generate valid evaluation criteria, case studies in the form of post-occupancy evaluations and other research were used to document design solutions already implemented in living environments for people with dementia. Dementia-specific design criteria were examined and combined to guide the post-occupancy evaluation at a specific case site.

The second purpose of the study was to compare and integrate perceptions of staff and family caregivers, thus identifying design issues and generating suggestions for improvements.

The third purpose of the study was to provide the nursing home with a written evaluation including design guidelines for environmental changes within the special dementia care unit and in the adjacent garden area.

Preliminary studies, e.g., meetings with the nursing home planning committee, behavioral observations of unit residents and staff, and an environmental audit were conducted to assist in the development of evaluation instruments. Methods used in the formal study were: (1) focused interviews with selected personnel from six departments serving the unit, and (2) a questionnaire which sought family and staff caregiver perceptions about the unit's environmental design. The questionnaire addressed four primary design criteria: (1) Safety and Security; (2) Compensation for Normal Age-Related Sensory Losses; (3) Independence and Autonomy with subsets (3a) Privacy, and (3b) Socialization; and (4) Homelike Qualities with subsets (4a) Personalization and (4b) Cultural Traditions.

Questionnaire composite scores for each of the four primary criteria categories yielded statistically significant differences between family and staff care groups (Confidence Level <.03), with staff caregiver composite means and median scores below family caregiver scores. While staff caregivers were more critical of the unit than family caregivers across all four criterion categories, the staff appeared to be most critical of attributes in two categories: (1) Independence and Autonomy and (2) Homelike Qualities. The Homelike Qualities criterion category had the highest number of attributes perceived as needing change while Safety

and Security had the fewest number of attributes perceived as needing change.

These findings have implications for the design process regarding the role of criteria in the evaluation of special care units and in assessing the needs and priorities of different user groups. The evaluation instrument used in this study may be further developed and used in planning for redesign of special care units.

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CHAPTER I

BACKGROUND TO THE PROBLEM

"The aging of America during this century has been a triumph of modern medicine and favorable economic conditions" (Butler, 1988, Forward, p. xiii). While many older Americans enjoy relatively good health well into the eighth decade of their lives and beyond, others fall prey to chronic illnesses such as dementia.

Increasingly, the public, as well as designers, gerontologists, facility administrators, and caregivers are concerned with the relationship of the built environment and its role in supporting the activities of daily living and the psychological well-being of older adults. This concern becomes particularly critical where chronic illnesses such as dementia render individuals dependent on others, and the need for supportive environments is heightened. As the population of older adults with dementia increases, creating environments which enhance the quality of living for those individuals will require more research and evaluation to provide a better-informed design process.

1.1: DEMOGRAPHICS OF AGING AND DEMENTIA

Americans over age 65 in the United States presently represent 12.5% of the population, and they are projected to represent 21% of the population by 2030 (U. S. Census Bureau, 1993). The fastest growing age group, those 85 years and older, are most at risk for chronic illinesses and more likely to need medical, social, and other support services (Gilford, 1988).

As more people live longer, it is important to learn more about dementia since it is estimated that somewhere between two and four million people in this country have some degree of intellectual impairment (Mace & Rabins, 1991). Dementia, from two Latin words meaning *mind* and *away,* generally can be characterized by a gradual and progressively degenerative decline of mental functions in an alert person, which leads to loss of memory and behavioral and personality changes as well (Mace & Rabins, 1991). Although at least 70 diseases and conditions can cause dementia (U. S. Congress, Office of Technology Assessment, 1990), the most common is Alzheimer's Disease which accounts for 50-60% of all dementia cases (Davies, 1988).

Alzheimer's Disease, named after Alois Alzheimer, the German physician credited with first describing its symptoms, is an irreversible condition with no treatment or cure. While improvements in detection have occurred, presently, diagnosis is usually determined through the process of elimination after a number of tests have first ruled out other causes. Confirming a diagnosis of Alzheimer's Disease can only be made at autopsy through the identification of structural changes in brain tissue, e.g., abnormally large numbers of neuritic plaques and neurofibrillary tangles (Davies, 1988; Mace & Rabins, 1991). Early in the disease, forgetfullness may be the only noticeable symptom, and there may be difficulty with tasks which require abstract reasoning. Personality changes may occur, and the person may become depressed. In later stages, impairments in both language and motor skills occur, and finally, the person becomes incontinent, is unable to walk, sit or hold up his or her head, is limited to one or two words, and cannot recognize people (Mace & Rabins, 1991).

While presently Alzheimer's Disease is irreversible, some causes of dementia can be treated, reducing the possibility of further damage, and in some cases, dementia can be reversed (Reisberg, 1986). Multi-infarct dementia, a series of strokes within the brain, is generally regarded as the second most common irreversible dementia. However, this condition often can be treated, thus minimizing the likelihood of further impairment (Mace & Rabins, 1991). Some reversible causes of dementia are: metabolic disorders, e.g., hormone imbalance and vitamin deficiencies; abnormalities in the brain, e.g., tumors, seizures, and blood clots around the outside of the brain; infections, e.g., tuberculosis and meningitis; toxins, e.g., drugs and metal poisoning, and depression (Crystal, 1988; Mace & Rabins, 1991).

In acknowledging that a decline in mental functions can result from many different causes, it is appropriate to point out that, for the purposes of this study, the term dementia will be used to denote a set of symptoms caused by Alzheimer's Disease, cerebrovascular diseases, and other less usual nervous system diseases, e.g., Pick's Disease and Creutzfeld-Jakob Disease. Excluded from consideration in this study are dementias associated with alcoholism, and those with reversible causes, such as those listed above.

Understanding dementia caused by diseases of the nervous system alone and the implications for creating supportive environments presents planners, designers, and care providers with formidable challenges. Presently, it is estimated that four million people suffer from dementia caused by Alzheimer's Disease and related disorders, and one to one-half million persons are thought to have severe dementia requiring constant care either at home or in institutions

(U. S. Congress, Office Technology Assessment, 1990). Barring a major scientific breakthrough, it is estimated that by 2040, between six and nine million individuals will be affected by moderate to severe dementia in this country alone (Schneider & Guralnik, 1990).

1.2: SUPPORTIVE ENVIRONMENTS-OPTIONS AND ISSUES

Although persons with dementia may possess relatively good health in many other ways, the progressive cognitive decline associated with dementia results in their increasing dependence on others (Mace & Rabins, 1991). Eventually, many persons cannot be cared for in their homes, and other options in the long-term care continuum, such as adult day care centers, assisted living facilities, group homes, or nursing homes are needed to assist residents and families with increased demands for care (Cohen & Weisman, 1991). One care option appearing with increasing frequency in nursing homes, the special dementia care unit, is the focus of investigation in this study.

Along with general increases in nursing home use (Sager, Easterling, Kindig, & Anderson, 1989; Kemper & Murtaugh, 1991), many families seek nursing home care particularly for those experiencing moderate to severe dementia (Brody, Lawton, & Liebowitz, 1984). Further, Schneider & Guralnik (1990) note that nursing homes continue as an important primary care source for this population. While nursing homes provide needed relief to exhausted family members and other caregivers, the physical environment often found in nursing homes is ill-suited to provide the kind of supportive attributes needed to compensate for the

behavioral manifestations of dementia, as well as other age-related sensory declines (Johnson & Grant, 1985).

Books and articles presenting research in various disciplines continue to emphasize the need for nursing home reform, including changes in environmental design (Johnson & Grant, 1985, Hiatt, 1991b). Those who criticize nursing home design note that the needs and preferences of those who use the environment (staff, residents, and visitors) often have been minimized or ignored altogether in the design process. This often has resulted in uncomfortable, less functional, and visually unappealing surroundings. This outcome, discussed at length by many authors, has been facilitated by policies and legislation which span decades.

The fundamental basis for care in nursing homes has been the medical model. Originally intended for acute care facilities such as hospitals and clinics, the medical model focuses on quality of care regarding diagnosis, treatment, and rehabilitation of individuals (Johnson & Grant, 1985). As a result, emphasis is placed on the person's illness and medical needs. Several factors have converged to reinforce and maintain the medicalization of nursing homes. Indeed, the quality of medical care has been the standard by which facilities are judged by accrediting and licensing bodies (Gallagher, 1986). This has been problematic because of the numerous state and federal regulations which are patterned after those applied to acute care settings and tend to be restrictive and inflexible (Coons, 1991b). The Hill-Burton Act, which provided federal aid to build nursing homes, also imposed criteria from acute care settings. Medicare and Medicaid also favor standards intended for acute care (Johnson & Grant, 1985).

As in acute care settings, the planning and design processes for nursing homes were influenced heavily by funding and government regulations and by organizational patterns having little to do with the design of actual living spaces (Koncelik, 1976). In addition, many nursing homes were built during the 50s and 60s when there was no clear concept of what to build, and architects had little time to research issues (Koncelik, 1976). Consequently, nursing homes were patterned after hospital designs which evolved from the medical model. Nursing home environmental design characteristics of the model often criticized are: (1) long, double-loaded (rooms on either side) institutional-looking corridors (Johnson & Grant, 1985; Coons, 1991d); (2) identical hallways which make way-finding difficult (Calkins, 1988); (3) a tendency to use white or off-white in large amounts causing optical strain (Mahnke & Mahnke, 1993); (4) an abundance of shiny surfaces causing visual confusion (Peppard, 1991); and (5) distracting noise from intercoms and alarms (Cohen & Weisman, 1991; Mathew & Sloane, 1991b).

These environmental characteristics not only give limited support for competent behavior, but, indeed present further adaptational difficulties to residents with dementia (Coons, 1991d). Generally speaking, older persons must already compensate for normal age-related sensory changes, such as a reduced ability to hear higher frequencies (presbycusis), reduced ability of the eye lens to focus (presbyopia), along with yellowing of the lens, reduced levels of light arriving on the retina, and reduced capacity to judge depth perception (Peppard, 1991). While the degree of deficit varies with individuals, reductions in sensory capacity coupled with dementia render individuals more vulnerable to environmental influences (Lawton, 1981).

1.3: ALTERNATIVE MODELS AND CARE APPROACHES

One response to issues associated with the medical model has been to develop alternative care approaches. The Team Model (Lefton & Lefton, 1979) and the Psychosocial Model (Abramovice, 1988) both offer multi-disciplinary team approaches where members work together to develop care plans for each resident. These approaches focus on the person's multiple needs instead of on the illness exclusively. However, leadership roles are not defined in either model. In addition, while these models address changes in fundamental care approaches, they provide no guidance regarding dementia-specific care issues and do not emphasize the importance of providing supportive living environments with unique environmental attributes.

In contrast, Gallagher (1986) discusses a "Quality of Life" Model of care based on a holistic assessment of the person and an environmental assessment emphasizing the mind and spirit in addition to bodily functions or dysfunctions. The quality of life concept includes health care only as one component among others; e.g., friendship, safety, dignity as an individual, and environmental enrichment. Gallagher's (1986) concept of the Model incorporates eight criteria proposed by Hiatt (1982) to guide environmental assessment: (1) flexibility/changeability, (2) safety, (3) community contact, (4) access, (5) personalization, (6) cultural familiarity, (7) memory development/cues, and (8) choice/decision making. In addition, Hiatt (1991a) and others, in keeping with the premise of the quality of life model, suggest that the architectural environment, though not the sole determinant of behavior, can significantly effect the quality of life (Calkins, 1988; Cohen & Weisman, 1991).

1.4: DEMENTIA CARE IN NURSING HOMES

Presently, conservative estimates indicate that residents with dementia comprise 50 percent of nursing home populations (Davies, 1988; Schneider & Guralnik, 1990), and some estimates report that as high as 60 percent (Lawton, 1981) and even 70 to 80 percent (Rovner & Rabins., 1985) of nursing home residents suffer from cognitive impairment. Pressured by sheer numbers of residents with dementia, as well as by the urging of staff and family caregivers to provide specialized approaches to care, including dementia-specific physical environments (Rabins, 1986; Mathew & Sloane, 1991a), increasingly, nursing homes are segregating residents with dementia into special areas or units (Leon, Potter, & Cunningham, 1990). Holmes, Teresi, and Monaco (1992), studied nursing homes in five states, and estimate the prevalance of special care units in nursing homes at 11 percent.

Criticisms associated with the medical model and their general application to nursing home care become even more critical in developing and designing special dementia care units. Remaining prominent in concerns about special care units is the design of the physical environment (Hiatt, 1991a).

Although empirical research has not clearly defined the physical design of environments for people with dementia, a body of literature is emerging. Presently, case studies and other evaluative research efforts have revealed some commonalities regarding dementia-specific design issues which appear to reinforce the "Quality of Life" Model. Calkins (1988), Coons, (1983, 1991d), Cohen and Weisman (1991), Peppard (1991), and Hiatt (1991a) have identified important criteria, e. g., safety and security, compensation for normal age-related sensory

losses, and others, accompanied by criteria-related recommendations to guide the design and redesign of dementia-specific environments. While these efforts have provided noteworthy contributions to the study of living environments of people with dementia, acknowledged is the need for further investigation about critical environmental attributes for this population.

Ohta & Ohta (1988) and others (Hyde,1989; Mace, 1991) found that dementia care units vary greatly in care approaches including environmental modifications. Presently, no dementia-specific federal standards or regulations exist to guide environmental design of special care units, and although a few states have adopted regulations, Hiatt (1991a) and others (Holmes, Teresi, & Monaco, 1992) suggest that more research is needed before defining special care units and relevant standards. Further, important to designers is clarification about the selection and role of criteria which facilitate the development of effective design solutions for special care units.

Because nursing homes have multiple roles to fulfill, the design process must produce design solutions which attempt to resolve conflicting interests of various users. Accompanying the challenge to fulfill multiple roles in nursing homes is the confusion about the definition of special care units and the great variation in design interventions implemented in existing units. Meanwhile, designers who consult dementia-specific literature are confronted with noticeable inconsistencies. Often, information is offered in the form of hypotheses which have not been empirically tested. While the need for testing and refinement is acknowledged, these hypotheses sometimes are presented as applicable to various types of living environments for people with dementia, e.g., day care

centers, assisted living facilities, and special care units in nursing homes. Consequently, designers and facility planners must decipher what design application is most appropriate in a given environment.

In addition, published writings contain conflicting design guidelines, confusing terminology and formats, and lack the support of systematic study which includes the perceptions of staff and family caregiver, presumably those who know the residents best. For example, in terms of guidelines, noted authors appear to agree that the use of color contrast is important (Calkins, 1988; Coons, 1991a, 1991d; Peppard, 1991; and Hiatt, 1991b), but there is lack of detailed information and also conflicting information about the specific use of color. Calkins (1988), agrees with the research of Alvermann (1979), and advocates general use of clear bright colors in warmer hues (reds, yellows, oranges, etc.). However, Peppard (1991) suggests that red, yellow, and orange, as well as stark white used in large areas can cause catastrophic reactions among residents and fatigue among caregivers, and that these warm intense hues should be reserved only for accents.

Another source of confusion is terminology used in the design literature. *Performance* is a concept increasingly used in building evaluation (Howell, 1980). Used earlier by engineers, performance suggested requirements which a specific piece of equipment must meet under a certain set of conditions. In environmental design, performance appears a less developed term for measuring the relationship between human need and the environment for translation into design solutions. Visible in the literature are general criteria (residential or non-institutional character), guidelines (small dining areas), and performance criteria (tables seating two to six people).

Nadler and Habino (1990) suggest that performance criteria should be measureable, implying quantifiable and specific information. Yet, performance criteria are presented by some in more general contexts, e.g., Homelike Qualities (Calkins, 1988; Cohen & Wiesman, 1991). Zeisel, Hyde, and Levkoff (1994), in a new E-B Model for Alzheimer Special Care Units, move toward more specific definitions and measures of criteria but acknowledge the need to test concepts and elements of the model.

Another difficulty is the format of discussion. Calkins (1988) has developed criteria and design responses for special care units based on behavioral issues and organized them by area or room. Cohen and Weisman (1991) have developed general design hypotheses in the form of criteria and design concepts designated as "therapeutic tools" for treatment in various settings and areas within those settings. However, their presentation is very general with sparse attention given to special care units. Given the challenges of conflicting guidelines, confusing terminology regarding criteria, inconsistent formats, and absence of user perceptions, one may ask how care providers, facility planners, and designers can work efficiently together to provide appropriate environments for people with dementia?

Designing or redesigning any nursing home facility, and more specifically, special care units for people with dementia is a complex process. Design solutions must be carried out in an environment which must fulfill multiple roles and intents e.g., the delivery of health care, providing custodial care in a homelike setting, fulfilling hospitality roles for families and visitors, and providing compassionate and sensitive care for those who are ill or even dying. To facilitate a better design

process, some have compared case studies to learn more about specific goals and problems impacting on design in a given facility and particularly how a particular setting has been redesigned (Cohen & Day, 1993).

As previously noted, case studies have revealed some commonalities regarding dementia-specific design issues (Cohen & Weisman, 1991; Cohen & Day, 1993), including important criteria. In addition, Cohen and Day (1993) propose that design for people with dementia should consider innovations and emerging trends, as well as the latest information about what does and doesn't work. Hiatt (1991a) suggests that the design of meaningful living environments for people with dementia should consider many different people: staff, family members, peers, designers, and others and be based on the goals it is to serve.

Although design solutions will be unique to each facility, it appears logical and advantageous to build on past successes and failures regarding the design of specialized environments. Several questions emerge from a review of past efforts. First, since some commonly-agreed-upon design criteria emerge from the literature, can they be used systematically to guide the evaluation of existing units? Secondly, assuming that such evaluations can be accomplished, how can the staff and family caregivers' perceptions about design be integrated with criteria-based evaluations to develop informed design recommendations for a specific site? Finally, how may the use of criteria be implemented so that designers may offer effective and supportive design solutions from criteria-based evaluations?

Using traditional accepted design principles along with an evaluation guided by dementia-specific criteria may allow designers to begin to meet specific needs within those criteria. Design solutions can then be guided by criteria and

site-specific questions, e.g., What design attributes of a facility promote or fail to promote safety and security? What design attributes contribute or fail to contribute to compensation for normal age-related sensory losses in a specific environment? This study investigated these and other criteria and design attributes during a comprehensive literature review and compared the work of several noted authors who have written about living environments for people with dementia. Comparative analysis was used to extract commonly-agreed-upon design criteria. Finally, the criteria guided a post-occupancy evaluation of design issues within a nursing home's special dementia care unit.

An important next step is using the evaluation criteria to progress from general goals and objectives to specific design solutions. However, the intent of this study is to provide an evaluation with pre-programming information by identifying design issues and offering general suggestions for improvement to allow a specific designer ultimately to propose site-specific solutions.

PROBLEM STATEMENT

This study is concerned with two problems. First, researchers, designers, and care providers do not have consistent and clear information to help them plan, design, or redesign existing nursing home units designated for the special care needs of people with dementia. Secondly, the planning process often ignores the perceptions of caregivers who can aptly inform the design process. These perceptions are important to identify design issues unique to a specific site, as well as issues which might be pertinent in other settings.

This post-occupancy evaluation, guided by dementia-specific design criteria, was used to identify design issues and to develop design guidelines for the unit after the study was completed. Further, this study is a step toward providing a general procedure to evaluate environmental attributes of special care units.

PURPOSES OF THE STUDY

The first purpose of the study was to identify design issues within an area nursing home's existing special care unit. To achieve this goal, design criteria suggested by noted authors were compared and combined to guide a post-occupancy evaluation of the unit. The prinicipal evaluation instrument, an environmental design questionnaire developed for this study, was based on the following dementia-specific design criteria:

A SUPPORTIVE ENVIRONMENT FOR RESIDENTS WITH DEMENTIA

(1) Fosters Safety and Security;

(2) Responds to Normal Age-Related Sensory Losses;

(3) Fosters Independence and Autonomy;

  (3a) Fosters Privacy,
  (3b) Fosters Socialization;

(4) Provides Homelike Qualities;

  (4a) Fosters Personalization, and
  (4b) Fosters Cultural Traditions.

The second purpose of the study was to compare and integrate perceptions of staff and family caregivers regarding unit environmental design to identify design issues and seek suggestions for improvements.

The third purpose of the study was to provide the nursing home with an evaluation including design guidelines for environmental changes on and near the special dementia care unit upon completion of the study.

DEFINITION OF TERMS

Dementia Loss of intellectual abilities of sufficient severity to interfere with social or occupational functioning (Gruetzner, 1988).

Alzheimer's Disease The most common cause of dementia; a condition of unknown origin which causes gradual loss of abilities in memory, thinking, reasoning, judgment, orientation, and concentration. While not the result of normal aging, it does occur more frequently in persons 65 years of age or older (Gruetzner, 1988).

Multi-Infarct Dementia A stepwise deterioration of intellectual functioning (affecting memory, abstract thinking, judgment, impulse control, and personality), which, early in the disease, leaves some intellectual functioning somewhat intact. This disorder is associated with cerebrovascular disease, and usually onset is abrupt with rapid changes rather than uniformly progressive. (American Psychiatric Association, 1987).

Long-term care "...a range of services that addresses the health, personal care, and social needs of individuals who lack some capacity for self-care. Services may be continuous or intermittent, but are delivered for a sustained period to individuals who have demonstrated need, usually measured by some index of functional incapacity" (Kane & Kane, 1982, p. 4).

Therapy An intervention provided for conditions expected to improve and one which is discontinued as treatment succeeds (Lindsley, 1964).

Special Care Unit Segregated area or unit designated for residents with dementia having special care approaches and structural modifications different from other nursing units.

Therapeutic Milieu

A philosophy of care which supports the dignity and worth of individuals including the right to self-realization and a sense of being accepted and valued (Coons, 1983).

Caregiver

Professional care providers who may represent an agency or various departments within a facility; e.g., administration, nursing, social work, activity therapy, food service, and housekeeping; also family and friends who in some way provide care or arrange for care of a person with dementia.

Post-Occupancy Evaluation

The process of evaluating buildings in a systematic and and rigorous manner after they have been built and occupied for some time. POEs focus on building occupants and their needs which provide insights into the consequences of past design decisions and the resulting building performances (Preiser, Rabinowitz, & White, 1988).

Criterion

"...a characterizing mark or trait...a standard on which a decision or judgment may be based" (Webster's Third New International Dictionary, 1986, p. 538).

Prosthetic Environment

A physical environment with structural aspects which will counteract known deficits associated with a particular population (Lindsley, 1964).

CHAPTER II

LITERATURE REVIEW

2.1: THEORETICAL SUPPORT FOR THE ROLE OF THE ENVIRONMENT

Understanding the relationship between people and their environments and learning to translate this knowledge into design solutions is a complex undertaking. This process must integrate two major areas of literature: (1) environment-behavior studies and (2) design methods. Topics reviewed within the first category are theory, the potential role of the environment, and issues in dementia-specific design. Topics reviewed within the second category are design method criteria issues and the use of criteria in the evaluation process.

The Ecological Theory of Adaptation and Aging:

Theoretical support for the role of the environment and its effect on the quality of life comes from several sources. Lawton & Simon (1968) used the term *"environmental docility hypothesis"* to explain differences in vulnerability of people to surrounding pressures and circumstances. Behavioral outcomes of those with higher levels of competence will be less influenced by surrounding environments than those with lowered competence.

Building on this earlier work of Lawton and Simon (1968), Nahemow and Lawton (1973) developed the "Ecological Theory of Adaptation of Aging" with its competence-press model (Fig. 1, p. 19) which describes affect and behavior resulting from person-environment interactions. This model suggests that behavior

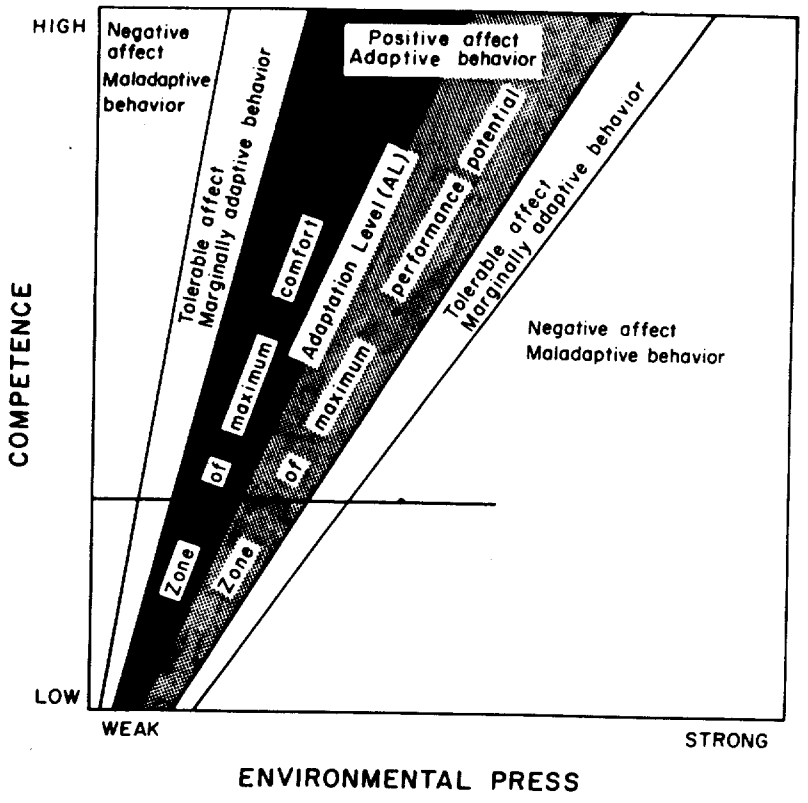


Fig. 1: Graphic Representation of an Ecological Theory of Adaptation and Aging

Source: Nahemow, L. and Lawton, M. P. (1973). "Toward An Ecological Theory of Adaptation and Aging." In: Preiser, W. F. E. (Ed.). Environmental Design Research. Fourth International EDRA Conference. Community Development Series, Volume 1, p. 27.

is a function of the individual's competence and the situation's environmental press (Murray, 1938). Lawton (1982) defines press as the characteristics that place negative or positive demands on the individual. Competence refers to an individual's nonevaluative characteristics -- needs, traits, and style, as well as more measureable ones -- biological health, sensory perception capacities, motor skills, and cognitive capacities (Lawton, 1982). An important concept in the model is adaption level. An individual will operate at his or her best when the environmental pressure or stimulation is moderately challenging. When press outweighs competence, the result may be maladaptive behavior. Similarly, if there is too little challenge, the individual operates below capacity, and reduced press or stimulation over a long period of time also may result in reduced competence (Nahemow & Lawton, 1973). In addition, even modest improvements in environmental quality may produce disproportionately greater improvements in outcomes for persons of low competence than for those with higher competence.

In summary, both too little or too much environmental press may result in maladaptive behavior patterns observed in individuals. Therefore, critical to good person-environment fit is a good match between the demands of the environment (press) and the capacity of the individual. Although Lawton (1982) has acknowledged the absence of a comprehensive measurement instrument to assess this fit, he and others (Zeisel, et. al., 1994) support using environmental approaches for the research and treatment of cognitive impairment in older adults.

Congruence Model of Person-Environment Interaction:

Another source supporting the importance of the physical environment is the

"Congruence Model of Person-Environment Interaction" (Kahana, 1982). This model simultaneously considers a variety of environmental and individual attributes and measures them along parallel and commensurate dimensions. The dimensions are characterized by three types of settings: *segregate, congregate,* and *institutional,* and four individually-based factors: *structure* (need for order); *stimulation-engagement* (properties of the physical and social environments); *affect* (expression of emotion and reaction to stimulation in the built environment); and *impulse control* (loss of control over motor skills and need gratification, need to reflect),

In this model, individuals likely will seek environments that are congruent with their needs. When congruence is lacking between need and the environment because of changes in one or both, adaptive strategies are required to increase person-environment fit. Strategies to reduce mismatch are critical and made difficult when options are limited by reduced income, impaired health, or loss of social roles (Kahana, 1982).

Theoretically, this approach combines appropriate person-environment measures, making it possible to determine which combinations are the most appropriate fit. Research conducted by Kahana and her associates supports congruence as a useful predictor of satisfaction, morale, and desire to stay. Additionally emphasized were the importance of user perceptions and also assessing the environment in a multidimensional manner. Although the model offers a general conceptual framework, it is not apparent which characteristics are critical and how many must match the settings in order to realize optimal person-environment fit. Kahana (1982) suggests that this model is quantifiable and

testable, but the studies she and her associates conducted appear to have used different measures which were not described in great detail.

The Roy Adaptation Model:

The "Roy Model of Nursing Process" or "Roy Adaptation Model" (Roy, 1984) describes adaptation both as a process and an end state where the individual works to respond to constantly changing internal and external environments. This model incorporates three kinds of stimuli: *focal* -- internal or external stressors immediately confronting the individual; *contextual* - - genetics, role functions, developmental stages, religion, social interaction patterns, and the physical environment; and *residual* -- past experiences which influence behavior but cannot be validated (Roy, 1984). Thornbury and King (1992), in a review of studies reporting positive behavioral outcomes for residents of dementia units (Hall, Kirschling, & Todd, 1986; Benson, Cameron, Humbach, Servino, & Gambert, 1987; Mayers, 1990), suggest that consistent with the Roy Model is the belief that an individual's adaptive zone may be enhanced by altering the environmental or contextual stimuli.

Schooler's Stress Theoretical Perspective:

Finally, "Schooler's Stress Theoretical Perspective" is based on Lazarus' (1966) cognitive theory of stress and coping, which says that individuals consistently evaluate their environments for potentially threatening, beneficial, or harmless characteristics. Schooler's position is that stress theory provides a conceptual framework for assessing the relationship between environmental

stressors and an individual's adaptive responses (Scheidt & Windley, 1985). Schooler's (1982) research conducted with noninstitutionalized elderly persons demonstrated that social supports significantly helped these individuals cope with their environments.

In summary, researchers in various disciplines -- including psychology, developmental psychology, environment-behavior studies, and nursing -- have contributed to a theoretical foundation for a conceptual framework that acknowledges the importance of the physical environment in affecting behavioral outcomes. Other commonalities in each of these theories are the effects of stress and the need for adaptation. However, judging by the design literature alone, several authors appear to find "The Ecological Theory of Adaptation and Aging" the most useful, particularly in the case of environments for those with dementia (Coons, 1983; Calkins, 1988; Cohen & Weisman, 1991). The Ecological Theory is especially interesting in its approach to adaptation levels. Lawton and Nahemow (1973) emphasize that maladaptive behavior occurs when the environment has too much or too little stimulation (press), wheras other theories appear to focus more on maladaptive behavior occurring from too much stimulation or stress. The possibility of maladaptive behavior on opposite ends of the spectrum makes it more difficult to operationalize, but this insight offers a more comprehensive description

Clearly, the development of various theories speaks to the complexity of understanding harmonious relationships between human need and attributes of the environment. Even with the profound contributions of Lawton and his associates, Kahana and her associates, and others, instruments to assess person-environment fit, particularly in the case of those with dementia, remain in the

development stages, e.g., "An Environment-Behavior (E-B) Model for Alzheimer Special Care Units" (Zeisel, Hyde, & Levkoff, 1994). Theoretical approaches are important to understanding appropriate person-environment fit, but confusion about critical environmental attributes and the limitations of instruments to assess and measure this fit make it difficult for those who design living environments for people with dementia to offer effective design solutions.

2.2: POTENTIAL ROLE OF THE ENVIRONMENT

Acknowledging theoretical support for the role of the environment, as well as the medicalization of typical nursing home environments, several authors suggest structuring care environments around the strengths of both staff and residents. Coons (1983) proposes creating an environment (therapeutic milieu) that encourages individuality and enables residents to maintain and integrate relationships with their past lives as much as possible. The milieu defines the environment in social and residential terms rather than custodial or medical ones, with emphasis on creating a homelike environment both in style of living and architectural features (Coons, 1983; Coons, 1991d). Embracing these general objectives, Cohen and Weisman (1991) offer therapeutic goals matched with design concepts that are organized around a model which reflects the interaction of architectural, social, behavioral, and organizational factors. Others present discussions in support of a homelike environment, including Calkins (1988), Hiatt (1991a), Peppard (1991), and Cohen and Day (1993), and suggest that a homelike environment should be as similar as possible to the environment in which the person lived before the onset of dementia.

Attempts to apply behavioral principles to the design of environments for older adults and particularly those with dementia originated in the 60s. Lindsley (1964) suggests creating prosthetic environments and cautions against thinking in purely therapeutic terms. He also emphasizes the importance of distinguishing between therapeutic and prosthetic design interventions. In medical terms, therapeutic interventions are temporary efforts and imply restoring functions that individuals maintain outside the therapeutic environment. By contrast, prosthetic interventions, characteristically more permanent, are designed to provide ongoing support to behavioral deficits. They will not alter the deficit but merely provide an environment in which the deficit is less debilitating (Lindsley, 1964). Whereas dementias attributed to diseases of the nervous system are progressively degenerative, it is likely that both temporary and more permanent ongoing support will be needed.

Calkins (1988), reinforces the importance of prosthetic supports, and notes that prosthetics may include signs and handrails which are found in many environments, not just in nursing homes. Examples of individual prosthetic devices are eye glasses and hearing aids (Lindsley, 1964). In the case of cognitively impaired residents, prosthetics are equally, if not more, important because they help those persons maintain control. Prosthetics may be added to an environment, such as providing supportive furniture or may involve reductions in information, such as camouflaging areas unsafe for residents. In contrast, a therapeutic intervention might include removing a mirror to prevent residents from being frightened at seeing an image they do not recognize as their own reflections.

Ideally, living environments for people with dementia should offer design attributes with both therapeutic and prosthetic potential (Pynoos & Stacey, 1986; Cohen & Weisman, 1991).

Debate over which design resolutions are appropriate for specific residents or what environments are appropriate at various stages of dementia continues, and considerable research is needed before many questions can be answered. Service providers need to know whether environments for people with dementia should be designed differently than environments used by other frail older adults. For those nursing home providers who hold that dementia does mandate different design, a typical response has been to create special dementia care units -- a separate wing or area of a nursing home with restricted access (Sloane & Mathew, 1991b). However, less well-defined, is just what design attributes are critical to the success of such a unit (Hiatt, 1991a). Existing studies have identified great variations in environmental characteristics (Ohta & Ohta, 1988; Hyde, 1989).

These units often are assumed to offer unique care approaches, e.g., smaller numbers of residents, higher staff/patient ratios, unique activities programming, and more homelike attributes in physical design. Yet, in reality, special care units vary greatly in terms of their guiding philosophy and therapeutic approaches, as well as their approach to environmental design. Ohta and Ohta (1988) found one unit described as a typical nursing care wing had only one unique feature: an alarm system that alerted staff when a resident wandered off the unit. In contrast, another unit provided private rooms decorated in pastel colors,

and identified residents with a photograph and name at the doorway. The hallway was carpeted, and wall hangings reflected the interests and backgrounds of the residents.

To date, special care units may or may not have special designs, and often design interventions, e.g., closed doors, locked doors, and alarm systems, as well as removal of items from the environment, have been initiated as a response to the negative behaviors manifested in affected individuals (Hiatt, 1991a). Some of those behaviors include disorientation and getting lost (Calkins, 1988), wandering to the point of disturbing others' belongings, agitation, provoking arguments with other residents, and crying out (Sloane & Mathew, 1991a). In light of these outcomes, case studies documenting past successes and failures can be an important source of information for planning and design intended to help ameliorate the effects of dementia (Cohen & Day, 1993).

2.3: GENERAL OBJECTIVES OF DEMENTIA-SPECIFIC DESIGN

Not surprisingly, dementia-specific design should be an extension of good design in general (Hiatt, 1991a), and take into consideration normal age-related sensory changes, e.g., slower reaction time, reduced attention span, and changes in vision and hearing as noted in Chapter I. In all cases, environments need to facilitate wayfinding (Weisman, 1987), support functional ability (Cohen & Weisman, 1991; Weisman, Cohen, Ray & Day, 1991; Peppard, 1991), and emulate homelike charcteristics that resemble, as much as possible, residents previous living environments (Calkins, 1988; Cohen & Weisman, 1991; Cohen & Day, 1993).

Finally, as Lawton (1981) and others have noted, a supportive environment becomes increasingly critical in the case of older adults with cognitive declines.

In addition, design also should address the needs of staff, residents' families, and other visitors. Visitation from family and friends is important for people with dementia. Therefore, it is important to provide places for visits other than resident' rooms, busy dayrooms, or other areas that may compromise private conversation (Cohen & Day, 1993). Similarly, it is important that staff have work spaces which support effective task completion, as well as areas for private conversation with other staff members, and places for work breaks and storage of personal items (Cohen & Day, 1993).

In summary, environmental unit design should address the needs of different user groups, e.g., staff, residents, family and other visitors; with primary focus on the needs of the residents and their individual characteristics so that the environment can support as much as possible what a particular individual can still do or be (Hiatt, 1991a). Based on existing literature, supportive design should address safety and security and facilitate daily cares, activities, and mobility. Additionally, supportive design should offer a range of spaces (with a small homelike scale), accommodate needs for solitude, small-group socialization, privacy for family visits and consults with staff, and provide areas for special events such as birthday and holiday celebrations. Indeed, the living environment, within the larger facility, should emulate the attributes of home with its comfort, rights and privileges as much as possible.

Some of the intents which can be facilitated by appropriate design are:

(1) Improved safety and security,

(2) Compensation for normal age-related sensory losses,

(3) More functional independence,

(4) More options for privacy,

(5) Increased opportunities for socialization,

(6) Reinforcement of cultural backgrounds and traditions,*

(7) Providing a more homelike environment with residential furnishings and finishes to promote comfort and a sense of well-being.

(Calkins, 1988; Cohen & Weisman, 1991; Coons, 1983; Coons, 1991a; Coons, 1991 b; Coons, 1991d; Hiatt, 1982; Hiatt, 1991a, Hiatt, 1991b; Peppard, 1991). *(Hiatt, 1991a; Peppard, 1991).

Finally, the design must match the residents, other users, and the setting. No two units will be exactly alike because differences will occur in terms of facility policy, staffing, and activities programming; residents and their individual characteristics, and also the design attributes of each facility (Hiatt, 1991a). Therefore, it is important to evaluate each unit individually and to have a general idea of the characteristics of the unit's residents to determine the most critical issues that need to be addressed in order to provide a supportive, user-friendly environment.

2.4: DESIGN METHODS: CRITERIA ISSUES

Designers have not always been concerned with criteria and goodness of fit between users and their environments, but psychological studies and design

failures prompted changes in design approaches (Osmond, 1966). Early studies demonstrating the effects of sensory deprivation (Bexton, Heron, & Scott, 1954), were followed some years later by Sommer's Personal Space (1969) which helped bridge the gap between studies and design criteria, thereby linking specific behaviors to design of environments. The work of Newman (1973) documented the affects of environment on human behavior in an urban setting, and Sandra Howell's (1980) work on designing for aging helped bridge behavior with design by analyzing case studies and developing guidelines for design.

The emergence of work by several authors, e.g., Howell (1980) and earlier efforts set the stage for the 1980s and early 90s, from which a new collection of books, articles, and other materials about the design of living environments for those with dementia have emerged. Prominent in these publications have been discussions about the appropriate use of design criteria to guide evaluation and subsequent guidelines and recommendations for dementia-specific environments. While the increase in research about dementia-specific design issues and criteria is encouraging, this body of literature, as in the case of design method literature, still contains confusing and conflicting information regarding design criteria.

A general intent to promote design which compensates for functional deficits, increases options, reinforces individuals' remaining abilities and also incorporates the needs of staff and visitors has been demonstrated. This literature provides a cursory understanding of how people with dementia interact within their environments, and in turn, discussions presented may inform design. However, designers are challenged to make a transition from reading design research literature to using design criteria to facilitate the design process.

In discussions about design methods, several authors have devoted attention to the role of criteria in the process of evaluating and designing facilities and suggest that criteria have multiple roles throughout the design process. In establishing a basic concept of the design process, Alexander's model (1964), although using the term "pattern" instead of criteria, identifies two major phases of the design process: analysis and synthesis. He describes the analytical phase as identifying components of a problem and then prioritizing them. Synthesis is the development of solutions, and his concept of "pattern" links the two phases by guiding design solutions. Alexander (1964), although rejecting the idea of design methods as an area of study, in reality influenced the development of a systematic process of design. In reviewing his pattern ideas, similarities to what others have identified as criteria emerge, and he considered patterns the key to creating forms.

Generally, criteria "... characterizing marks or traits: standards on which a decision or judgment may be based: standards of reference: yardsticks" (Webster's New World Dictionary, 1986, p. 538) are important to understand because they offer directions and adaptability in developing solutions (Dohr & Portillo, In Press). In addition, criteria may assume a measure of evaluation, and therefore, serve a useful purpose in bridging the gap between the process (problem identification, purposes, objectives) and structural context (attributes of the environment), and thus offer a valuable way to better understand design (Dohr & Portillo, In Press). By examining and using criteria, insights may result with implications for environmental attributes related to users' needs and also for the development of design solutions. The concept of compatability and congruency

needed in person-environment relationships also are evident in design methods studies where user needs and environmental contexts are translated to the language of criteria for evaluating and programming for design. The underlying premise and assumptions of the environment-behavior and design methods literature appear similar which provide compatibile support for this study.

Others who emphasize the use of criteria in the design process include Hillier (1984), whose work in design method proposes that criteria address the function of design. Alexander & Poyner (1984) suggest that responsive design begins with a statement of user needs or design criteria which includes a checklist for evaluating a proposed design. Levin (1984) calls for more data on criteria for judging designs so that sites may be compared. More recently, Nadler & Habino (1990) also stress the evaluative role and relate criteria to objectives. Thus, the recognition of the importance of criteria and various roles from analysis to integration into design solutions are well-established in the literature.

However, implementing criteria may be problematic because of potential confusion over its intended use during the design process. Although providing common threads throughout various phases, criteria may be difficult to define because of their multiple functions or roles. Schon (1988), in a discussion of criteria, maintains that designers must frame the problem, set boundaries, select particular things for attention and "...impose on the situation a coherence that guides subsequent moves" (p. 182). Schon's definition implies that criteria offers flexibility by providing consistent meaning, while the role and purpose may shift depending upon the stage of the design process. Zeisel (1984) and others

describe criteria as meeting economical, technical, and sociological demands. Nadler and Habino (1990) characterize criteria as being determined by purposes, being measurable, and also linked to general objectives. Portillo (1992) found that designers employed compositional, symbolic, behavioral, pragmatic, and preferential criteria in completing design projects.

Another implementation issue is inconsistent terminology. Dohr & Portillo (In Press) found that a variety of terms including those denoting constraints, restrictions, limitations, parameters, objectives, guidelines, and requirements are often interchanged with criteria. Prominent in this discussion is the suggestion that consistent vocabulary and application are important for advancing design research.

Assuming that consistent definitions and selections of criteria are reached, a further difficulty confronting the design process concerns the difference in how environments are perceived between those who design them and those who use them. Hershberger (1988) aptly demonstrated differences in thinking between architects and non-architects regarding meanings of buildings, reactions to spaces, judgments about organization, and also general aesthetics. Hershberger and Cass (1988) also discuss the difficulties of predicting user responses to buildings, along with the pressure of rapidly increasing construction costs which limit time to investigate user responses to buildings. Even if time is allotted to assess user perceptions, in the case of design for dementia there are serious limitations in assessing the perceptions of those primary users who have dementia. Therefore, except for behavioral observations and environmental audits, this situation is a case where consulting secondary consumers -- staff and family -- is critical.

Again, consistent with design methods literature, multiple roles and functions of criteria are visible in efforts to define and use dementia-specific critera. Researchers must consider several variables if they are to address what most certainly will be a continuum of needs requiring increasing support. Hiatt (1991a), as well as Rule, Mike, & Dobbs (1992) note the importance of sensory and cognitive functioning levels attributed to the manifestations of dementia, as well as normal age-related declines. Hiatt (1991a) also notes the importance of culture (the living environment, heritage, and geographic location). Peppard (1991) supports the importances of culture ("geographic specificity") on preferences, and adds orientation (ability to identify with the environment). These types of criteria appear consistent with the general types of criteria that Zeisel (1984), Portillo (1992), and others have named.

The focus on user needs is supported in methods and content literature, but is a concept that continues to evolve and require refinement. Andreason (1985) noted that more often criteria are related to visual aesthetics, ease of maintenance, and the agendas of facility owners, and less often related to functional needs of the residents. In addition, early efforts to provide supportive design solutions for those with dementia appeared to focus on protection, containment, and attempts to deal with behavior disturbing to others (such as getting lost) rather than focusing on reinforcing residents' abilities (Hiatt, 1991a). Using these criteria, the design intent was based primarily upon preventing behavior causing disruption or discomfort to staff or other residents and less on variables supporting the characteristics and needs of individual residents in the settings. While the difference may appear subtle to non-designers, Nadler and Habino (1990) suggest that planners and

designers need to recognize such differences for it will ultimately create a different solution or type of information sought. A challenge for designers is that the intent of the design must be to accommodate various levels of competence including least to most, as well as other levels between those extremes.

Recognizing user needs and preferences is a direct response to the first principle set forth in Breakthrough Thinking: "The Uniqueness Principle" (Nadler & Habino, 1990). This belief principle demands that planners evaluate, and do not stop with merely providing generic solutions but move on to explore what is unique to a particular set of users or setting. Missing in the approach to nursing home environments has been an evaluative approach emphasizing the uniqueness of a given facility and its residents. More often, the medical model, with its generic solutions, has been inappropriately applied.

Equally important to the evaluative process is establishing the purpose for a given design intervention. Nadler and Habino (1990), suggest that a purpose can signify intended use of something, or may identify an objective, but that establishing a purpose is important because doing so provides a focus for change. Regarding design, establishing a purpose can drive the steps to solutions which then can be evaluated and improved as needed.

2.5: USING CRITERIA IN THE EVALUATION PROCESS

Noted authors have proposed that the functional abilities of residents with dementia should be major factors driving design. This basic premise is commonly found in those discussions about criteria that intend to assist designers

with conceptualization for special care environments (Calkins, 1988; Coons, 1991a; Coons 1991d; Cohen & Weisman, 1991; Hiatt, 1991a; and Peppard, 1991). Yet the criteria described by these authors vary in format, elaboration, and semantic clarity. Criteria used in literature about design for dementia reflects continuing efforts to clarify meanings and functions. In a recent article, Zeisel, Hyde, and Levkoff (1994) after reviewing the work of Calkins (1988), Cohen and Weisman (1991), Hiatt (1991a) and Lawton (1989), proposed an "Environment Behavior Model" for Alzheimer special care units using performance criteria. While stating that performance criteria should be measureable, the performance criteria examples listed, e.g., "Safe & Secure" and "Residential" appear to be more general categories of criteria as described in Chapter I. However, from the work of Zeisel, et. al. (1994) emerges a more systematic evaluation procedure than offered in many previous efforts. Additionally, it supports the ten commonly-agreed-upon dementia-specific design criteria initially selected to facilitate evaluation of the special needs dementia care unit -- the focus of this study.

Thus, environmental criteria initially selected to guide this study were:

(1) Homelike Qualities (Noninstitutional Character),

(2) Sensory Stimulation without Stress,

(3) Way-finding/Orientation,

(4) Independence and Autonomy,

(5) Privacy,

(6) Personalization,

(7) Safety and Security,

(8) Socialization,

Criteria Continued:

(9) Responses to Normal-Age Related Sensory Losses,

(10) Cultural Considerations.* (Hiatt, 1982, 1991a; Peppard, 1991)

Criteria 1 through 9: (Coons, 1983; Coons, 1991a; Coons, 1991d; Calkins, 1988; Cohen & Weisman, 1991; Hiatt, 1982, Hiatt, 1991a; Hiatt, 1991 b; and Peppard, 1991). *(Hiatt, 1982; Hiatt, 1991a; Peppard, 1991).

The list of ten criteria, as mentioned previously, was selected from the published work of previously noted six researchers, and subsequently was reconstructed into four major criterion categories that integrated some of the previous criteria as subheadings. Wayfinding/Orientation and Stimulation without Stress were omitted from the list to avoid problems with operationalization and to limit questionnaire length. Criteria selected does not imply the establishment of an exhaustive list, and future studies may profit from including Wayfinding/Orientation and Stimulation Without Stress, as well as other criteria. However, the present evaluation and subsequent design guidelines for the special care unit were guided by the following design criteria and assumptions:

A SUPPORTIVE ENVIRONMENT FOR RESIDENTS WITH DEMENTIA

(1) Fosters Safety and Security;

(2) Responds to Normal Age-Related Sensory Losses;

(3) Fosters Independence and Autonomy

  (3a) Fosters Privacy,

  (3b) Fosters Socialization;

(4) Provides Homelike Qualities

  (4a) Fosters Personalization, and

  (4b) Fosters Cultural Traditions.

CHAPTER III

METHODOLOGY

3.1: INTRODUCTION

Case study research, an approach often used in psychology, sociology, political science and planning, allows researchers to focus on a specific contemporary phenomenon within a real-life context (Yin, 1989). In case studies, investigators identify boundaries of an object and then observe "...the elements it comprises, relations among elements, the development of the object, and contextual influences" (Zeisel, 1984, p. 65).

By using more than one source of evidence, researchers may address a broader range of issues, which provides an opportunity to develop "converging lines of inquiry" (Yin, 1989, p. 97). In addition, Yin notes that findings are likely to be more convincing and accurate if they are based on different sources of information. This style of inquiry is particularly meaningful for environmental design studies where the scope of inquiry must entail investigation of person-environment interactions, elements of the built environment, as well as developmental and cultural issues.

One application of the case study research approach has been to conduct post-occupancy evaluations, particularly in the past thirty years. Although informal and subjective building evaluations have occurred throughout history (Preiser, Rabinowitz, & White, 1988), more systematic evaluations began to develop in the

mid-1960s when severe problems, some of which related to built environments, were observed in mental hospitals and prisons (Osmond, 1966).

Early proponents of evaluation studies such as Christopher Alexander (1964 & 1977) favored rational and rigorous design processes emphasizing evaluation of the needs of those for whom the design was intended to serve. Yet, case studies continue to vary in focus, rigor, and depth. Some appear as reports with general environmental comparisons of multiple sites (Cohen & Day, 1993). Others focus on specific sites and employ more formal methods accompanied by statistical analysis to assess user satisfaction and building performance (Burg, Rahaim, Rosenheck, & Tuttle, 1981). Even with variation in formats, evaluation studies may offer certain clear benefits: (1) increasing organizational effectiveness; (2) providing design professionals with information to make better informed design decisions; and (3) developing more responsive design for users (Preiser, Rabinowitz, & White, 1988).

Given the complexity of nursing homes and their multiple functions, as well as the ambiguity regarding definitions and characteristics of special care units (Ohta & Ohta, 1988; Holmes, Teresi, & Moncaco, 1992) case study research, with its many opportunities for obtaining both quantitative and qualitative data, offered a useful format for this study. In order to expand existing dementia-specific research regarding design criteria and to understand how they may be used in the evaluative stage of the design process, a post-occupancy evaluation was conducted in the special needs dementia care unit at a nursing home, Skaalen Sunset Home, Inc., in Stoughton, Wisconsin.

To facilitate the investigation of environmental design issues, research procedures were implemented in several phases (Fig. 2, p. 41). Phase one consisted of a comparative analysis of literature-based dementia-specific design criteria and preliminary studies at the site. Preliminary studies included discussions with the Skaalen Planning Committee, completing an environmental audit of existing conditions, and observing behaviors and activities of residents, staff, and visitors. These studies provided the opportunity to become familiar with issues related to the built environment, as well as policies, staffing, and resident characteristics and care needs. In addition, the preliminary studies helped clarify important unit design issues which were then matched with criteria from the literature to guide further investigation of caregiver perceptions.

Phase two investigated caregiver perceptions concerning unit design through interviews with individual staff representing six departments and an environmental design questionnaire which was mailed to staff and family caregivers. The intent of the interviews was to identify design concerns related to staff, residents, and visitors which again were compared with criteria from the literature and incorporated into an environmental design questionnaire. Three interview subjects were also members of the Skaalen Planning Committee, and the interviews provided an opportunity to explore issues on an individual basis more in depth than possible during meetings.

The questionnaire's content was guided by the previously selected dementia-specific design criteria and included design issues noted by the researcher during discussions with the Skaalen Planning Committee, the environmental audit, behavioral observations, and also issues articulated by staff

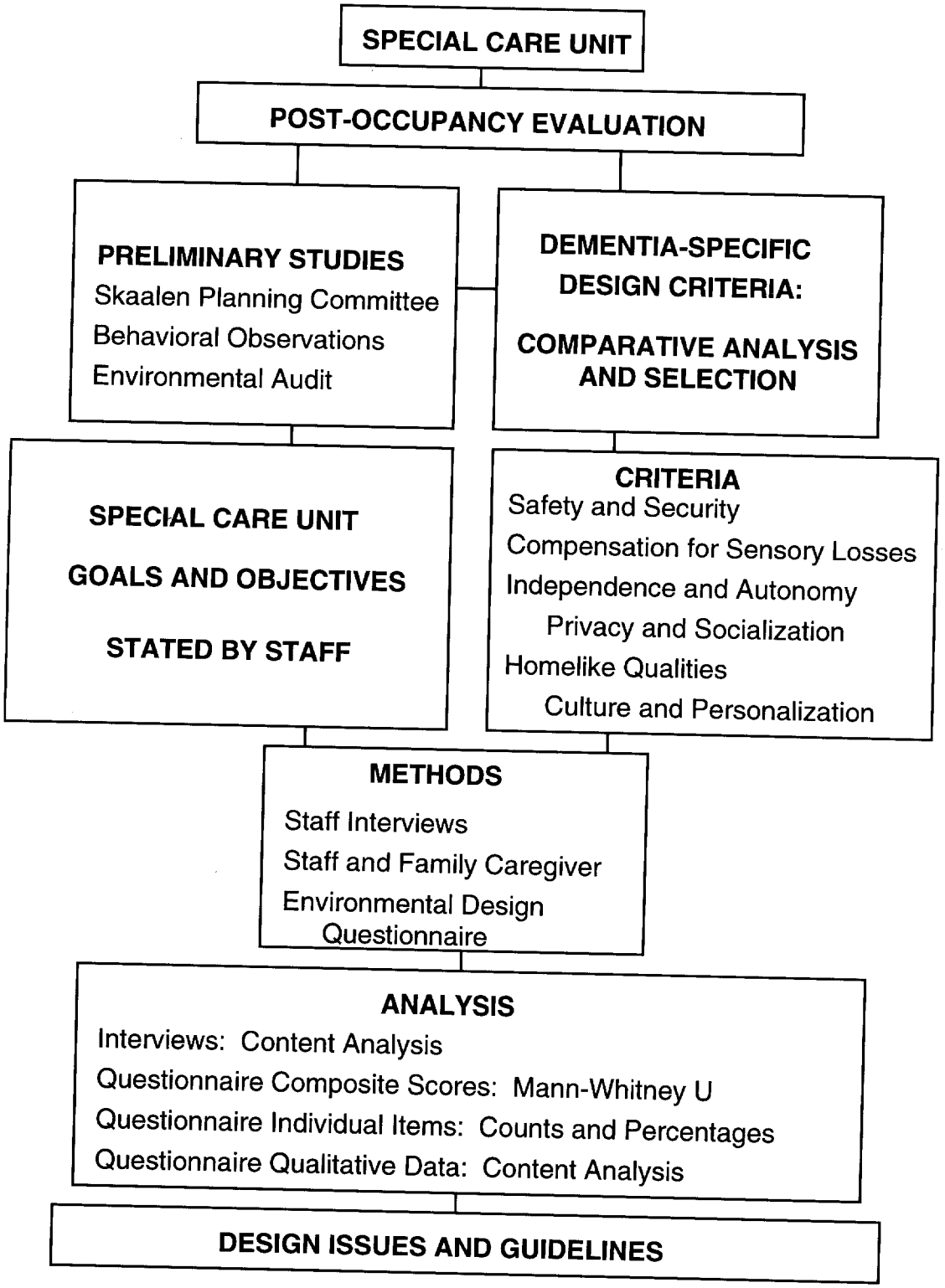


Fig. 2: Thesis Study Flow Chart

during the formal interviews in phase two. The intents of the evaluation were to enhance understanding of design criteria for special dementia care units and how to use criteria to guide the assessment of user perceptions regarding unit design.

Phase three of the study developed a list of design issues and guidelines (Chapter VI) based on the results of the evaluation. Although outside the scope of this study, a comprehensive written evaluation with site-specific design issues identified through the study, along with design guidelines was presented to the facility after the study's completion.

3.2: SITE SELECTION

Organizational Structure:

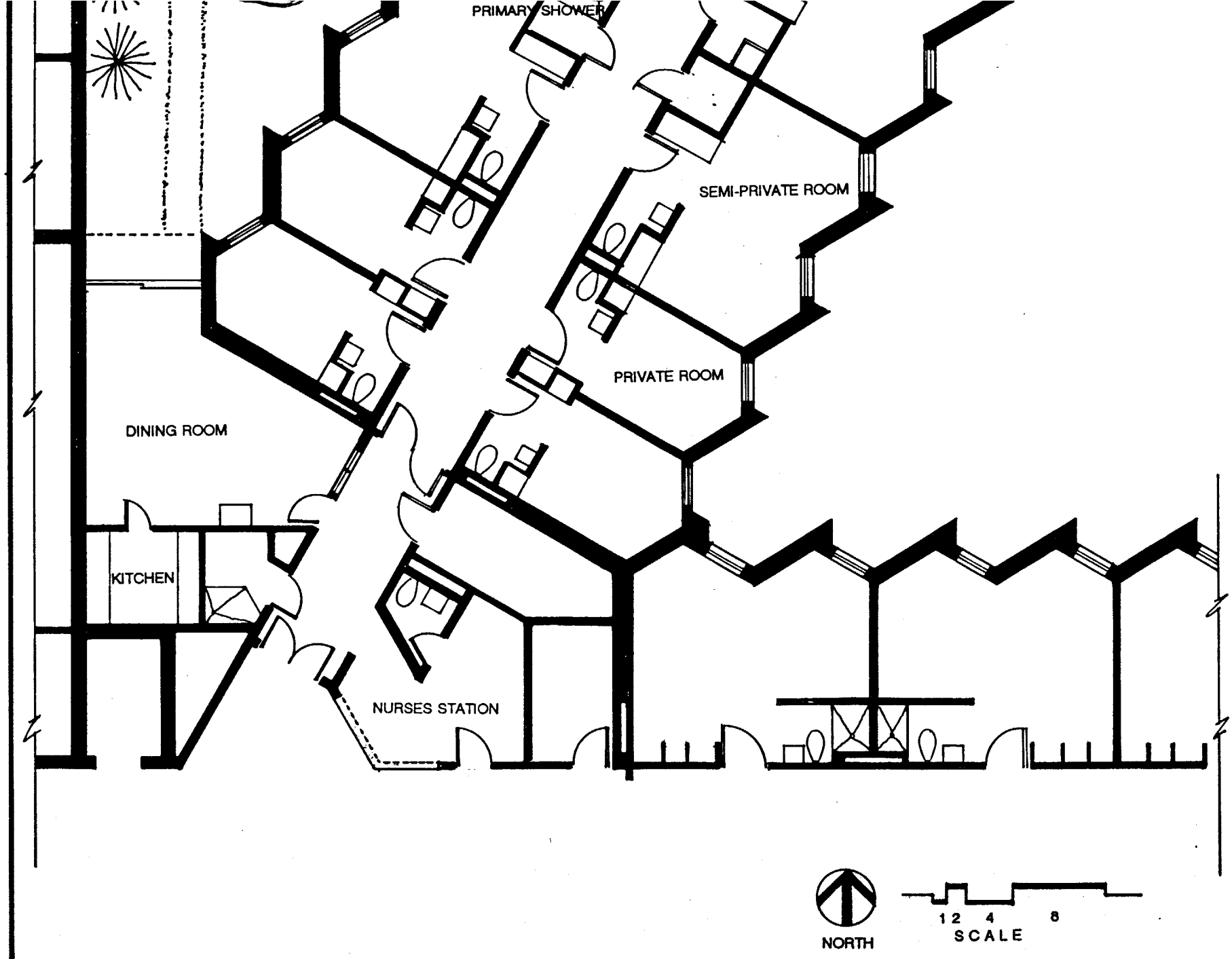
Skaalen Sunset Homes, Inc., a noted leader in the care of aging persons, was in the process of enhancing special care approaches in its special needs dementia care unit, including improvements in environmental design. Administrators and other key personnel at Skaalen had organized a planning committee to investigate environmental design issues along with discharge policies, nursing care and activity programming issues. Owned and operated by Skaalen Retirement Services, a not-for-profit organization affiliated with the Evangelical Lutheran Church in America, the special care unit is located within the larger 266-bed nursing home. Long term-residency and day care were both offered at the time of the study. However, day care was relocated to a remodeled single-family dwelling near campus after the study was completed. Located on a

hillside overlooking the Yahara River, the 110-acre campus is also the setting for a 114-unit retirement community and two single-family style residences with support services for independent adults.

Physical Environment:

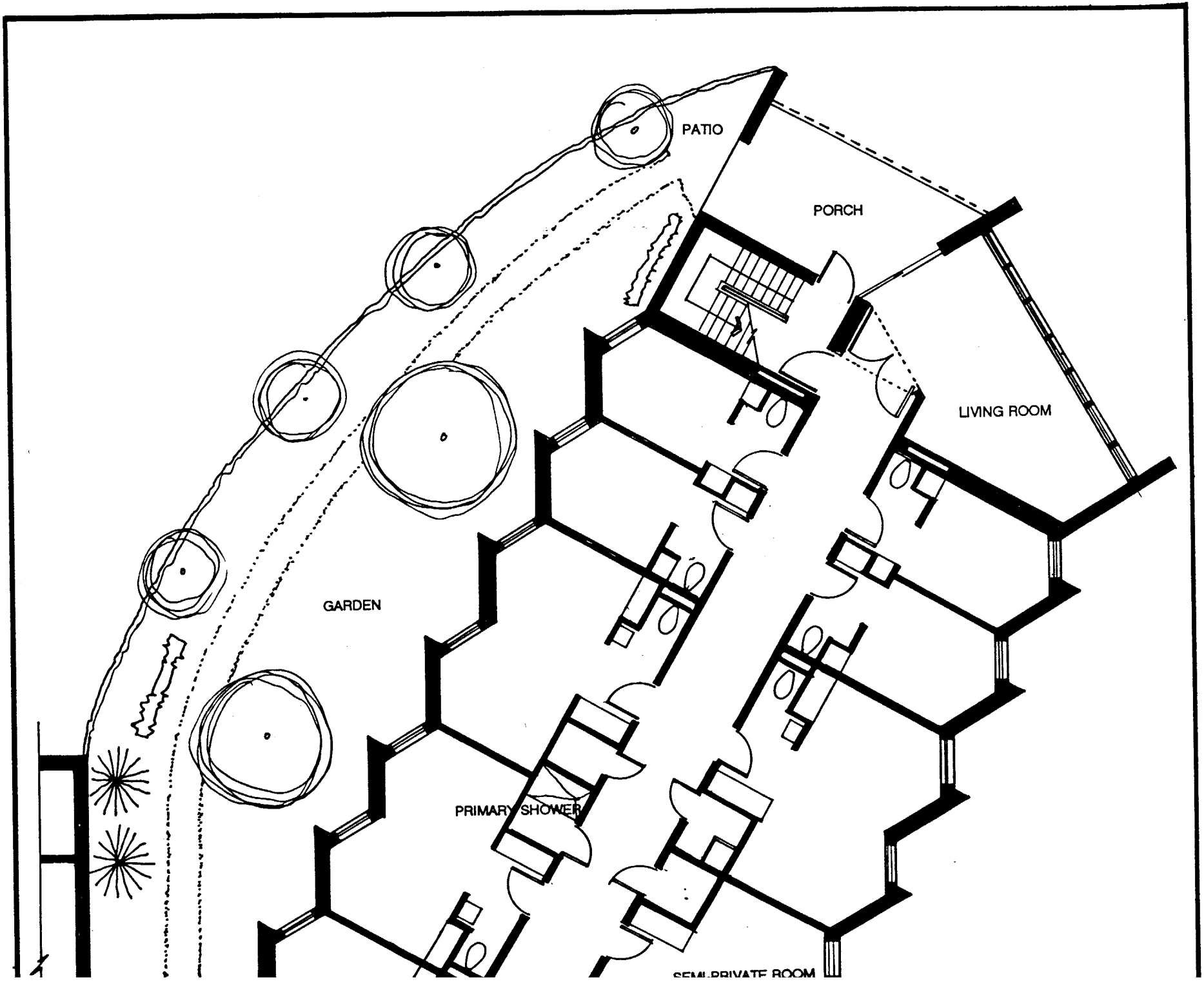
Similar to other wings of Unit 4, the basic floor plan of Unit 4A (Fig. 3, p. 44) consists of seven private rooms and four semi-private rooms located along a long double-loaded corridor, as well as a living room adjacent to a screened porch which leads to an outside garden patio area at the unit's other end. In addition, there are two shower rooms and clean and soiled utility storage rooms as well. Other unit attributes include: (1) a dining room with family-like setting (space and furniture groupings accommodate only unit residents); (2) an adjacent kitchen located near the unit entry; (3) angular and irregular shaped residents' rooms, dining room, living room, porch, and nurses station; and (4) access to nearby outdoor spaces on either side of the unit. A landscaped outdoor space on the unit's northeast side could be accessed from both the dining room and the porch. However, there is no connecting walkway between these two locations, and the ground is somewhat uneven, discouraging even supervized walks with residents in that area. Finally, there is limited outdoor seating with no protection from the sun or weather. The additional landscaped area on the unit's southwest side has walkways and limited seating, but again, there is no protection from the sun or weather.

LIVING ROOM
PORCH
PATIO



UNIT 4 - A SCANDIA GARDEN

FIGURE 3


PATIO
PORCH
LIVING ROOM
GARDEN
PRIMARY SHOWER
SEMI-PRIVATE ROOM

Resident Profile:

The special dementia care unit, also called the special needs unit and Unit 4A -- Scandia Garden, is based on a social-medical model offering long-term residency for 15 residents and day care only for up to five residents. At the time of the study, there were twelve long-term residents ranging in age from 65 to 92 and five day-care residents. Each of the long-term residents had been diagnosed with either Alzheimer's Disease or a related disorder, and their stages of dementia ranged from mild to severe, although no one was in the final stage (bed-bound), requiring the highest levels of skilled care. During the preliminary studies, administration at the nursing home made a decision to relocate the day-care program to a nearby single-family home formerly occupied by a previous chaplain). However, until interior modifications and staff preparations were ready in the single-family home, the five day-care residents continued to spend time in the unit.

Staff Profile:

A nursing staff-resident ratio of 1-3 or 1-4, compared to 1-7 or more within other nursing units at this site, provides greater opportunities for individual attention regarding activities of daily living, medical care, and recreational activities. A hall monitor, primarily staffed by nursing employees, is available daily from early morning to mid-evening to help residents with wayfinding and walking, and to provide minimal assistance with toileting when needed. Through the planning and supervision of an award-winning activities therapist, a variety of individual and group activities such as opportunities for sensory stimulation (baking, outdoor walks, tactile interaction and games), opportunities for social interaction (listening

to music, bus rides, games, refreshment breaks and gardening in the courtyard) are offered with the intent of maximizing the residents' talents, backgrounds, and special abilities.

Other professionals serving the unit included a social worker who assists with admissions and provides family consults, and a chaplain who visits the unit weekly to lead a hymn sing and study group; he is also available for family consults. In addition, support services are provided by employees from Building Maintenance, Laundry, Dietary, and Cosmetology departments. In summary, users of the environment consist of approximately 25-30 staff caregivers, 17 residents (12 long-term and 5 day-care), as well as visitors.

3.3: PRELIMINARY STUDIES

Nadler and Habino (1990) use planning and design principles to identify unique characteristics of situations and case study research procedures. Consistent with their approach, steps were taken to investigate the uniqueness of the special needs dementia care unit (Scandia Garden) and its users within the overall context of Skaalen Sunset Home. This initial phase was accomplished through meetings with the Skaalen Planning Committee, an environmental audit, and behavioral observations of caregivers and residents in the special needs unit.

MEETINGS WITH THE SKAALEN PLANNING COMMITTEE:

Purpose:

Early in 1993, Skaalen Sunset Home, Inc. organized a Planning Committee to examine several issues relevant to Unit 4A: Scandia Garden, a then

approximately two-year old special dementia care unit. Relevant subjects at issue were: (1) environmental design problems; (2) whether or not to keep the day care program on the unit; (3) unit admission and discharge policies; (4) nursing care; and (5) activity programming.

Description:

The Committee, comprised of twelve to fifteen members, met twice a month depending on the priorities and demands of staff responsibilities. Meetings were attended by those who were available and wanted to present issues of concern. The researcher initially met with the Committee and administrative representatives to present a proposal for a joint venture regarding the investigation of environmental design issues. The Committee approved the proposal to conduct a post-occupancy evaluation to be used in partial fulfillment of a master's degree in the Department of Environment, Textiles & Design at the University of Wisconsin-Madison. In exchange, Skaalen would receive a written evaluation and suggestions for environmental changes based on the preliminary studies and the formal post-occupancy evaluation. The researcher met with members of the committee six additional times. Correspondence with representatives of Skaalen and notes from the meetings were kept on file and referenced when appropriate to guide questions and provide any needed clarification.

BEHAVIORAL OBSERVATIONS:

Purpose:

The purposes of the observations were to see how staff and residents used or did not use the environment, how they moved about, accomplished tasks, and interacted with each other in the environment, what areas were supportive to human activity and what areas or attributes appeared to cause problems.

Description:

Unit 4A observations were conducted on four separate days. Four areas: the unit entry (intersection of A, B, and C Wings), corridor, dining room, and living room were observed for approximately 45 minutes on two different days and times for each area. Insights about behavioral observations were recorded with visual sketches, written notes about how the environment did or did not support function or meet with aesthetic appeal, and comments of unidentified staff caregivers.

ENVIRONMENTAL AUDIT:

Purpose:

An environmental audit was conducted to record quantitative information and researcher comments about the size and shape of spaces, descriptions of flooring, wall surfaces, window coverings, storage space, and furniture.

Description:

The audit was completed with a researcher-designed form and color photographs taken by the researcher. The audit was conducted by area; e.g.,

dining room, living room, residents' rooms, etc., noting approximate area dimensions and configuration of objects in each area, descriptions of types of flooring, wall surfaces, window coverings, furniture and use of color.

Environmental Design Issues and Profiles Developed from Preliminary Studies:

Generally speaking, a most important problem identified was that of congestion. Contributing factors were circulations patterns, spatial constraints, mobility aids, and unit equipment and furnishings. Another problem identified by staff was the limitation of adequate spaces for wandering which contributed to congestion in the corridor and in some doorways. Some residents also wandered into others' rooms uninvited. Along with these concerns, flooring was sometimes slippery as well, putting residents at risk for falls. Additionally, the dining room and the living room were too small to accommodate all unit residents plus staff and mobility aids at one time.

Another dominant concern was the unit 's institutional appearance and lack of color and texture variation. As one person said: "Looking down the corridor is like looking down the inside of a spaghetti noodle." Others noted a lack of personalization evident except for a few objects that residents' families brought from home. Overall, wallhangings, furniture and finishes did not appear meaningful for the resident population. There had been efforts to identify all residents' rooms by taping pictures of animals and birds on the doors or placing ribbons on the nursing care code bars located near the top of the left-side door jam of room entries of female residents. However, it appeared there was a lack of consensus about how to provide effective resident room entry identification and

personalization. Many chairs in the unit needed to be replaced for various reasons, including issues related to sitting and rising with ease, visual appeal, and comfort.

Other staff reported the need for more varied spaces. Some indicated that the living room could not adequately to accommodate many large-group activities, and there were few spaces where two or three residents accompanied by a staff person could go to engage in a small-group activity. Others expressed concern about privacy and confidentiality issues in terms of consults with other professionals (nurses, social workers, doctors, chaplain, etc.) and families. Through the discussion about these and the other previously stated issues, the Planning Committee members were able to develop goals and objectives for the unit.

DESIRED GOALS AND OBJECTIVES OF THE UNIT STATED BY STAFF:

Functional:

a. Relocate the day-care residents and program.

b. Provide more area for walking (pacing and wandering).

c. Enhance safety.

d. Replace most of the furniture in the unit with a more comprehensive and integrated system of furnishings.

e. Provide a better range of space sizes to accommodate a variety of staff and resident needs.

f. Reduce congestion in the unit.

Functional Goals and Objectives Continued:

g. Reduce noise in the unit.

h. Maintain controlled access but with less intrusive alarm.

Aesthetic:

a. Provide a more homelike decor.

b. Provide more color variation.

c. Change the lighting (also functional).

d. Provide more visual and tactile stimulation in decor.

e. Encourage more personalization.

f. Change decor to reflect residents' backgrounds.

g. Change dress code so it is not restricted to white uniforms.

The process of defining goals and objectives for the unit also facilitated development of the environmental design questionnaire. Issues discussed became the subject of specific items for the appropriate criteria section of the environmental design questionnaire. Matching issues and criteria categories was guided by the six authors (Coons, 1983; Coons 1991a; Coons 1991d; Calkins, 1988; Cohen & Weisman, 1991; Hiatt, 1982; Hiatt 1991a; Hiatt, 1991b; and Peppard, 1991) cited as sources of criteria and the context of discussion with staff. Comparing literature and staff discussion was useful, particularly when issues clearly could have been associated with more than one criterion category.

Examples of questionnaire items with related issues and criteria:

Issue: Congestion in the corridor and some doorways

Criterion Category: Safety and Security

Questionnaire Item:

Item #SS1:

"The unit provides enough safe places for wandering, a common behavior among people with dementia."

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Issue: Lack of color differientiation in the corridor.

Criterion Category: Compensation for Normal Age-Related Sensory Losses

Item #CSL3A:

"There is distinct color contrast (light/dark) between walls and floors in the corridor."

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Issue: Concern about privacy and confidentiality in terms of consult space with care providers and families.

Criterion Category: Independence and Autonomy

Item #IA4:

"Private space is needed for staff (nursing, social work, chaplain, etc.) near the unit to consult with families."

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Issue: The unit looks too institutional.

Criterion Category: Homelike Qualities

Item #HQ1:

"The entry to the unit is homelike in appearance."

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Conversations during interviews revealed an abundance of issues which respondents described in detail. As a result, the researcher decided to include several open-ended items in the questionnaire to allow respondents an opportunity to identify additional concerns or expand on items answered.

3.4: SAMPLE

Interviews were conducted with one staff member from six different departments serving the special needs unit. Departments represented include: Activities Therapy, Administration, Chaplaincy, Housekeeping, Nursing, and Social Work. The researcher and administrator of the facility agreed that those interviewed should represent different departments. However, representatives of nursing administration chose the interviewees, some of whom were already on the Skaalen Planning Committee.

Family and staff caregivers were asked to complete an environmental design questionnaire. Random sample selection was not possible because of the limited sample size. Therefore, all family and staff caregivers associated with the unit were invited to participate in the study. The questionnaire was mailed to 63 caregivers (33 family and 30 staff) along with a self-addressed, stamped return envelope.

The researcher received 46 (22 family and 24 staff) questionnaires for a 73% overall return rate, and return rates of 67% and 80% for family and staff respectively. However, because of missing or confusing data, only 43 questionnaires were useable (20 family and 23 staff); an overall adjusted return rate of 68%, and return rates of 61% and 77% for family and staff respectively, were used for the analysis. Although substantial demographic data was missing, of the respondents who did report their ages (18 family and 16 staff), the mean age for family caregivers was 55.28 years and 41.45 years for staff caregivers.

It should be noted that staff caregivers who participated in the interviews also were sent questionnaires. Since the researcher had no access to the

names of questionnaire respondents, it is unknown how many interview participants responded to the questionnaire as well. It is acknowledged that some overlap may have occurred between the staff interview and staff questionnaire samples. Thus, these two data sets may not be completely independent.

3.5: DATA COLLECTION METHODS

METHOD I - INTERVIEWS:

Purpose:

The purpose of the interviews was to identify critical issues of concern to staff caregivers in various disciplines, corroborating preliminary research. These site-specific issues were then incorporated within the environmental design questionnaire under the appropriate criteria section.

Description:

Each interview, consisting of researcher-respondent one-on-one dialog guided by sixteen questions (Appendix A), took approximately 30 minutes. Pretesting was conducted with three administrative staff from three different departments at Skaalen. Respondents gave a description of their jobs and any personal experience regarding a relative or friend with dementia and comment on needs specific to residents with dementia. They also were asked to identify any design problems in the unit relating to four criteria areas: (1) Safety and Security; (2) Compensation for Sensory Losses; (3) Independence and Autonomy; and (4) Homelike Qualities. In addition, respondents were asked: What are the three best design attributes of the unit? What are the three worst design attributes of the unit?

What words would you use to describe the image you think the unit should convey to staff, family, and visitors? Confidential responses were written on the typed interview question pages as the researcher asked each question. No electronic recordings were used nor was a recording clerical person present.

METHOD II - ENVIRONMENTAL DESIGN QUESTIONNAIRE:

Purpose:

The purpose of the questionnaire was to evaluate issues identified in the preliminary studies and focused interviews, identify new ones, and compare responses of the two caregiver (family and staff) groups.

Description:

Accompanied by letters (Appendices B & D) of introduction and explanation, the questionnaires (Appendix C-Family and Appendix E-Staff) consisted of four major sections based on four major criteria areas: (1) Safety and Security (14 items); (2) Compensation for Age-Related Sensory Losses (10 items for composite analysis and 4 separate questions on lighting using a different scale); (3) Independence and Autonomy (10 items); and (4) Homelike Qualities (15 items for composite analysis and one item for separate analysis). The majority of the questionnaire was constructed with a Likert Scale of 5-1, with 5 meaning "Strongly Agree" and 1 meaning "Strongly Disagree" for each item. Since the lighting scale was 5-1 with 5 meaning "Much Too Bright", 3 meaning "About Right,"

and 1 meaning "Much Too Dim," this information had to be analyzed separately. In addition, one question in the Homelike Qualities criterion category required separate analysis.

Each section contained an open-ended question which allowed respondents an opportunity to list other concerns regarding the particular criterion category addressed. In addition, three open-ended questions at the end of the questionnaire featured: (1) an opportunity to list concerns not previously addressed about environmental design; (2) an opportunity to identify theunit's best design attributes; and (3) a request to list words the respondent deemed appropriate for conveying the desired image for the unit. Demographics included items about length of employment in the unit and department (staff), or length of residence for relatives in the unit (family), and age. Family caregivers were sent questionnaires with blue paper, and staff caregivers were sent questionnaires with green paper. Colored paper was used to reduce hard copy glare for respondents, and to separate data during collection and analysis.

Pretesting was conducted with five family caregivers in the Madison area, five Skaalen employees who worked in other units or areas of the nursing home, and one graduate student in the Department of Environment, Textiles & Design whose research area is interior environment homelike qualities as perceived by well elderly persons.

3.6: ANALYSIS METHODS

INTERVIEWS:

Content analysis was used to examine environmental design concerns identified during interviews. Environmental issues identified were incorporated into the questionnaire items under the appropriate criteria category, e.g., the design issue regarding the need for additional space for residents to wander and pace safely was incorporated into the Safety and Security criterion category.

QUESTIONNAIRE:

A "Mann-Whitney U Test," a powerful nonparametric measure and useful alternative to the parametric "t" test (Siegel, 1956), was used to identify statistical differences in central tendency between the family and staff caregiver groups. A major advantage of the Mann-Whitney U Test is that it tests for differences of median scores, which are considered to be truer measures of the center of a distribution of scores than mean scores (Marascuilo & Serlin, 1988).

To test for statistical differences, the scores from both groups first are ranked from one through 43 (family caregivers--n=20 plus staff caregivers--n=23). In samples of this size, a U statistic is calculated from an appropriate formula which incorporates the sum of the ranks from the larger sample. When ties occur within scores of the same group, the value of U is not affected. However, when ties occur accross groups, the ranks of those scores are averaged, and each tied score is then reassigned that average rank (Siegel, 1956). In the case of smaller samples, the scores are ranked, recording from which groups scores are obtained. A

researcher then counts the number of times scores from one group are preceeded by another. These are added to obtain a U statistic, and tables are used to determine significance levels. Computations in the present study, as well as appropriate significance levels were generated through computerized analysis using the appropriate formulas.

Raw composite scores -- including mean and median scores for each of the four criteria categories -- were compared by group, as were frequency distributions (actual counts, as well as row, column, and total percentages) for each individual item on the questionnaire. Information from planning committee meetings, observations, and the environmental audit was also referenced for the evaluation and subsequent design guidelines.

As noted, the questionnaire's framework was literature-based and included user input regarding site specific design issues within the framework. Other than pretesting, the questionnaire had not been used in other settings. Therefore, a reliability analysis using Coefficient Alpha (Cronbach, 1951) was conducted on criterion categories with the following results: Safety and Security (14 items): Alpha = .88; Compensation for Normal Age-Related Sensory Losses (10 items): Alpha = .84; Independence and Autonomy (10 items): Alpha = .81; and Homelike Qualities (15 items): Alpha = .94. Review of assessment literature employing the Coefficient Alpha suggests that acceptable ranges for Alpha vary with the test's specific purpose and context. In tests of affective measures such as personality and interest, the coefficient is typically lower than in tests of achievement. If a test is intended to determine whether the mean scores of two groups of people are significantly different, then a modest reliability coefficient (.60 to .70) may be

acceptable. However, if a test is used to compare the scores of two individuals, a reliability coefficient of at least .85 should be obtained (Aiken, 1994). Cronbach (1990) proposes that reliabilities of scores in ability tests used for important decisions should be .90 or higher. These guidelines, recommended in the field of psychological testing and assessment, emphasize the need to consider the purpose and context of the research in order to determine an acceptable alpha coefficient. Environmental design research literature has not established commonly agreed upon acceptable ranges for alpha coefficients, but given the previously noted parameters, it is reasonable to assume that coefficients of .80 and above and particularly coefficients of .90 and above are satisfactory for the purposes of the present investigation.

CHAPTER IV

RESULTS

Interview findings, guided development of the majority of items in the environmental design questionnaire and are presented first. Questionnaire findings are reported with overall composite scores, followed by caregiver responses on individual items. Tables with counts and percentages for each questionnaire item and questionnaire qualitative data may be found in Appendices F and G.

4.1: INTERVIEW FINDINGS

Safety and Security:

Overall, interviewees responded that the unit was basically safe and secure. While acknowledging the need for a security system, some complained that the door alarm was intrusive. Design issues identified as needing change were: (1) limited space for resident wandering and pacing, both indoor and outdoor; (2) congestion in the unit particularly in the corridor, dining room, and living room; and (3) raised patio door thresholds in the dining and living rooms which made access to outdoor spaces difficult, particularly for those using wheel chairs.

Compensation for Normal Age-Related Sensory Losses:

Design issues identified as needing change were: (1) too much glare particularly in the corridor; (2) lack of color variation in the unit; (3) print on name tags, although enlarged, is still too small; (3) alarm is too loud, and (4) overall too much noise in the unit.

Independence and Autonomy:

Interviewees acknowledged the advantage of having visually appealing outdoor spaces nearby, but they noted there was limited access. Design issues identified as needing change were: (1) space not available for small-group activities; (2) living room too small for large-group activities; (3) more private space needed particularly for residents with semiprivate rooms, and (4) there is a confidentiality issue regarding report and consults with other staff and also families.

Homelike Qualities:

Several areas were identified as homelike; e.g., the smaller kitchen/dining room for baking and eating activities, living room with view of outdoors, the porch, availability of private rooms, and new stereo system in the living room. Design issues identified as needing change were: (1) lighting too bright throughout most of the unit; (2) furniture is not comfortable or homelike; (3) minimal personalization in some resident rooms; (4) most wall hangings are not appropriate for residents; (5) staff wears white uniforms which are reminders of hospitals; (6) limited opportunities to hear music; (7) no carpeting; and (8) not enough seasonal decorations.

Those interviewed identified the following environmental features as the best design attributes of Unit 4A:

(1) Living room with expansive view to the outdoors.
(2) Porch enjoyed by residents in summer.
(3) Kitchen/dining room with adjacent locations.
(4) Kitchen/dining room location near entry.
(5) Dining Room with attractive family setting.

Best Design Attributes Continued:

(6) Private and semiprivate rooms (no 3 or 4-bed wards) affording privacy. and sense of ownership.
(7) Stereo system.
(8) Outdoor spaces near the unit.

The same respondents identified the following environmental features as the most troublesome design attributes:

(1) Limited walking and pacing space for residents.
(2) Inadequate living room size: too small for large-group activities and too large for small-group activities.
(3) Loud alarm on unit.
(4) Floors often shiny and slippery.
(5) Dining room cluttered during meals.
(6) Furniture not sturdy or comfortable.
(7) Small toileting areas in residents' rooms.
(8) Outdoor spaces are not easily accessed.
(9) Overall, not user friendly, uncomfortable, institutional decor, congested.

The following is a list of words interviewees used to describe the image they thought the unit should convey to staff, family, and other visitors:

safe	calm	comfortable	homelike
secure	peaceful	comforting	home environment
non-threatening	tranquil	supporting	"Garden of Eden"
	restful	warm	
	relaxing	soft	
		cozy	
professional	clean	adequate	

4.2A: QUESTIONNAIRE FINDINGS: CRITERIA COMPOSITE SCORES OF CAREGIVER GROUPS

Overall, total sample respondents demonstrated a wide range of composite scores in each of the four criterion categories. However, when composite scores were compared by caregiver group, staff consistently gave lower ratings to the unit. Consequently, there were statistically significant differences (Confidence Level < .03) between family and staff groups in each of the four criterion categories: Safety and Security (P<.0008); Compensation for Normal Age-Related Sensory Losses (P<.0185); Independence and Autonomy (P<.0018); and Homelike Qualities (P<.0003).

It should be noted that one family and two staff questionnaires were omitted from the Safety and Security composite analysis because of missing data. In the Compensation for Normal Age-Related Sensory Losses criterion category, two family questionnaires were omitted from the analysis because of missing data.

Out of a possible high score of 70 on fourteen items in the Safety and Security criterion category, overall (N=40) composite scores ranged from 28.00 to 66.00 with a mean of 50.25 and median of 50.50 (Fig. 4). Composite scores for family caregivers (n=19) ranged from 45.00 to 66.00, with a mean of 54.47 and median of 53.00 (Fig. 5). By contrast, composite scores for staff caregivers (n=21) ranged from 28.00 to 60.00, with a mean of 46.43 and median of 47.00 (Fig. 5).

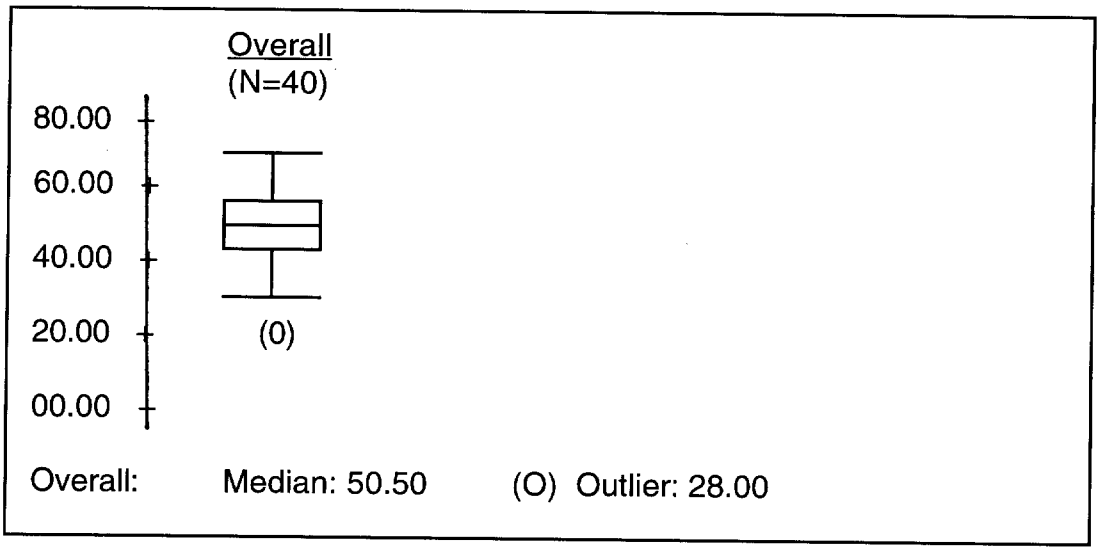


Fig. 4: Safety and Security Composite Scores: Overall

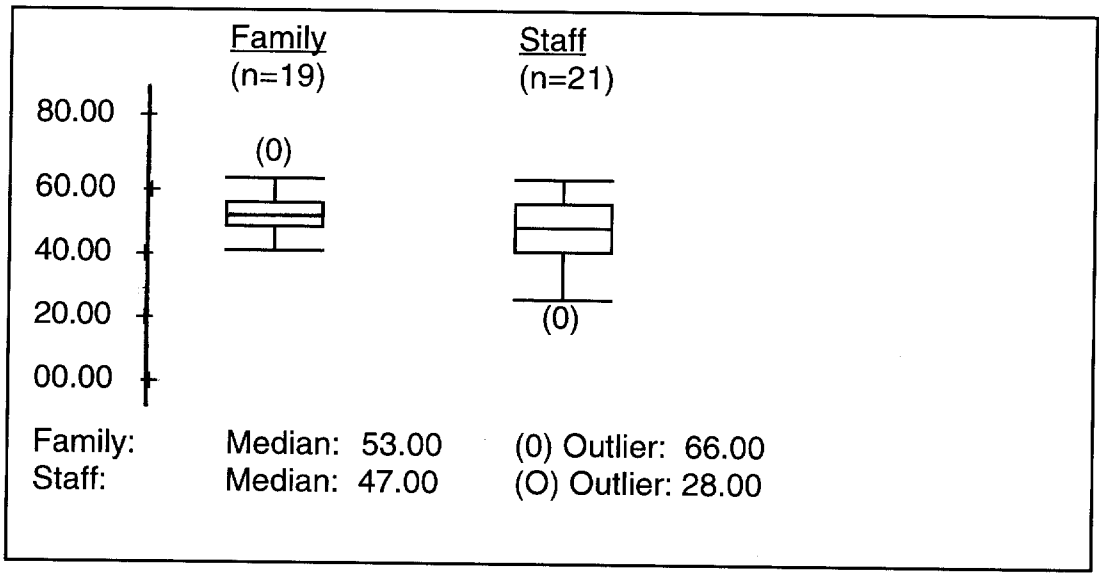


Fig. 5: Safety and Security Composite Scores: Family and Staff

Out of a possible high score of 50 on ten items in the Compensation for Normal Age-Related Sensory Losses criterion category, overall (N=40) composite scores ranged from 13.00 to 43.00, with a mean of 29.93 and median of

31.00 (Fig. 6). Family caregiver (n=18) composite scores ranged from 25.00 to 43.00, with a mean of 32.83 and median of 32.50 (Fig. 7). Staff caregiver (n=23) scores ranged from 13.00 to 38.00, with a mean of 27.65 and a median of 30.00 (Fig. 7).

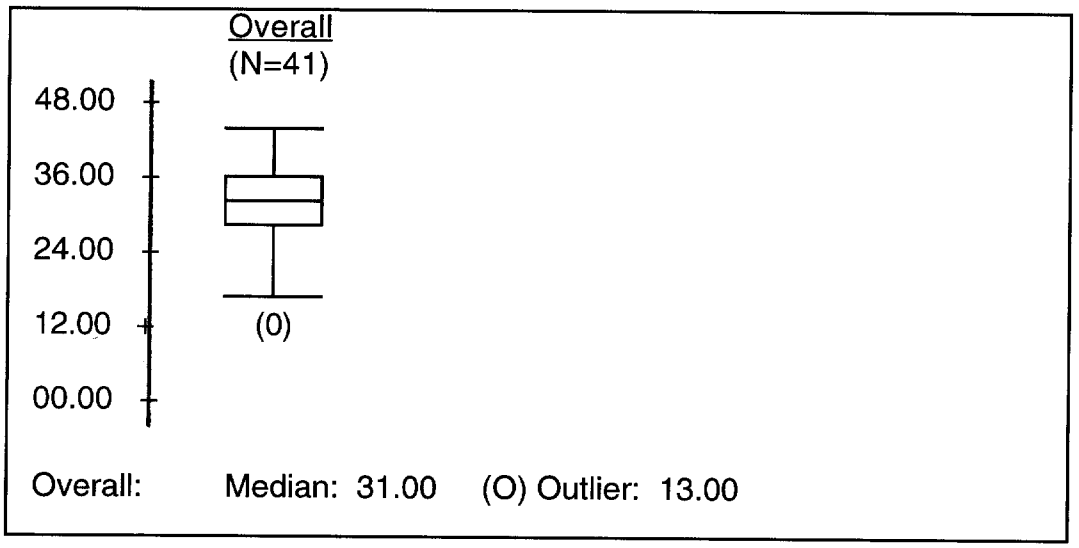


Fig. 6: Compensation For Normal Age-Related Sensory Losses Composite Scores: Overall

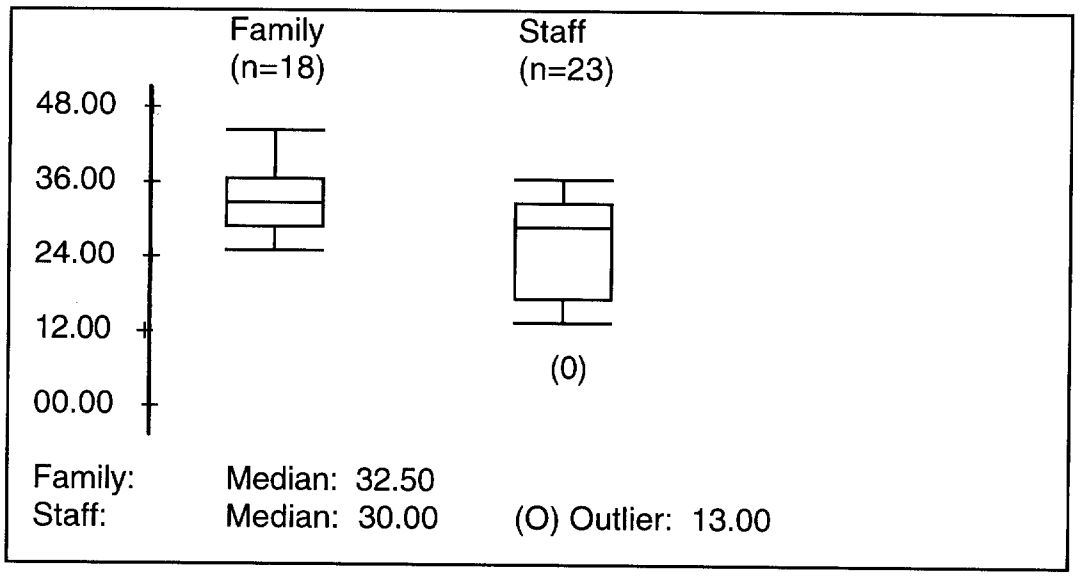


Fig. 7: Compensation For Normal Age Related Sensory Losses Composite Scores: Family and Staff

Out of a possible high score of 50 on ten items in the Independence and Autonomy criterion category, overall (N=43) composite scores ranged from 14.00 to 46.00, with a mean of 29.35 and a median of 29.42 (Fig. 8). Family caregivers (n=20) composite scores ranged from 23.00 to 46.00, with a mean of 32.35 and median of 33.50 (Fig. 9). Staff caregiver (n=23) composite scores ranged from 14.00 to 37.00, with a mean of 25.74 and a median of 27.00 (Fig. 9).

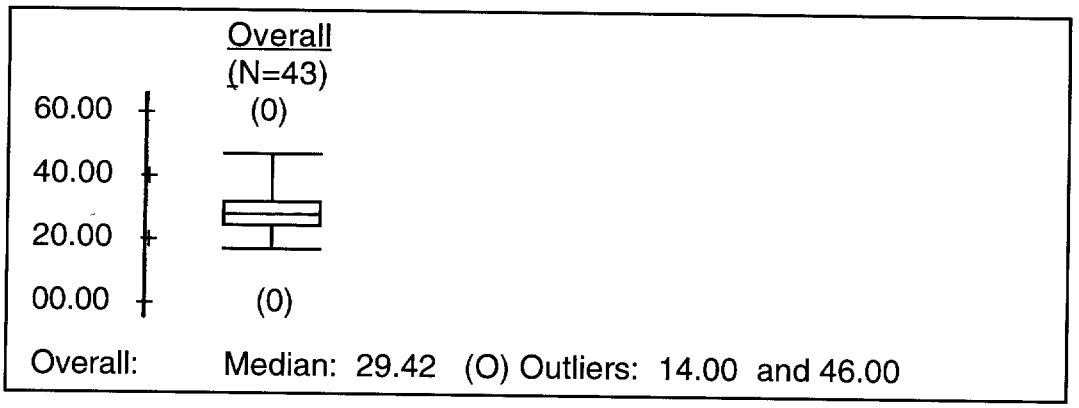


Fig. 8: Independence and Autonomy Composite Scores: Overall

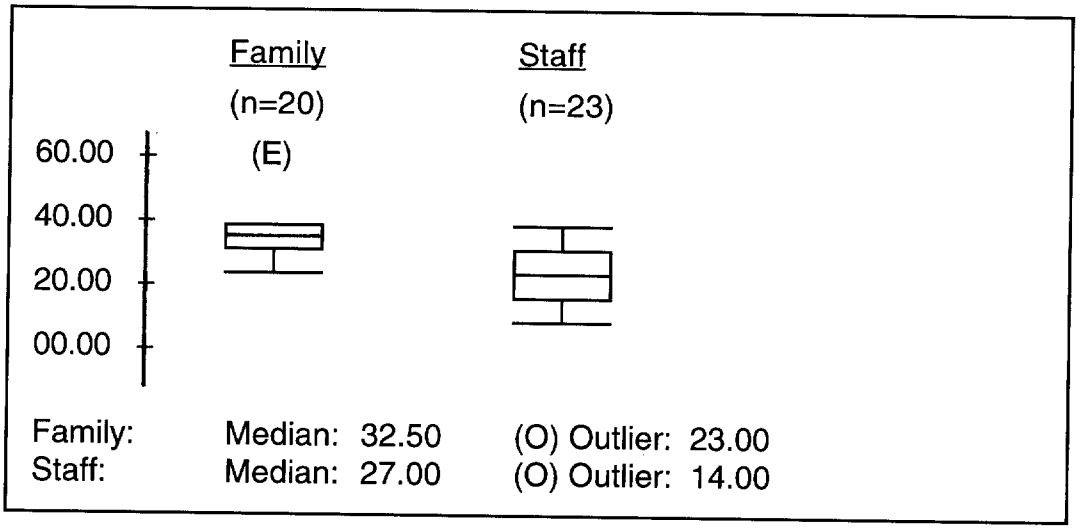


Fig. 9: Independence and Autonomy Composite Scores: Family and Staff

Out of a possible high score of 75 on 15 items in the Homelike Qualities criterion category, overall (N=43) composite scores ranged from 15.00 to 66.00, with a mean of 45.21 and a median score of 48.00 (Fig. 10). Family caregiver (n=20) composite scores ranged from 25.00 to 66.00, with a mean of 51.75 and a median of 53.50 (Fig. 11). Staff caregiver (n=23) composite scores ranged from 15.00 to 54.00, with a mean of 39.52 and a median of 41.00 (Fig. 11).

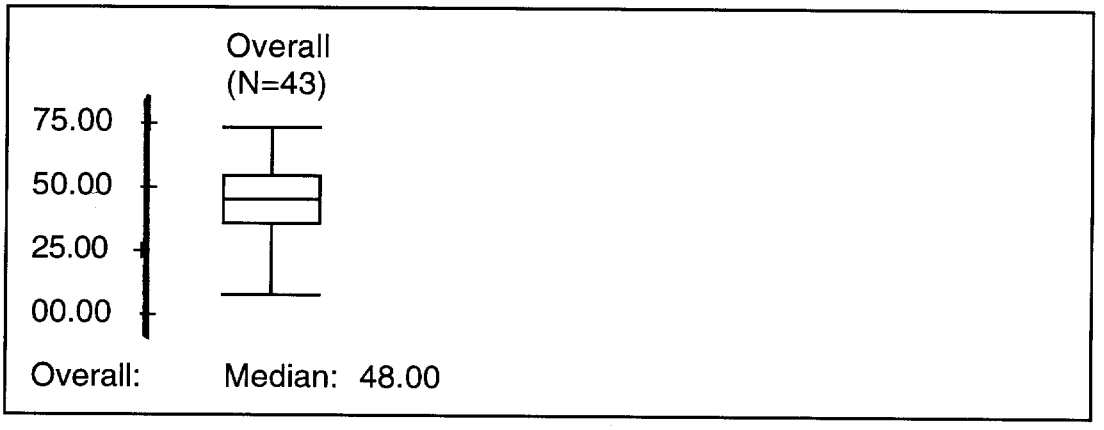


Fig. 10: Homelike Qualities Composite Scores: Overall

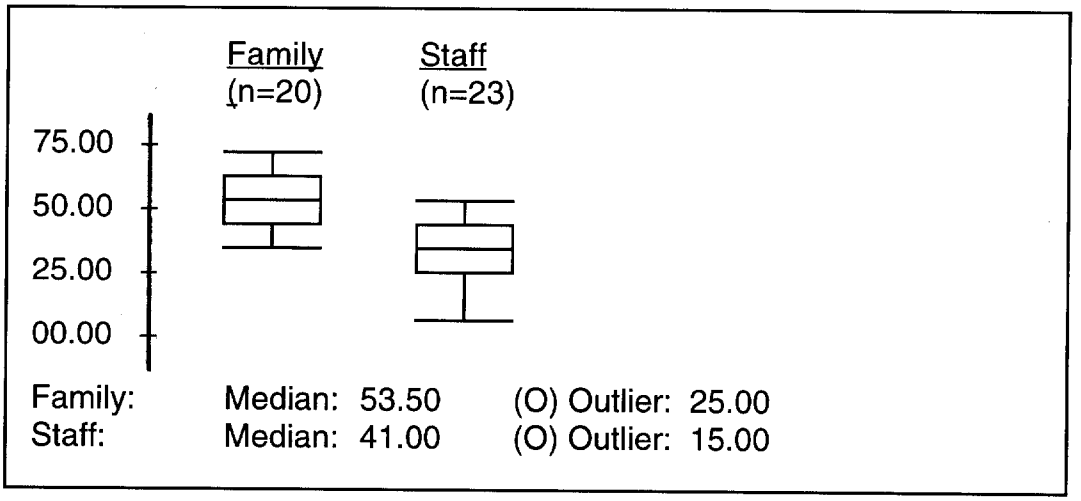


Fig. 11: Homelike Qualities Composite Scores: Family and Staff

4.2B: QUESTIONNAIRE FINDINGS: CAREGIVER RESPONSES ON INDIVIDUAL ITEMS

Responses to individual questionnaire items are presented for each of the criteria: (1) Safety and Security; (2) Compensation for Normal Age-Related Sensory Losses; (3) Independence and Autonomy; and (4) Homelike Qualities. Presentation is listed by categories of agreement and disagreement in both overall and individual caregiver group responses. The questionnaire response categories of "Strongly Agree" and "Agree" have been collapsed into "Agree," and "Strongly Disagree" and "Disagree" have been collapsed into "Disagree" for counts and percentages because of the small sample size. Counts and percentage tables for each item rated on Likert Scales are listed in Appendix F.

SAFETY AND SECURITY
14 Items

More than 50% of overall respondents agree that: there are enough safe places for wandering (#SS1, 51.1%); corridior railings are high enough for wheel chair users (#SS2A, 74.4%); corridor railings are high enough to provide support for residents who walk without canes or walkers (#SS2B, 86%); there are enough grab bars in toileting areas (#SS3, 60.5%); generally, the floor on the unit is not slippery (#SS5, 67.4%); nearby outdoor paths are not slippery (#SS6, 64.3%); walking paths in the dining room are free of obstructions (#SS7, 58.1%); the unit entrance doorway is usually free of obstructions (#SS8A, 86.1%); the corridor/dining room doorway is usually free of obstructions (#SS8B, 86.1%); the corridor/living room doorway is usually free of obstructions (#SS8C, 86.0%); the

corridor is usually free of obstructions (#SS9, 95.3%); and that living room chairs allow residents to safely sit and rise (#SS10, 53.5%).

However, when comparing caregiver groups, 50% or more of the staff caregivers disagree that there are enough safe places for wandering (#SS1, 69.6%); paths in the dining room are free of obstruction (#SS7, 52.1%); and the living room/porch doorway is free of obstructions (#SS8D, 50.0%). Additionally, there is a high percentage of uncertainty regarding enough grab bars for adequate support in showering/bath areas (#SS4, 42.5%).

COMPENSATION FOR NORMAL AGE-RELATED SENSORY LOSSES
10 Composite Items Plus 4

Questionnaire items #CSL1A through #CSL1D were about lighting levels in the dining room, living room, the corridor, and residents' rooms. These items are not included in the criterion composite score because the scale: "Much Too Bright" (5); "Too Bright" (4); "About Right" (3); "Too Dim" (2); and "Much Too Dim" (1) is different from the Likert Scale used for the other questionnaire items. Nevertheless, approximately, 70% or more of the respondents rated the living levels "About Right" in all four areas: dining room, living room, the corridor, and residents' rooms.

More than 50% of the total sample respondents agree that sounds from the unit alarm, intercom, or facility public address system are kept to a minimum (#CSL5, 61.9%). More than 50% of overall respondents disagree that there is distinct wall-floor color contrast in the corridor (#CSL3A, 53.5%) and in residents' rooms (#CSL3D, 53.5%). There is no clear overall majority regarding issues of

glare in the dining room (#CSL2A), living room (#CSL2B), corridor (#CSL2C), or in residents' rooms (#CSL2D); wall/floor contrast in the dining room (#CSL3B) and living room (#CSL3C); or regarding unwanted noise being a problem on the unit (#CSL4).

However, comparison of individual caregiver groups indicates that more than 50% of staff respondents disagree that there is distinct color contrast between walls and floors in the dining room (#CSL3B, 56.5%); and in the living room (#CSL3C, 52.1%). Consistent with overall responses, staff disagree there is distinct wall-floor color contrast in the corridor (#CSL3A, 65.2%) and in residents' rooms (#CSL3D, 73.9%).

INDEPENDENCE AND AUTONOMY
10 Items

More than 50% of overall respondents agree that there is adequate privacy in toileting areas (#IA6, 67.5%) and in bathing areas (#IA7, 51.2%); as well as a need for private space for family and staff to consult (#IA4, 62.8%). More than 50% of overall respondents disagree that there are enough spaces for family visits on the unit (#IA8, 51.1%).

Comparison of individual caregiver groups indicated that more than 50% of the staff disagree that there are enough spaces for small group activities (#IA1, 60.8%); the unit has areas that provide opportunities for exploration and discovery (#IA2, 52.1%); there are enough spaces for relaxation and reflection (#IA3, 52.1%); there are enough spaces where residents can spend time alone on the unit (#IA5, 60.8%); and that there are outdoor spaces where residents can spend time with

minimal supervision (#IA9, 60.8%). No clear majority agree or disagree either overall or by caregiver group regarding outdoor spaces providing activity spaces that encourage social interaction (#IA10).

HOMELIKE QUALITIES
15 Composite Items Plus 1

More than 50% of overall respondents agree that the following unit attributes are homelike: furniture (#HQ2C, 53.5%), and wall surfaces (#HQ3B, 69.8%) in the dining room; window coverings in the living room (#HQ4A, 58.1%); and in residents' rooms (#HQ4B, 79.1%); wall surfaces in residents' rooms (#HQ3D, 55.8%); provision in residents' rooms to display momentos (#HQ5, 76.7%); and personalization of room entries (#HQ6, 60.5%). Although the question regarding residents' room colors is not included in the composite because of its preference format versus evaluation of existing conditions, there is high agreement among overall respondents in support of color variation in residents' rooms throughout the unit (#HQ8, 71.4%). More than 50% of overall respondents disagree that the following unit attributes are homelike: the entry to the unit (#HQ1, 67.4%); and reminders of residents' past occupations are incorporated into unit design (#HQ7, 55.8%).

Comparison of individual caregiver groups indicate that more than 50% of staff respondents disagree that the following unit attributes are homelike: the furniture in residents' rooms (#HQ2A, 56.5%); and in the living room (#HQ2B, 69.6%); wall surfaces in the living room (#HQ3A, 60.9%); and corridor (#HQ3C, 65.2%); reminders of residents' ethnic backgrounds are incorporated into unit

design (#HQ9, 65.2%); and that there is adequate space available to residents for large group activities relating to cultural traditions, spiritual needs, or holiday celebrations (#HQ10, 69.6%).

4.2C: QUESTIONNAIRE QUALITATIVE DATA

Family and staff responses identifying the best unit design attributes agree with staff interview responses; e.g., the living room with large windows allowing visual access to the outdoors, a separate dining room for the unit with adjacent kitchen, private rooms, the garden area outside the unit, and others (SeeChapter IV, Section 4.1 and Appendix G).

Regarding the words used to describe the image respondents thought the unit should convey to staff, residents, and visitors, there are again similarities between questionnaire data and interview responses. In addition, the family and staff questionnaire responses identify similar words. However, when comparing family and staff responses, only staff include "privacy" in the list of image words.

Again, as in the quantitative questionnaire items, staff are more critical of the unit in the open-ended questions, offering about twice as many comments as family caregivers. Family respondents are principally concerned with issues about Homelike Qualities criterion; e.g., "...decor is actively institutional...I'm so glad it will be changed;" whereas staff reflect concerns related to all four criteria.

Examples of staff comments with related criteria:

Safety and Security

"...residents need more room to pace than just the hallway."

Compensation for Normal Age-Related Sensory Losses

"...high gloss on floors...especially hallway...looks like pools of water up and down hall."

Independence and Autonomy

"..not enough spaces for relaxation and reflection..."

Homelike Qualities

"...wall surfaces very institutional throughout...wall colors should vary..."

CHAPTER V
DISCUSSION

"...We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time."

T. S. Eliot, *Little Gidding* , p. 59
Originally published --1943

5.1: DISCUSSION OF FINDINGS AND IMPLICATIONS

The majority of questionnaire respondents rated the unit relatively satisfactory but not exceptional in all four criterion categories. The Safety and Security criterion category had the lowest number of attributes perceived as needing change while Homelike Qualities had the highest number of attributes perceived as needing change. When comparing family and staff responses regarding the attributes identified as needing change, staff clearly was much more critical. In addition, even when accounting for group differences, Safety and Security still had the lowest number of items needing change and Homelike Qualities the highest number.

Overall, caregivers agreed that the unit was safe and secure. However, staff caregivers disagreed that there were enough safe places for wandering, or whether dining room paths and the living room\porch doorway were generally free of obstructions. Surprisingly, unit floors were not perceived by caregivers as being slippery, a finding in direct conflict with comments and observations from the preliminary studies. Depending on floor waxing and buffing schedules, preliminary

studies indicated definite differences in traction on any given day, and that a visitor had slipped, but not fallen, in the corridor on two occasions. The practice of staff and residents to wear shoes with rubber-like soles enhanced their safety, but flooring conditions could pose a potential liability issue. Additional safety issues found during preliminary studies included dangling fan cords in the corridor and dining room and electrical outlets in need of safety caps in the dining room, corridor, and living room. Again, caregivers appeared unconcerned about the sparse number of grab bars or corridor railing height placement. However, preliminary studies indicated that the quantity and placement of grab bars in toileting and showering areas did not appear to be in compliance with ADA Guidelines (ADAAG, 1991), and also the corridor handrails appeared to be too low for some residents.

Another conflict between the preliminary studies and the interviews versus the questionnaire findings occurred in the Compensation for Normal Age-Related Sensory Losses criterion category. Questionnaire data indicated that caregivers judged lighting levels to be "About Right" throughout the unit. However, since criticisms of lighting throughout the unit were made by several staff caregivers during preliminary studies and during interviews, the large number of positive responses about lighting levels in the questionnaire was unexpected. The majority of total sample respondents also agreed that sounds from alarms and public address systems were kept to a minimum, but they disagreed that there was distinct color contrast in the corridor and in residents' rooms. In addition, these respondents demonstrated uncertainty ranging from 9.3% to 46.5% regarding glare

throughout the unit, unwanted noise as a problem on the unit, and color contrast in the dining room and living room. Only staff caregivers were critical of color contrast in all areas.

In the Independence and Autonomy criterion category, total sample respondents agreed that private space was needed for consults, and that there was adequate privacy in toileting and bathing areas. However, they disagreed that there were enough spaces for family visits, with staff being more critical about the need for visiting spaces. In addition, total sample respondents demonstrated no clear agreement or disagreement about spaces for exploration and discovery, spaces for relaxation and reflection, spaces for time alone, outdoor spaces where residents could go with minimal supervision, or outdoor spaces that encouraged social interaction. High percentages of uncertainty ranging from 16.3% to 46.5% for these latter five items may have occurred because of difficulty with interpretation of items or an unfamiliarity with specific unit details. However, the majority of staff caregivers disagreed about four of the above-mentioned items and a near majority (47.8%) disagreed that outdoor spaces provide opportunities for social interaction.

Areas judged to be homelike by a majority of total sample respondents were: furniture and wall surfaces in the dining room, wall surfaces and window coverings in residents' rooms, window coverings in the living room and personalization in residents' rooms and at residents' room entries. These respondents also agreed that wall colors should vary in residents' rooms throughout the unit, but disagreed that the unit entry was homelike in appearance, and that unit design incorporated reminders of residents' past occupations.

Design issues with no clear majority opinion from total sample respondents were: furniture in residents' rooms and the living room, wall surfaces in the living room and corridor, unit design incorporating reminders of residents' ethnic backgrounds, and adequate space for large group activities. However, when comparing responses between family and staff caregiver groups for these items, the majority of staff caregivers disagreed that these last six attributes were adequate.

Typically, most of the lower ratings by staff were about space (amount and variety), circulation, and aesthetic needs. Staff made several comments during preliminary studies about the insufficient range of spaces to accommodate small and large-group activities, lack of color variation and outdated finishes (wallpaper in the living room and just inside the unit entry) during the preliminary studies; and these attributes were confirmed in the environmental questionnaire responses as design issues needing change. The issues identified during the preliminary study and confirmed at the time of interviews -- and also through the environmental design questionnaire, ADA Guidelines (ADAAG, 1991) and general design principles and elements -- were incorporated into a written evaluation prepared for the facility. Although the written report was outside the scope of this thesis, it was offered in exchange for the researcher's privilege of access to the facility. Contents included descriptions of the scope of the project, background issues in aging and in dementia-specific design, data collection and analysis methods used, findings, and suggestions for improvements in design by area within the unit.

The qualitative section of the questionnaire reinforced the differences in family and caregiver responses, although those family and staff caregivers who offered comments agreed with interviewed caregivers about the best unit design attributes. Regarding design issues, again, staff caregivers were most critical, offering twice as many comments as family caregivers. Family comments concentrated on but were not limited to issues related to Homelike Qualities, while staff comments reflected concerns in all criterion categories. In general, words suggested by respondents to convey the ideal image of the unit supported criteria; e.g., "Safe," "Peaceful," "Homey," and "Spacious" (Appendix G).

5.2: A CRITIQUE OF THE DESIGN QUESTIONNAIRE

Three of the questionnaire criterion categories provided the most helpful information regarding design issues and suggestions for improvement. These are: Safety and Security, Independence and Autonomy, and Homelike Qualities. Compensation for Normal Age-Related Sensory Losses was the least effective criterion category. Wayfinding/Orientation -- one of the criterion originally selected to guide the evaluation and omitted in the revised list -- merits further consideration. Additional comments about this criterion are discussed in "Research Implications," Section 5.5.

The Homelike Qualities category (15 composite plus 1 item) had the most items (12) where a majority of the total sample or a caregiver group, usually staff, indicated a need for change. Perhaps this is because perceptions about "homelikeness" are more easily understood and relate more to personal preference than to a critique of how design functions on the unit.

However, caregiver group response differences were apparent. Although a majority of the total respondents agreed four attributes were homelike, in the remaining items, it was usually staff who agreed changes were needed. However, an exception occurred when more family caregivers (73.7%) than staff caregivers (69.5%) agreed that wall colors should vary in residents' rooms throughout the unit. In view of the facility policy to use only white or cream colored paint on walls in residents' rooms, the consensus on this item supports the suggestion to vary colors in residents' rooms.

The Independence and Autonomy criterion category (10 items) had the next highest number of items (7) where a majority of the total sample or staff respondents indicated a need for change. It is interesting that within in this category a majority of staff caregivers (78.3%) agreed that private space is needed for staff to consult with families, whereas less than a majority of family caregivers (45.0%) agreed on this item. Overall, privacy for toileting and bathing was considered adequate by both groups. However, there was no consensus regarding outdoor spaces providing opportunities for social interaction, and this item perhaps can be addressed better through an environmental audit and interviews.

The Safety and Security category (10 composite items) had the least number of items (3) indicating a need for change, with respondents agreeing family more than staff that Safety and Security issues were addressed. In a future effort, the items regarding grab bars in the toileting and showering/bath areas,

as well as the items about handrails may be addressed better through checks on legislative codes, completion of environmental audit, and behavioral observations, respectively.

Compensation for Normal Age-Related Sensory Losses was the most problematic criterion category (10 composite items plus four). As previously noted, preliminary studies indicated dissatisfaction with lighting throughout the unit. However, in the questionnaire, lighting levels were rated "About Right" throughout the unit. These conflicting outcomes illustrate one difficulty designers face when attempting to assess and correct lighting problems. Indeed, many factors affect lighting, including color, the specific setting, various types of lighting, and purposes and activities of the users (Mahnke & Mahnke, 1993). Thus, lighting is an issue which may be addressed more effectively by consulting a lighting expert who will collaborate with designers.

Color contrast problems were identified in the corridor, residents' rooms, dining room, and living room either by a majority of the total sample or a majority of staff caregivers. In retrospect, this attribute also can be addressed effectively in an environmental audit. Identifying glare as a design issue was inconclusive except for the corridor where it was quite obvious (and again identifiable in an audit). Noise or unwanted sounds in the unit were reported in preliminary studies as problematic, but this view was not confirmed by a majority of total respondents or by either family or staff caregivers in the questionnaire findings.

When used, the questionnaire should offer open-ended questions to provide respondents an opportunity to elaborate. One staff caregiver clearly articulated her

concern about congestion problems in the dining room with personal written comments and a large sketch on the back of a questionnaire page. Essentially, the sketch visually described the issue and was useful in proposing an improved circulation path (Chapter VI). Additionally, in this study, qualitative outcomes reflected patterns in the quantitative results, e.g. staff caregivers were again more critical. However, differences aside, it is vital that the designer address the attributes identified by respondents as needing change, whether it be the total sample or only one of the caregiver groups. When outcomes result in strong conflict between user groups, the designer can play a key role in facilitating a collaborative approach with user group representatives to effectively prioritize issues and develop possible solutions.

In summary, the present research questionnaire was an exploratory effort. As such, it provided quantifiable information for comparing user group responses and qualitative data to enhance the overall understanding of ratings on individual items. Collectively, both data sets contributed to the identification of design issues, provided suggestions for improvement, and allowed for comparisons for some of the interview findings. Mailing the questionnaire fostered an opportunity for respondents to share perceptions without fear of identification.

Criterion categories that provided the most effective responses to guide future design were: Homelike Qualities, Independence and Autonomy, and Safety and Security. The outcomes in the Compensation for Normal Age-Related Sensory Losses category suggests a need for clarification and restructuring of this section. The effort to enlist the use of criteria to guide evaluation, as well as the effort to assess caregiver perceptions to inform design, are steps supported in both

environment-behavior and design methods literature. In the case of administrators and other planners, caregiver perceptions may be useful to those who demonstrate sensitivity to employees and consumers and who must prioritize and budget for environmental changes to a given unit or facility.

In the present study, there were fewer items about which overall consensus for change was forthcoming. However, in the absence of consensus, it was staff responses which generated identification of issues. Table 1 shows the number of Items identified by caregiver group as needing change.

Table 1

Number of Design Attributes Identified as Needing Change By Caregiver Group

Criterion Category	Number of Items for Change		
	Staff	Staff & Family	Total
Safety and Security (14 Items)	3	0	3
Compensation for Sensory Losses (10 Items)	3	2	5
Independence and Autonomy (10 Items)	5	2	7
Homelike Qualities* (15 Items)	9	3	12

*Includes an item in the Homelike Qualities criterion category excluded from the composite score.

It is not entirely clear why family caregivers rated the unit higher than staff caregivers in terms of meeting the criteria set forth in the questionnaire. However, contributing factors to differences in responses may have been that staff spent

more time on the unit with residents, and therefore, were more familiar with the physical environment and how people interacted with others and with the environment itself. Secondly, staff were expected to complete a variety of tasks within a given work shift, and the pressure of time constraints may have raised awareness of how the environment supports or does not support task completion. Staff also received continuing education regarding caring for persons with dementia which may have sensitized them further to issues in the physical environment. Indeed, one responsibility of the Planning Committee, was to study unit design issues and to suggest solutions or approaches to solutions.

In addition, since staff and family use and may view the environment differently, they may have had different priorities regarding what attributes they notice or are concerned about. As Bowers (1988) noted in her study, family caregivers perceived themselves to have continued caregiving responsibilities after nursing home placement of a family member. While these perceptions about caregiving were concerned with those things which preserve the dignity of a family member with dementia, they had more to do with policies, schedules, and financial issues. Thus, family caregivers may have been less concerned about design attributes per se than staff caregivers, except when design may impact preserving the dignity of the resident and their families.

Other reasons for such a wide variation in outcomes differences between caregivers may have been a lack of any formal communication and opportunities for discussion with family caregivers prior to the questionnaire mailing. Formal communications with family members about environmental issues was impeded by the absence of a facility-sponsored support group or other organizational vehicle

whereby family could come together to discuss their concerns. Although the unit social worker had attemped to offer family support groups in the past, there had been little positive response. As a result, there was little opportunity to discuss environmental issues with family members. Aside from family visits to the unit (where they had heard informally about the Planning Committee's work and the research project), family-staff interactions were limited to visits to residents or conversations with staff regarding medical needs or other care issues.

Family members, consequently, had no introduction to the research other than the cover letter which included an explanation from Skaalen, along with initial instructions and comments at the beginning of the questionnaire. In retrospect, even though the response rate for family caregivers (61%) compared with the rate for staff caregivers (77%), both determined after adjustments for missing data, was adequate for analysis, interviews or less formal discussions with family members prior to mailing the questionnaire would have been advantageous. Such preparation of family caregivers for the study may or may not have resulted in noticeable differences in responses. However, even modest efforts, such as an introductory letter sent two weeks before the questionnaire and cover letter mailing, may have increased the response rate and amount of information shared in the open-ended questions.

5.3: DEMENTIA-SPECIFIC CRITERIA AS A FACILITATOR OF EVALUATION

The use of criteria, although exploratory in nature, offered several advantages and provided a general framework or context to guide the present investigation. Presumably, the Skaalen Planning Committee could have been asked about their individual and collective concerns. These concerns then could have been organized to include: circulation, space needs, aesthetic needs, functional needs, and financial constraints, which are all typical issues associated with the evaluative phase of the design process. However, while these criteria are reasonable considerations for any population, the intent of the present evaluation was to look at these and go beyond them to identify and select dementia-specific criteria.

Prior to criteria selection, it was important to review the work of several authors and consolidate some of the criteria specific to living environments for people with dementia. This review also considered developmental issues which have to do with normal age-related declines, as these relate to supportive design as well. In addition to discussions of design issues related to dementia, some authors offered attribute checklists and lists of questions to facilitate environmental evaluations (Calkins, 1988; Cohen & Weisman, 1991). These, along with the above-mentioned discussions, were referenced for content of historically typical issues which arise in dementia-care settings.

As noted in Chapter I, choosing the appropriate criteria presented a challenge because of the different formats, semantics, and conflicts among

suggested guidelines associated with various criteria. Nonetheless, there were recurring themes; e.g., safety and security and homelike qualities, along with other commonly-agreed-upon criteria among authors (Calkins, 1988; Coons, 1991a; Coons, 1991b; Coons, 1991c; Cohen & Weisman, 1991; Hiatt, 1991a; Hiatt, 1991b; and Peppard, 1991). Additionally, case study examples were available with discussions of how these criteria had been used in a specific situation (Coons, 1991a; Cohen & Weisman, 1991).

Another advantage of using criteria was that it facilitated a systematic yet flexible review of the site. Comparisons of criteria were combined with preliminary studies to guide both the criteria selection and the development of evaluation questions which were unique to the built environment at Skaalen and to the particular concerns of staff and how they cared for residents on the unit. Staff at the nursing home stated that providing adequate safety and security for residents was a prominent goal. One safety concern was lack of space for wandering which created congestion at times. Thus, Safety and Security was selected as a criterion, and space for wandering was addressed in the first questionnaire item for this category.

Using criteria in questionnaire development was useful in two ways. First, it provided structure to the interviews and gave respondents an opportunity to address problems under a specific criterion; e.g., Safe and Security, as well as to share general insights and impressions. Secondly, in the questionnaire where sections were organized by criterion, items rated by 5-point Likert-Scales provided quantitative and qualitative information (open-ended questions at the end of each criterion section). While outside the scope of the present study, criteria

used in the evaluation may also be used in a future evaluation of design changes implemented in the unit.

Using criteria in the evaluation also offered more than just an inventory of spaces. It was necessary to look at individual design attributes and areas within the context of criteria. This approach allowed the evaluation to seek and provide a perspective of the unit as a whole while considering modification of individual design attributes. Individual modifications may have impacts across criteria, imply changes between individual attributes, and have an affect on the unit as a whole. For example, changes in color contrast might appear more homelike and also improve safety by enhancing visual clarity. Consistent with the idea of viewing unit design as more than just a collection of design attributes, preliminary studies included an environmental audit with objective measurements and documentation of specific finishes and furnishings, as well as an assessment of activities and purposes of the users.

A further advantage was that the criteria categories, particularly after consolidation, were easy to remember; this characteristic should be advantageous to care providers, planners and designers. Regarding the subsets, privacy and socialization are characteristics easily associated with independence and autonomy. Similarly, personalization and cultural characteristics are easily associated with homelike qualities. As noted, improving one attribute may have implications in other categories, strengthening the case for budget requests when prioritizing environmental modifications.

5.4: THEORETICAL IMPLICATIONS

Theoretical perspectives regarding person-environment interactions are available in several disciplines, e.g., psychology, developmental psychology, and nursing, as well as in the design professions. The literature about theory and dementia-specific design issues shows one author preeminent: Lawton. Along with various associates (Lawton & Simon, 1968; Lawton, 1981; Lawton, 1982; Nahemow & Lawton, 1973), Lawton was cited by many authors including those from whose writings criteria was selected (Calkins, 1988; Coons, 1983; Coons, 1991d; Cohen & Weisman, 1991; Hiatt, 1991a; Hiatt, 1991b; and Peppard, 1991). Clearly, the "Ecological Theory of Adaptation and Aging" proposed by Lawton and his associates is the preferred approach in the field of aging and specifically regarding the design of environments for people with dementia.

The Ecological Theory guided this study and remains the obvious point of departure for designing further inquiry. Rich in descriptions of both affective and behavioral responses, Nahemow and Lawton (1973) focus on the individual's adaptation level, a theoretical point around which competence and press vary. The discussion about adaptability has implications for the competence-press relationship in all four criterion categories used in the evaluation, and more comments about this can be found under "Practical Implications," Section 5.6.

5.5: RESEARCH IMPLICATIONS

This study was an initial attempt to use dementia-specific criteria to develop an assessment procedure for evaluating environmental attributes within a special

dementia care unit. As previously noted, reliability on items rated on the Likert Scale was relatively high in each criterion category, with Homelike Qualities having the highest Alpha Coefficient. As stated earlier, specific reliability ratings were: Safe and Security - ALPHA = .87; Compensation for Normal Age-Related Sensory Losses - ALPHA = .84; Independence and Autonomy - ALPHA = .81; and Homelike Qualities - ALPHA = .94. These reliability values suggest satisfactory internal consistency in the present instrument.

It is readily acknowledged that refinements need to be made and further testing conducted to improve validity. As noted, future studies should include interviews with family caregivers and staff caregivers to identify issues to include in the questionnaire. In addition, this study's analysis and findings apply to one special dementia care unit, and any conclusions generalized which may be applied to other units must be exercized with caution.

Consistent with the literature, all four categories appear appropriate for the evaluation process. Despite problems with individual items previously noted -- and particularly those in the Compensation for Normal Age-Related Sensory Losses category -- advantages from the present study and the work of others are apparent to justify further inquiry using these criteria. In their development of an Environment-Behavior Model for Alzheimer Special Care Units, Zeisel, Hyde, and Levkoff (1994) reviewed the work of Calkins (1988), Cohen & Weisman (1991b), Hiatt (1991a), and Lawton (1990) and also included many criteria similar to those used in this study.

Additional criteria listed by Zeisel, et. al. (1994) were: "Confinement and Feedback," "Contact with Nature & Animals," and "Contact with Out of Doors."

Although this study included inquiry about outdoor spaces, it was principally in the context of independence and autonomy. In addition, given recent research and analysis linking the natural environment and positive effects on various populations (Ulrich, 1984, Verderber, 1986; Kaplan, R. & Kaplan, S., 1989), it seems reasonable to include "Contact with the Outdoors" as an additional criteria used in post-occupancy evaluations of special care units.

Wayfinding/Orientation is another criterion which should be included in further inquiry. Numerous staff caregiver responses for the questionnaire item about spaces for wandering, along with a family caregiver comment about residents wandering uninvited into others' rooms indicate that wayfinding and orientation are issues of concern. Despite the challenges of operationalization, this criterion merits further study.

The statistically significant differences between caregiver groups in all four criteria categories raised several questions with implications for future research: (1) What similarities and differences are there in the priorities of caregiver groups? (2) Are there any criteria categories viewed as more important than others? and (3) Are there other criteria categories besides those previously discussed that would enhance evaluation?

5.6: PRACTICAL IMPLICATIONS

Several practical implications emerged from the use of criteria to facilitate the evaluation. First, the process of criteria selection facilitated a collaborative relationship with facility representatives. After completing comparative analysis to

identify and select commonly-agreed-upon criteria from the literature, the next step was to decide which criteria to use in the evaluation. In this regard, it was helpful to have informal feedback from those at the sight regarding criteria; e.g., several members of the Planning Committee agreed informally that Safety and Security was an important priority on the unit. Thus, study of the literature helped facilitate discussion about the unit, and discussion about the unit helped facilitate criteria selection.

Secondly, more than one criterion objective might be served by identifying a specific design issue and subsequent guidelines. The evaluation emphasized the importance of providing open areas for walking, flooring with appropriate traction, maintaining unobstructed pathways, and providing appropriate lighting and color contrast to support an individual's mobility. While meeting these objectives is important for residents, staff, and visitors, it is critical for residents with dementia who often may walk with unsteady gaits. A prominent goal of the staff is to promote Safety and Security, but implementing the above-mentioned modifications also may support physical competence and enhance psychological well-being, which relate to Independence and Autonomy.

Another example of design issues and guidelines serving multiple criteria objectives occurred with respect to color contrast, for which there was application in all four categories: Safety and Security, Compensation for Normal Age-Related Sensory Losses, Independence and Autonomy, and Homelike Qualities. Color contrast was evaluated in the Compensation for Normal Age-Related Sensory Losses category and identified by respondents as an attribute which needed attention on the unit. Improvement in contrast can enhance a homelike

appearance and define boundaries, giving more visual clarity which may compensate for reduced vision, thereby enhancing independence and safety. While assessment of color contrast does not necessarily require caregiver perception, the understanding of its relevance in the context of multiple criteria categories is not only important to the design process but also has implications across criteria categories.

Consistent with several author's suggestions to include user perceptions in the evaluation, the interviews and environmental design questionnaires facilitated assessment of the opinions of family and staff caregivers about overall conditions and specific unit attributes. Interestingly, the ratings of family caregivers, with minor exceptions, indicated overall satisfaction with the unit. By contrast, while staff caregivers appeared to rate some attributes higher, clearly they were less satisfied with the unit overall. This outcome has implications for designers, planners, and care providers who must identify design issues, prioritize design changes and balance the sometimes competing needs of user groups, marketing practices, and budgets.

Planners and designers need to be encouraged to seek caregiver perceptions regarding the built environment. It is acknowledged that initially this process requires extra time and planning, but these efforts may facilitate better outcomes and avoid costly mistakes. Whereas caregiver perceptions have been studied, most contain perceptions about the quality of care in nursing homes (Bowers, 1988). Few studies can be located with caregiver perceptions about design in nursing homes and particularly about special dementia care units.

5.7: CONCLUSIONS

This study moved toward a better understanding of the use of criteria in identifying design issues and guidelines relevant to special care dementia units and how caregiver perceptions may inform the design process. Using criteria to develop an instrument to assess caregiver perceptions facilitated the assessment of existing design attributes and allowed for identification of other design issues. The evaluation process advanced understanding of how dementia-specific criteria may be used to inform the design process in three ways: (1) It provided an opportunity to look at research-based and commonly-agreed upon dementia-specific design criteria to find relevant application for the design process; (2) It investigated the perceptions of caregiver groups about design in the unit, and (3) It provided structure and flexibility which facilitated the extraction of both quantitative and qualitative data regarding a specific dementia care site. Criteria used in this study, as well as additional criteria merit further investigation (Research Implications, Section 5.3).

Caregiver perceptions were important to the identification of design issues and the development of recommendations for change in the special care unit. While in this study staff caregivers identified more design issues than did family caregivers, future evaluations with refined methods -- or other methods in other settings -- may have different outcomes. Where user group conflicts occur, the designer or evaluator may facilitate conflict resolution with user group representatives. Whereas there is ample support from environment-behavior and design methods literature for seeking perceptions of user groups to inform design,

additional evaluations will be useful to refine both evaluation procedures and integration of perceptions so as to identify issues, develop guidelines, and provide suggestions for improvements.

The continuing pattern of establishing special care units throughout the United States suggests several potential research opportunities. Future studies should include post-occupancy evaluations of environmental design of two or more units, allowing for comparisons of attributes and the perceptions of family and staff caregivers. In the present study, staff were more critical of unit design. However, if family members had been included in discussion with the Planning Committee and interviewed individually about unit design before questionnaire development, would outcomes have been different?

The effectiveness of unit design in separate dementia units versus units where individuals with dementia are integrated with other nursing home residents also should be studied. In general, this can become a debate about appropriate placement options or care provider services, but unit design may be a critical variable affecting future debates and resulting care options. Is the issue protecting others from objectional behavior, or can design interventions minimize and even eliminate some objectionable behaviors?

Another concern regards the selection of effective research methods which is important to successful post-occupancy evaluation procedures and outcomes. Aside from preliminary steps to organize an evaluation, other options might include omitting a formal questionnaire and instead conducting individual and group interviews of both family and staff. Visual research might be employed during the interview process or used as a separate technique following preliminary studies.

Visual design alternatives in the form of photographs or sketches might be presented to respondents for ranking or comparisons between two or more visuals. Subsequently, respondents could be asked to elaborate on the reasons for their choices. Incorporating criteria with visual research may produce useful outcomes for identifying design issues and generating suggested improvements.

On a practical level, studies are needed to develop an effective system of implementing design changes. These procedures need to reflect sensitivity to resident and staff needs and to facility policies and schedules. Research questions might include: (1) What training is appropriate for designers, contractors, and workers before renovation begins? and (2) How can residents and staff be supported during the stresses associated with renovation?

Any inquiry should include family and staff caregiver perceptions. Several special care unit studies have been conducted with administrators or staff (Ohta & Ohta, 1988; Hyde, 1989; Gold, 1991; Holmes, Teresi, & Monaco, 1992), but rarely have family members been interviewed or otherwise questioned about issues regarding environmental design. The present study clearly implies that more attention is needed regarding family caregiver perceptions.

Finally, translating a philosophy of providing special dementia care based on a higher quality of life into specific design interventions is a complex process at best. Research to support design solutions is still in the development stages, and researchers will benefit by referencing past difficulties and successes when designing future studies. The design of environments for people with dementia has profited by advances in research in various disciplines. However, population

increases and rapid changes in technology combine to make understanding human needs even more critical. Considerable research is needed to enhance understanding of how individuals with dementia adapt or do not adapt favorably to their environments, and under what circumstances these outcomes occur.

CHAPTER VI
DESIGN ISSUES AND GUIDELINES

Introduction:

Design issues were identified through the preliminary studies, staff interviews, and family and staff caregiver perceptions from the environmental design questionnaire. Guidelines were developed that considered study outcomes, as well as ADA Guidelines (ADAAG, 1991) regarding grab bars in bathing and toileting areas. Design attributes identified as needing change from the questionnaire were based on the following outcomes: (1) Questionnaire items where a majority, 50% or more of the total sample respondents indicated a need for change; (2) Questionnaire items where a majority, 50% or more of one of the caregiver groups indicated a need for change; and (3) ADA Guidelines. Design issues regarding the nurses' station were beyong the scope of the study principally because family caregivers did not have access to this area, thereby limiting their knowledge of design issues in this area. However, a general suggestion to redesign this area completely is included because of numerous staff complaints.

Most of the guidelines are general in nature to allow flexibility for planners and designers. However, more objective performance expectations, e.g., seating characteristics, are included as well to facilitate formulation of specific design solutions for each area. The format of the guidelines consists of two color-copied photographs of an area on one and sometimes two 8 1/2" X 11" pages. Design issues are listed on the left side of the page and design guidelines on the right side.

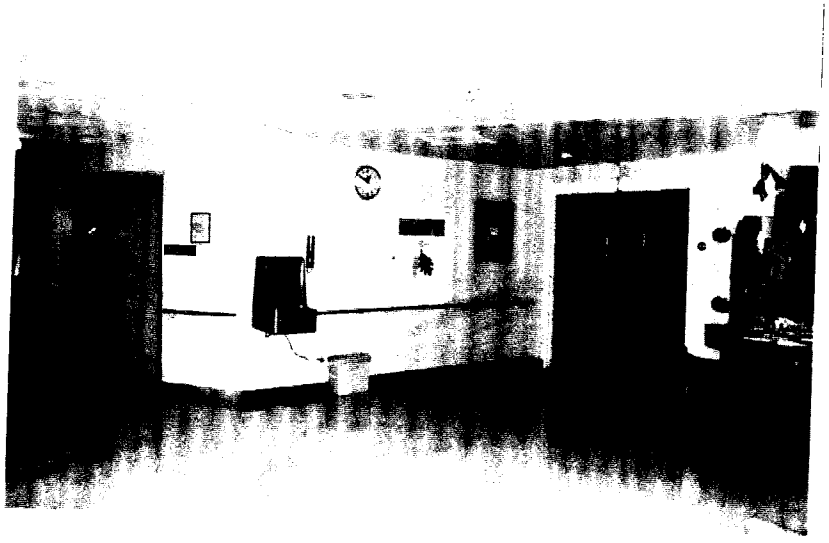
The Planning Committee was responsibile for prioritizing the selection and implementation of changes on the unit. Prominent in their concerns were choosing a color system for the unit, selecting new finishes, and replacing the living room furniture, as well as some of the tables in the dining room. Furniture replacement in residents' rooms will be implemented in accordance with the facility by-unit rotation schedule at an unspecified date. The unit name, "Scandia Garden" provides an interesting metaphor as a reference point for design changes, particularly regarding selection of color applications and wall hangings.

Guidelines also included possible changes of architectural elements, finishes, and furnishings, as well as further development of an enclosed outdoor garden area. The installation of a walking surface, raised garden beds, and added seating for the garden area was suggested to increase space for walking and other activities. Undoubtedly, the most expensive suggestion for indoor spaces was to convert a resident room adjacent to the living room into a small-group activity area with a connecting door to the living room. This intervention might serve multiple purposes: (1) Provide a walking loop pattern when both doors to the resident room are open; (2) Provide a small-group activity area which could be closed off; (3) Provide a space which could be used for private visits with family; and (4) Provide a quiet area for relaxation for a resident who might be agitated by the presence of too many people.

Other suggestions included changing wall surfaces and flooring throughout, as well as window coverings in the dining and living rooms to support an overall color plan. While respondents generally appeared satisfied with lighting throughout the unit and also personalization issues in and at the entries to

residents' rooms, nursing administration sought changes. Therefore suggestions were made to replace existing fixtures with ones equipped with parabolic lenses, and to add indirect lighting where appropriate. Although residents' rooms benefited from natural lighting in the daytime, the use of flourescent bulbs and absence of indirect lighting contributed to uneven lighting during the evening hours.

Additional suggestions affecting residents' rooms were to apply color to wall surfaces, install picture moldings and brackets for flexibility in displaying personal photos and wall hangings, and to add "bio-boards" with residents' names and pictures at entrances to rooms. Preliminary studies suggested that the unit was too "institutional," and a design attribute that contributed to this perception was the use of blue and yellow nursing code bars outside each resident room. However, since administration and staff favored the use of nursing code bars, it is recommended that, at the very least, bars with contrasting wood colors be installed to replace the yellow and blue ones presently used. As previously noted, criteria used in the post-occupancy evaluation may also be used to measure the effectiveness of environmental design changes implemented in the unit.



UNIT ENTRY

DESIGN ISSUES

1. Not homelike in appearance

2. Floor shiny and slippery

3. Low floor/wall contrast

4. Lighting contributes to glare

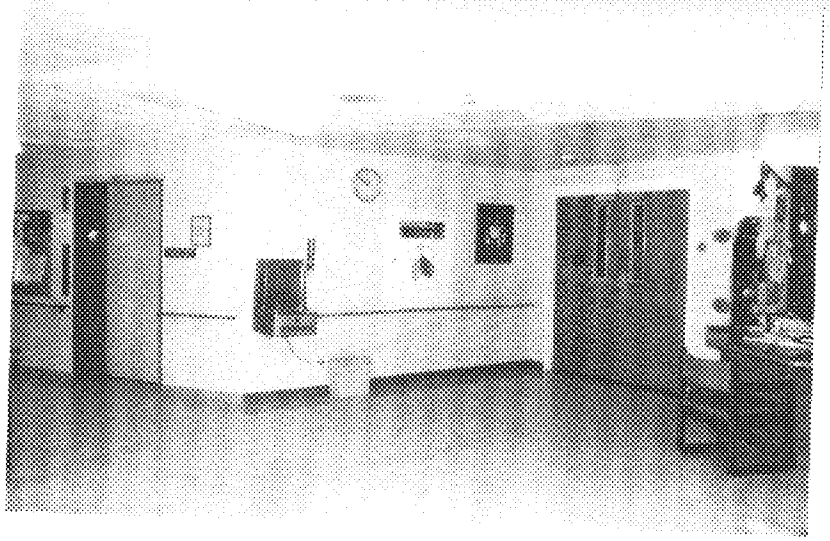
GUIDELINES

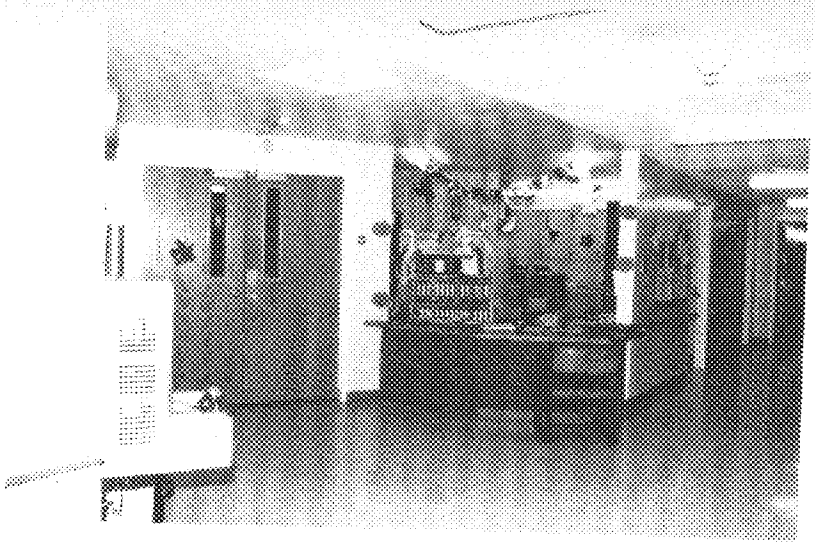
1. Add decorative door-frame molding, wall hangings, and plants

2. Install floor with matte finish

3. Introduce color variation and texture which constrasts with the floor

4. Install ceiling fixtures with parabolic lenses to reduce glare; add indirect wall lighting for flexibility and to vary atmosphere





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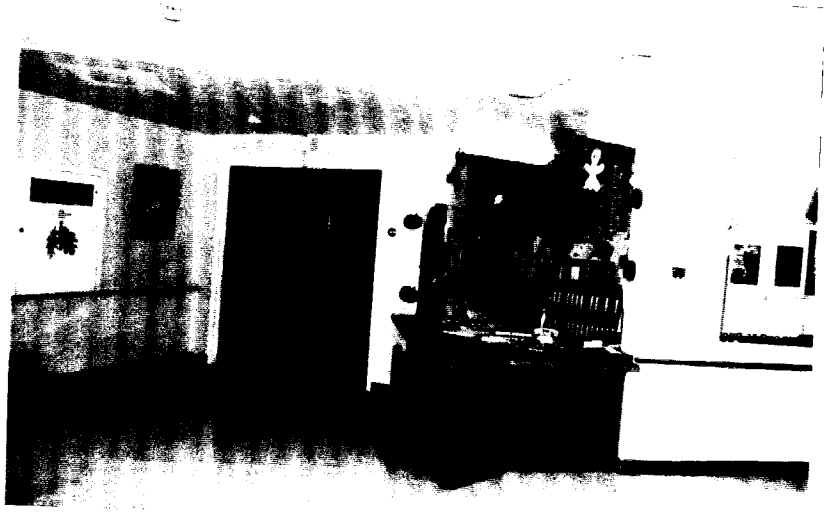
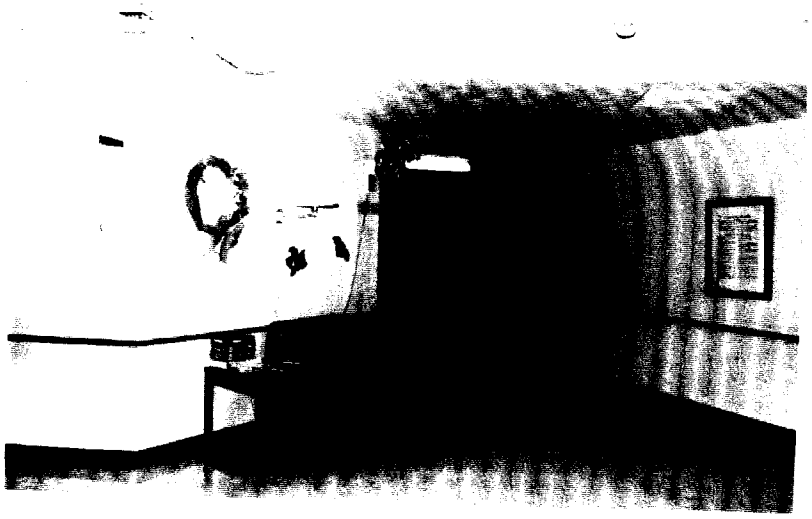




UNIT ENTRY

DESIGN ISSUES

5. Furniture not supportive or homelike

6. Alarm sound is distracting

7. Nurses station needs updating

8. Unit manager's office too far from unit and shared with linen storage compromising privacy and confidentiality

GUIDELINES

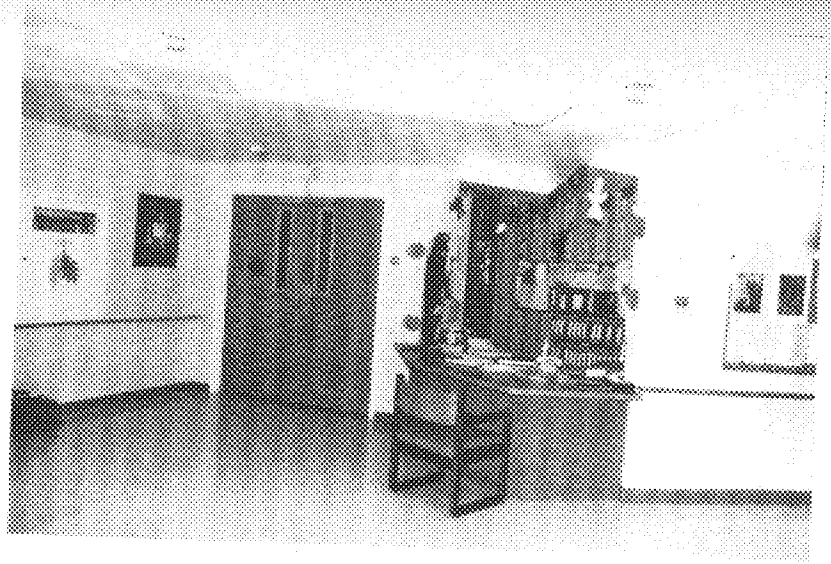
5. Provide seating* which supports sitting and rising

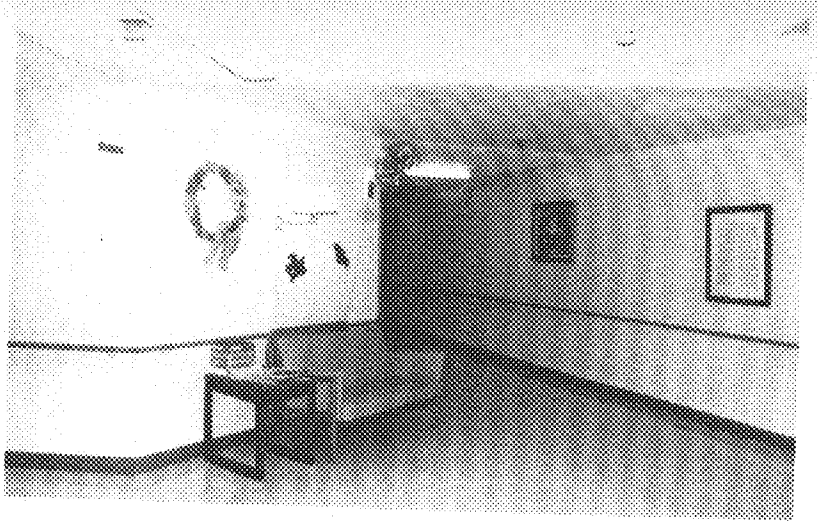
6. Install unit with doorbell or chime sound

7. Redesign nurses station to improve function, appearance, and confidentiality

8. Allocate space for staff and family consults near the unit

*Seating should have 3" wide armrests with rounded edges extending from back to seat front, level seats with rounded edges, approx. 18" high, contrasting with the floor, and supportive backs.





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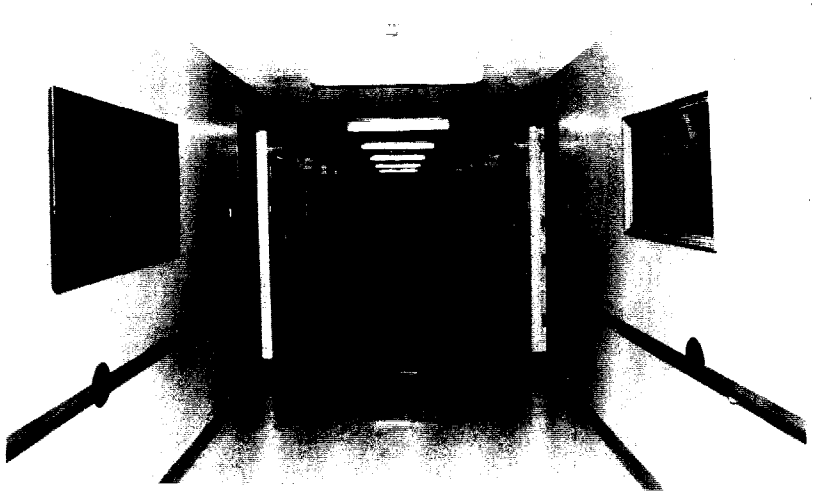
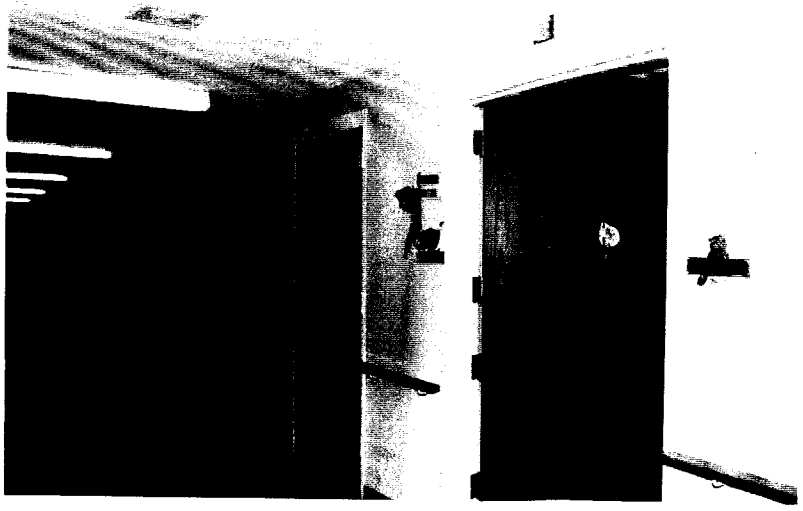




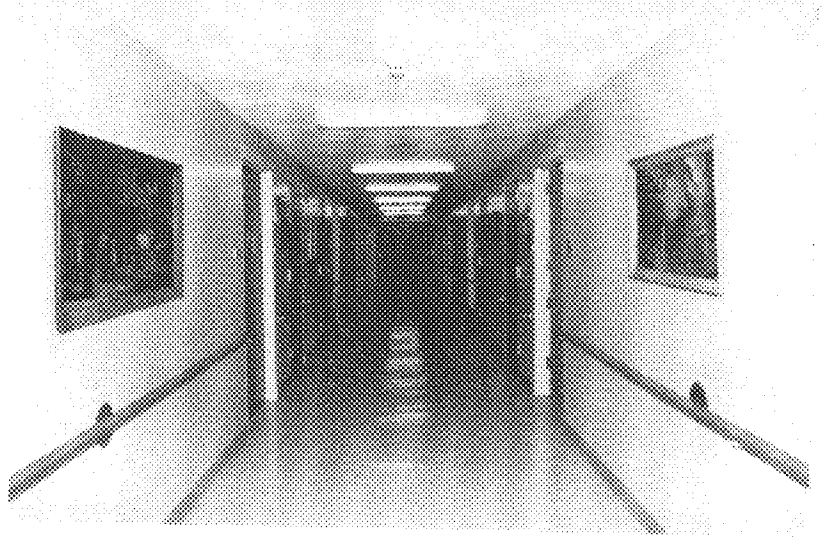
CORRIDOR

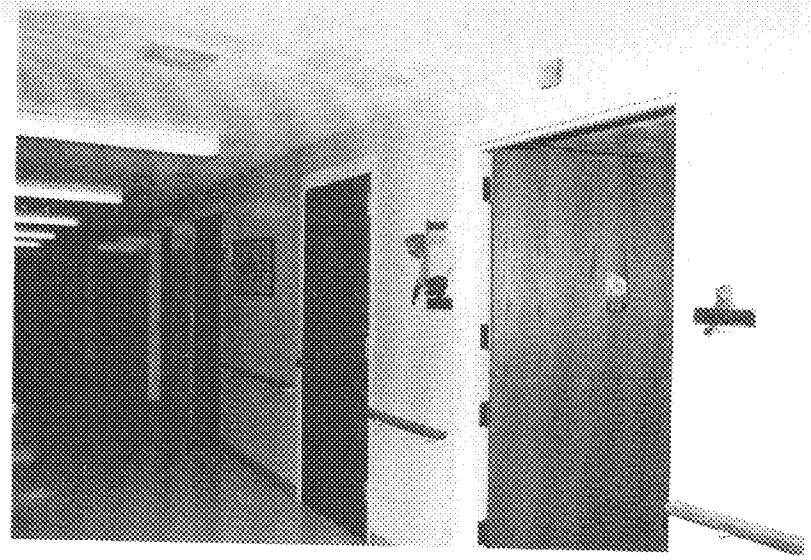
DESIGN ISSUES

1. Not homelike in appearance
2. Nurse signal code bars have medical appearance
3. Resident room entries personalization needs improvement
4. Floor appears shiny and slippery
5. Little wall/floor contrast

GUIDELINES

1. Add wall color and textures, creating a wainscotting effect
2. Replace bars with two natural wood colors
3. Install "bio-boards" with pictures of residents and families or install hooks for wall hangings near the door low enough for residents to see
4. Install floor with matte finish
5. Add color and texture variation contrasting with floor





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CORRIDOR

DESIGN ISSUES

6. Lighting contributes to glare

7. Inadequate area for resident pacing and walking

8. Sharp-edged hand railings are low for some walkers

9. Dangling fan cord presents safety hazard

10. Open outlet presents safety hazard

GUIDELINES

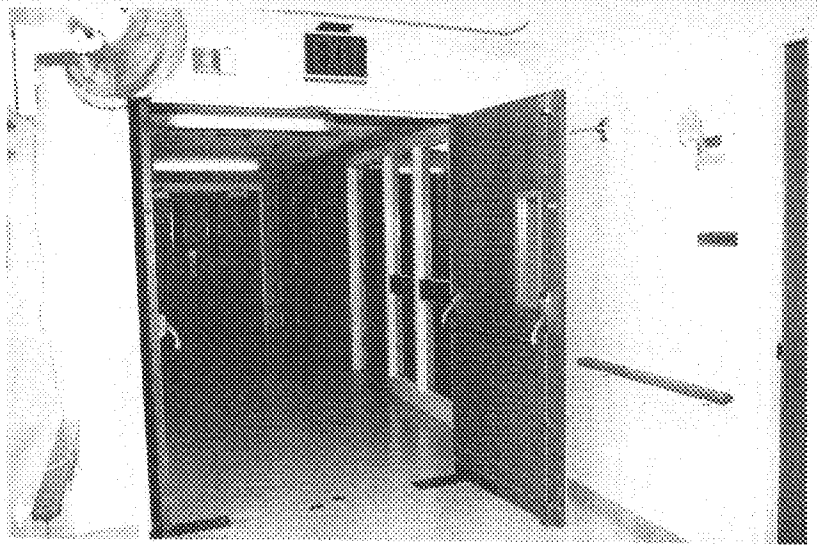
6. Install parabolic fixtures to reduce glare, add indirect lighting to improve atmosphere

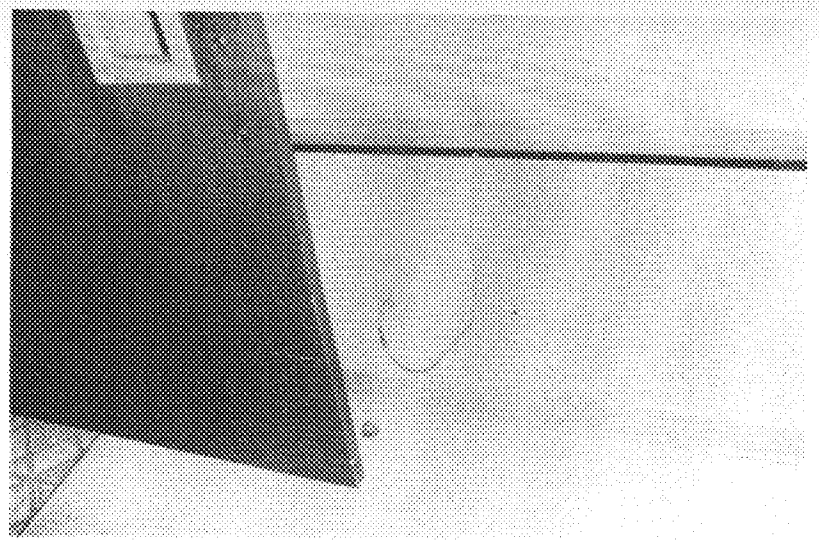
7. Create walking loop by installing door between living room and adjacent resident room converted to multi-purpose space

8. Install product with easier grip and reach

9. Enclose in protective casing or move outlet

10. Install outlet covers





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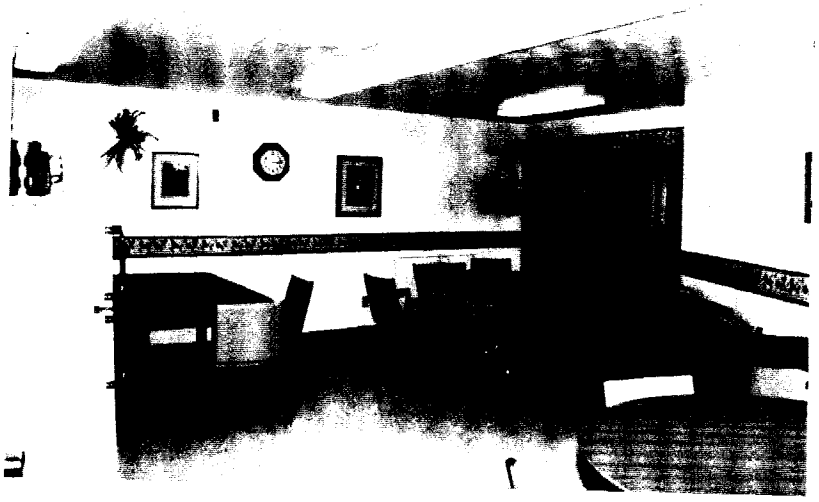


DINING ROOM

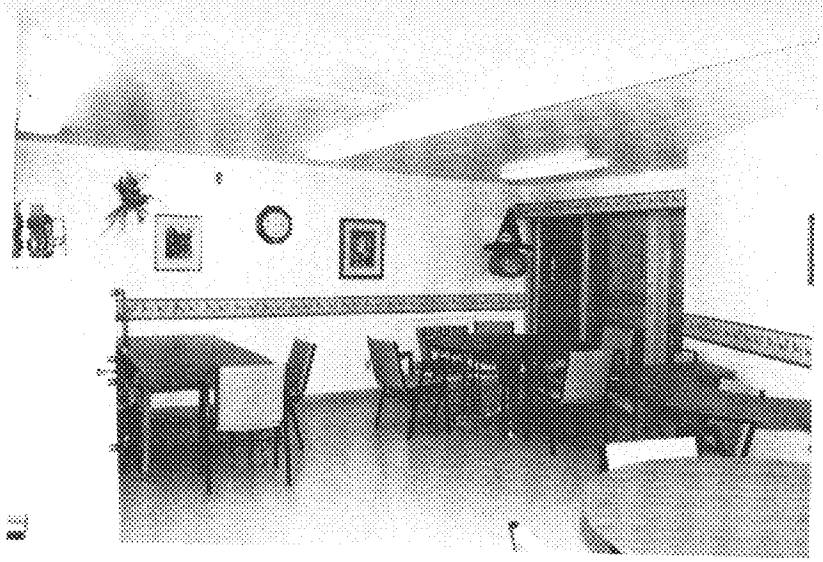
DESIGN ISSUES

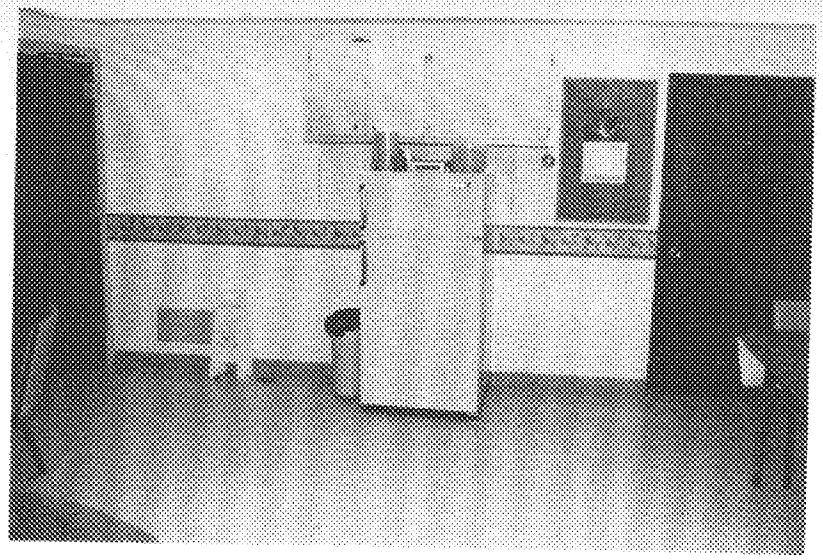
1. Needs improvement in homelike qualities
2. Floor appears shiny and slippery
3. Low wall/floor contrast
4. Lighting contributes to glare
5. Furniture not supportive or homelike

GUIDELINES

1. Install matching valances over patio doors and windows near dining room entry
2. Install floor with matte finish
3. Add wall color and textures
4. Install fixtures with parabolic lenses to reduce glare, add indirect lighting to vary atmosphere
5. Update furniture*

*Remove assisted feeding table. Keep large round table and replace others with one oval and one round or square table, both with rounded edges. See guidelines for chairs under Unit Entry Guidelines.





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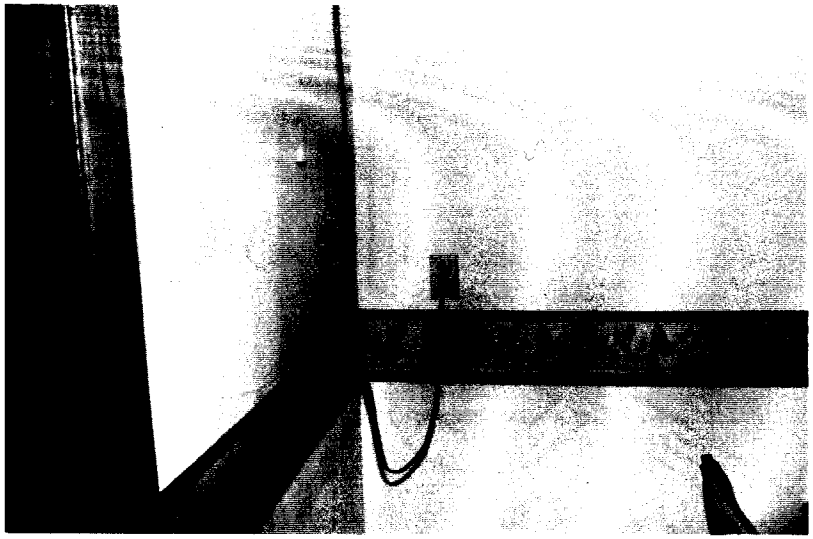


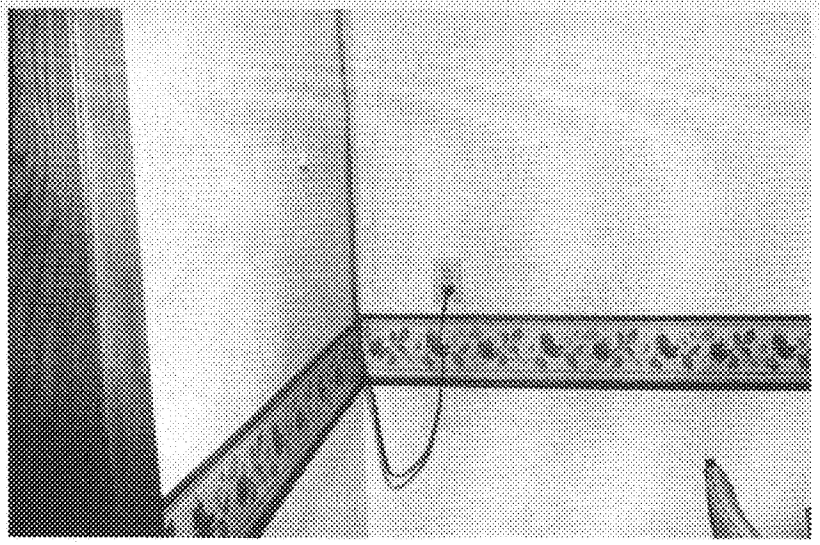
DINING ROOM

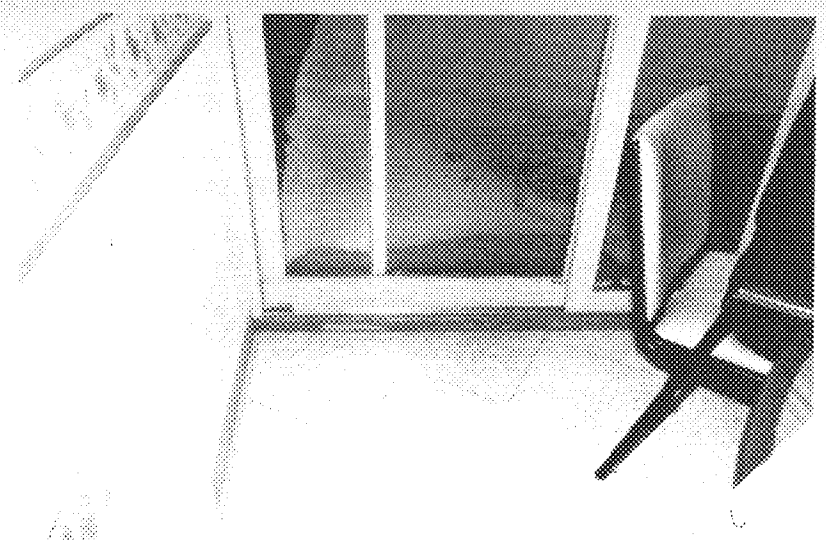
DESIGN ISSUES

6. Paths congested during meals and activities (see sketch on next page)
7. Patio door raised threshhold creates walking obstruction
8. Fan cord presents safety hazard
9. Open electrical outlet creates safety hazard

GUIDELINES

6. Remove refrigerator and cabinets to add add room for circulation
7. Install unit with threshhold flush with floor or ramp that meets ADA Guidelines
8. Enclose cord in protective casing or move outlet
9. Cover unused outlets with safety covers





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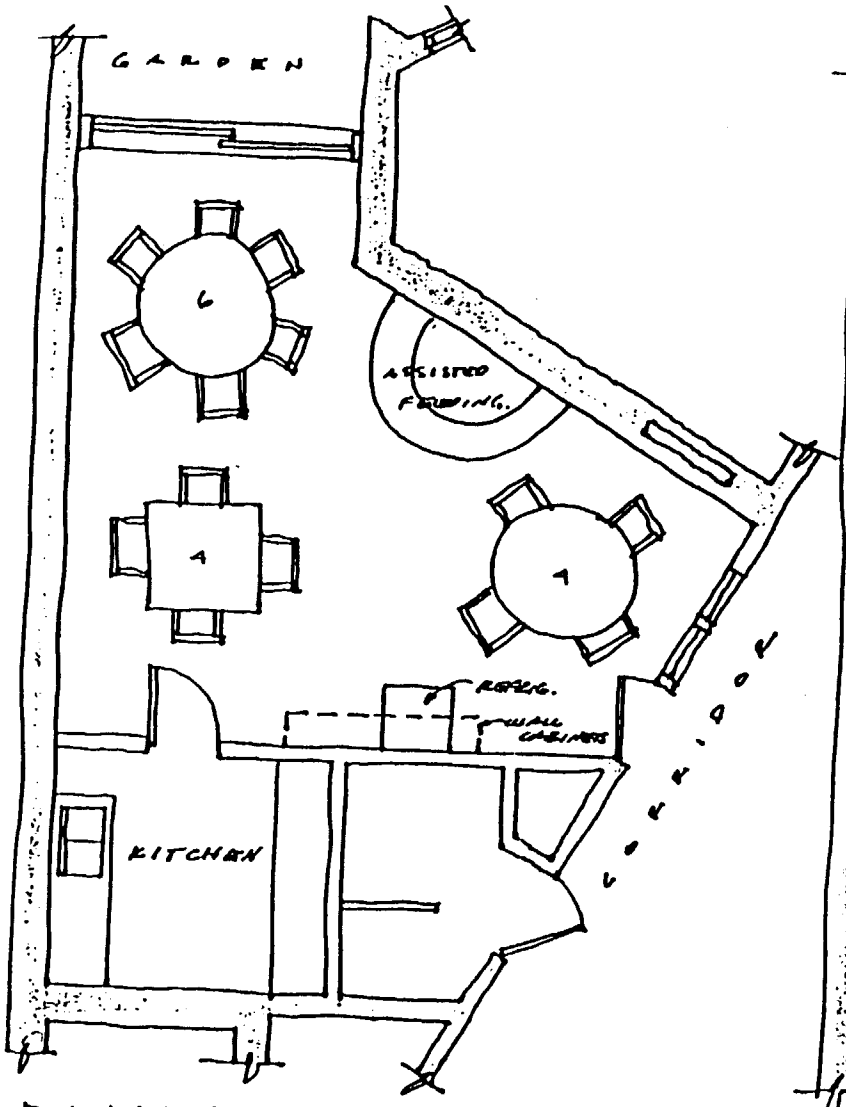
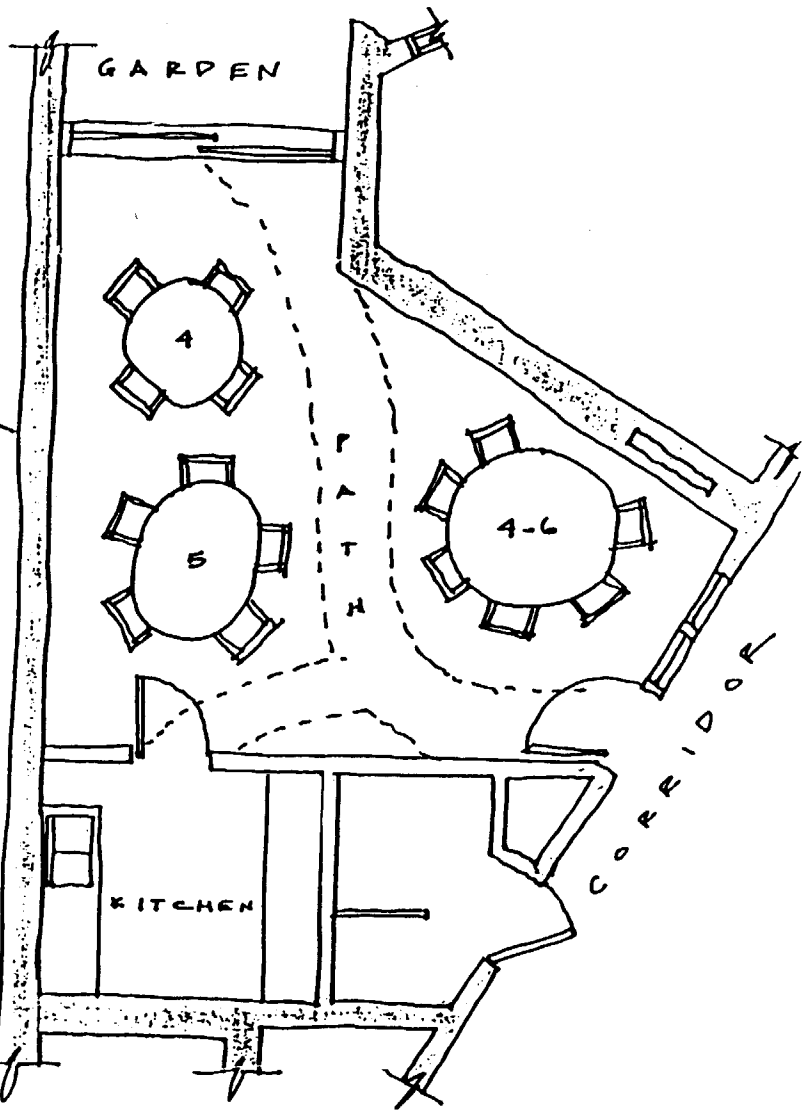


DINING ROOM

AS IS.



DINING ROOM

REVISED

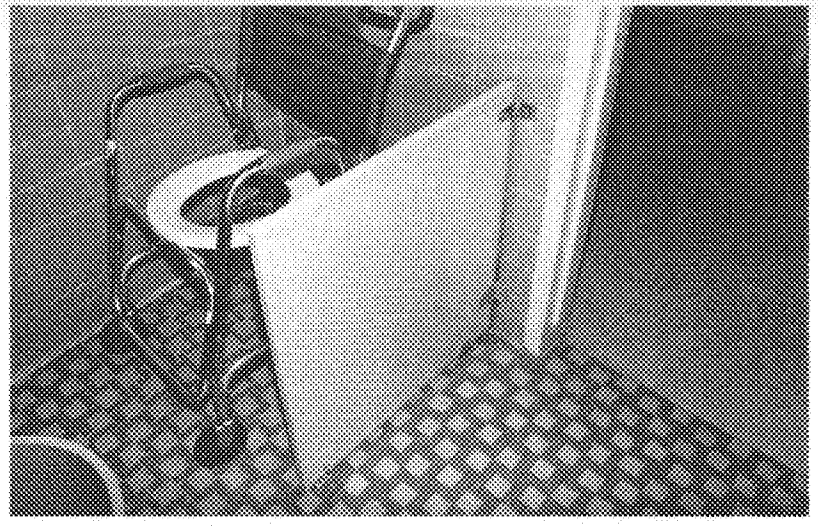
SHOWER

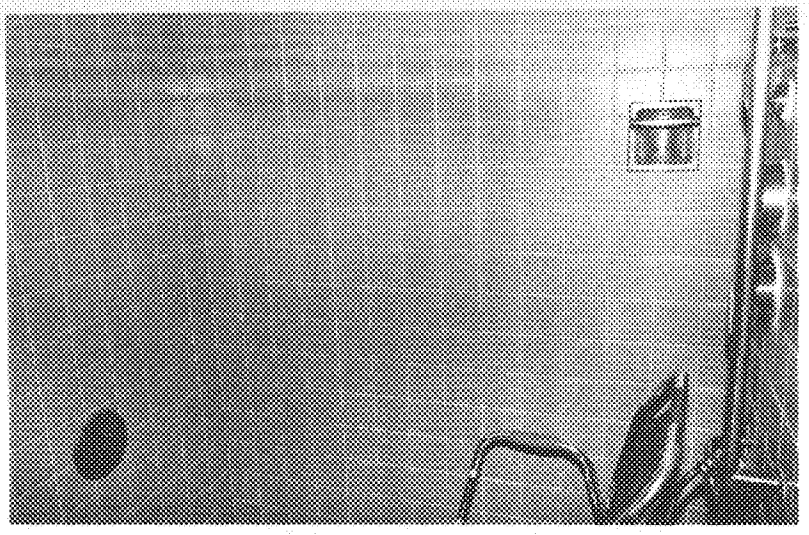
DESIGN ISSUES

1. Floor pattern visually complex
2. Water barrier wing wall has sharp edges and appears weak
3. Not enough grab bars
4. Lighting needs updating

GUIDELINES

1. Replace floor tile with solid color or small pattern
2. Install product with rounded edges and assure stability
3. Add horizontal bars on two walls
4. Install switch that permits light level adjustment





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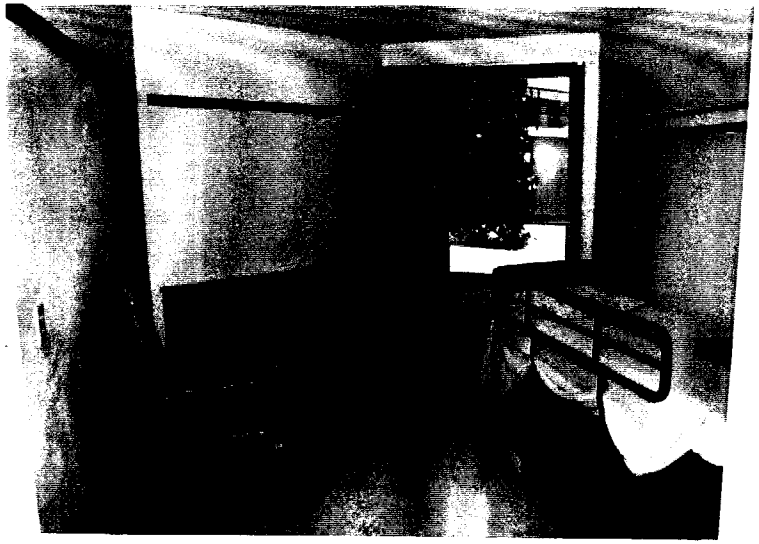
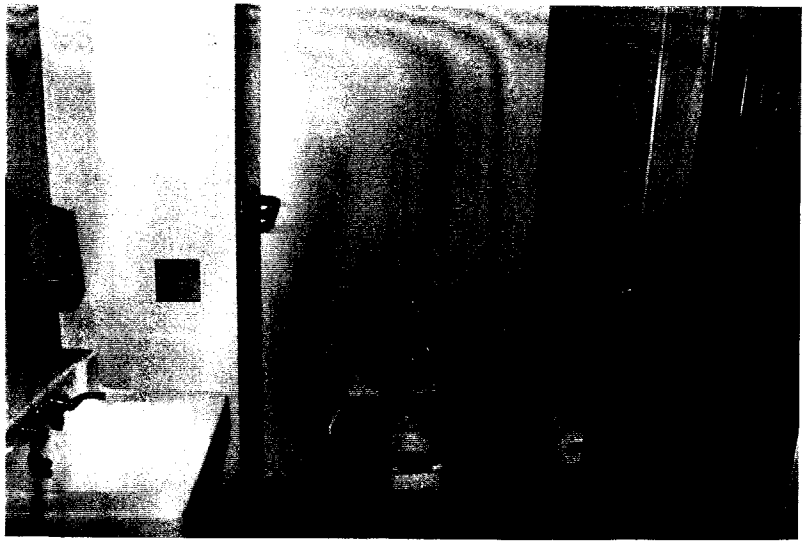




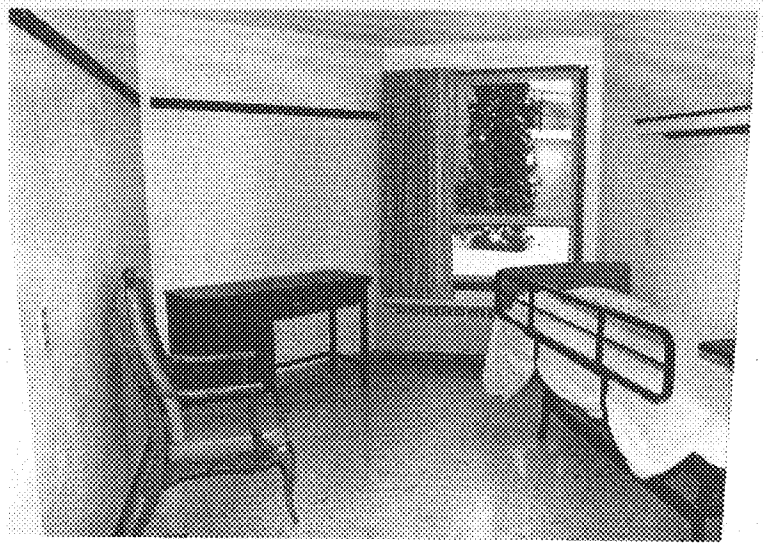
RESIDENT ROOMS

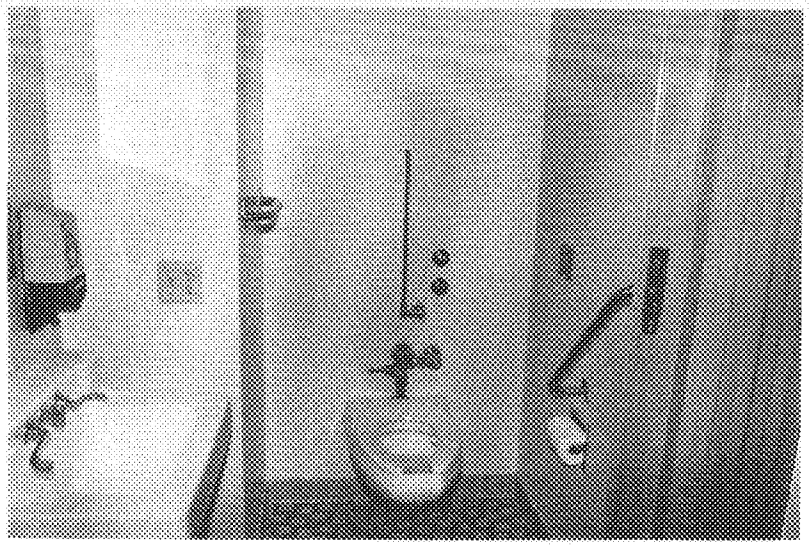
DESIGN ISSUES

1. All resident room colors are the same
2. Floor needs to be updated
3. Moldings designated for pictures limit options for personalization
4. Inadequate lighting
5. Visitor chairs need updating
6. Not enough grab bars in toileting area

GUIDELINES

1. Provide four wall color choices for rooms
2. Install floor with matte finish
3. Install picture moldings and brackets for greater flexibility
4. Install updated wall fixtures and add ceiling-mounted fixtures
5. Replace with more supportive, homelike chairs
6. Add horizontal bars on side and back of toilet





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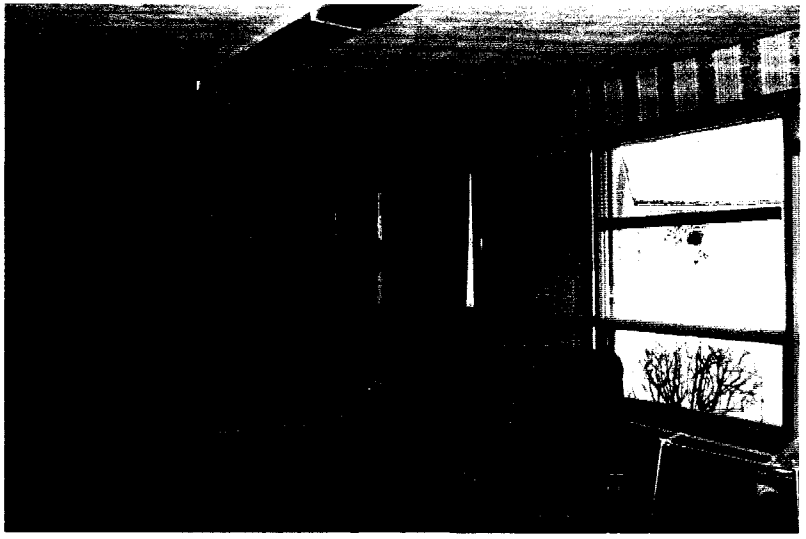


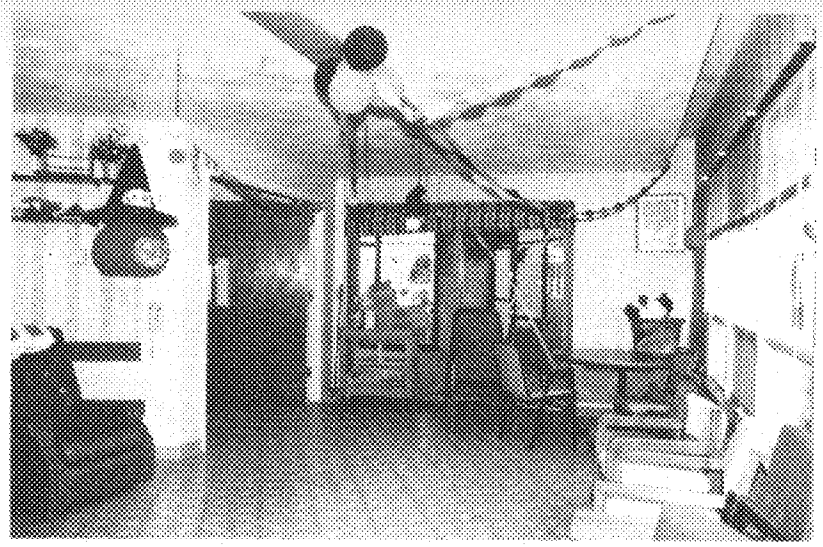
LIVING ROOM

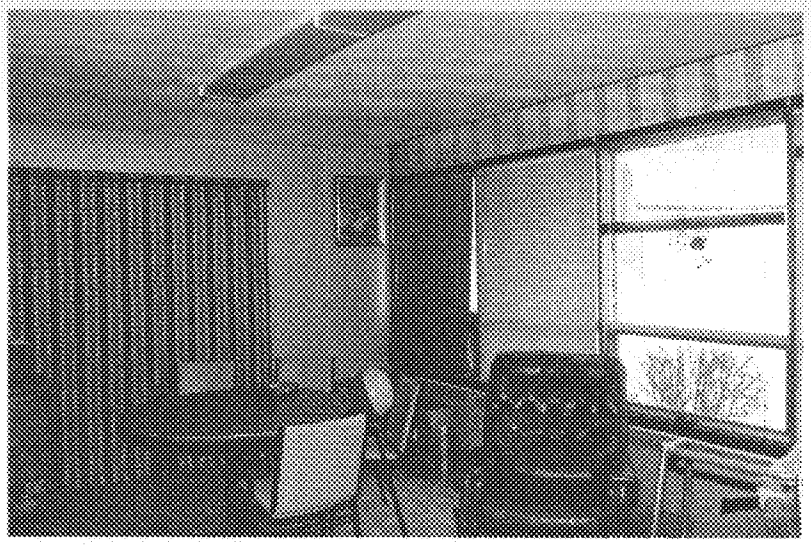
DESIGN ISSUES

1. Floor needs updating
2. Wall surfaces need updating
3. Window treatments not homelike
4. Overhead lighting contributes to glare

GUIDELINES

1. Install floor with matte finish.
2. Add new colors and textures, include tactile wall hangings
3. Update window and patio door treatments
4. Install fixtures with parabolic lenses to reduce glare; add indirect lighting (retain coved lighting above windows)





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LIVING ROOM

DESIGN ISSUES

5. Furniture not supportive or homelike

6. Inadequate for small-group (2-3) activities

7. Inadequate for large-group activities

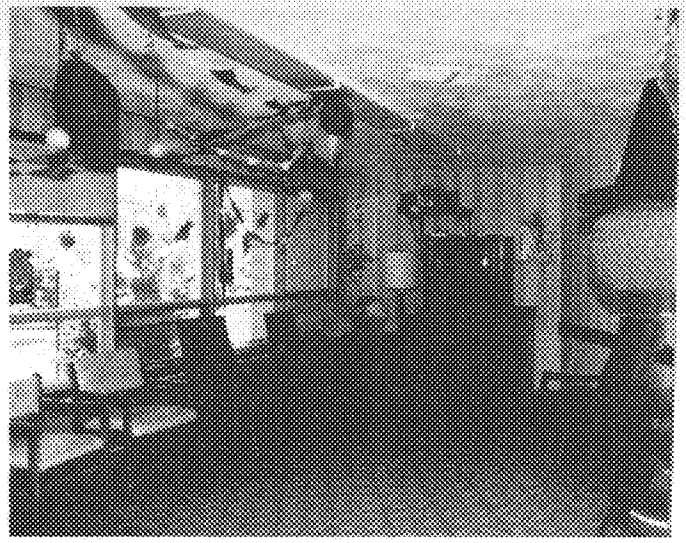
GUIDELINES

5. Add small sofa* and replace chairs*

6. Convert adjacent resident room into multi-purpose small-group activity area with connecting door to living room

7. Allocate space near unit for activities that relate to cultural traditions, celebrations, and spiritual needs

*Seating should have 3" wide armrests with rounded edges which extend from back to seat front, level seats with rounded edges, approx. 18" high, contrasting with floor, and supportive backs.



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PORCH

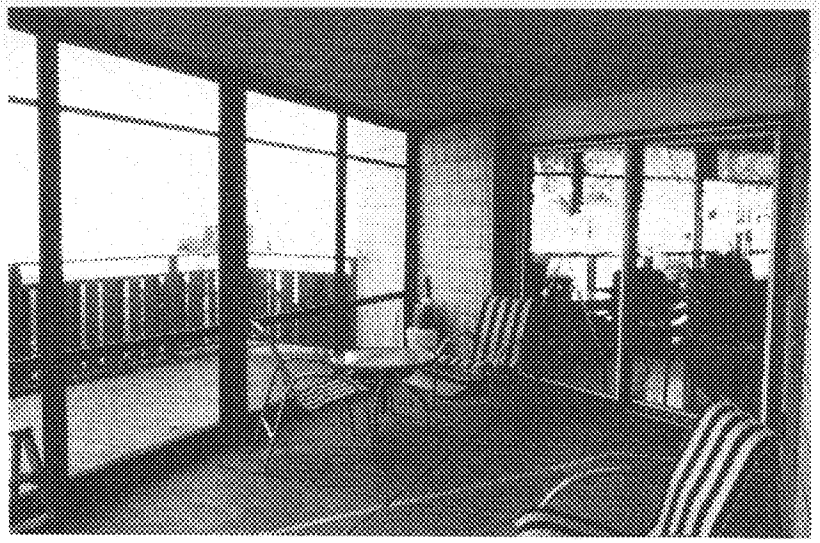
DESIGN ISSUES

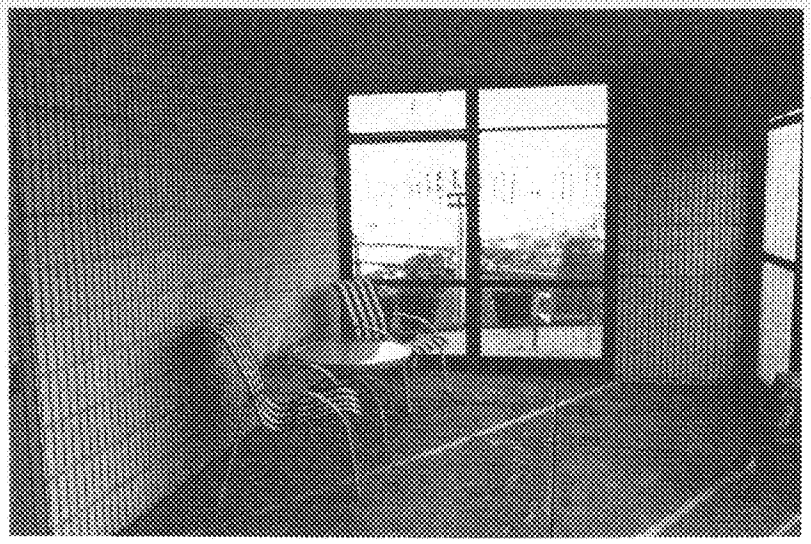
1. Patio door accessing porch has raised threshhold creating walking obstruction
2. Furniture not supportive to sitting and rising
3. Concrete floor creates safety hazard

GUIDELINES

1. Install unit with threshhold flush with floor or ramp that meets ADA Guidelines
2. Replace chairs*
3. Install all-season carpeting and cover in winter

*Chairs should have 3" wide armrests with rounded edges extending from back to seat front, level seats with rounded edges, approx.18" high, contrasting with floor, and supportive backs.





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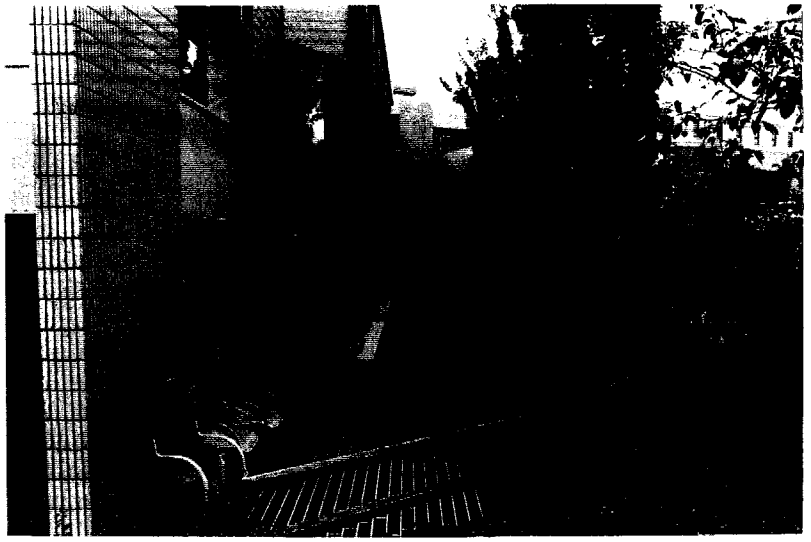
1. Patio door accessing porch has raised threshhold creating walking obstruction
2. Furniture not supportive to sitting and rising
3. Concrete floor creates safety hazard

GUIDELINES

1. Install unit with threshhold flush with floor or ramp that meets ADA Guidelines
2. Replace chairs*
3. Install all-season carpeting and cover in winter

*Chairs should have 3" wide armrests with rounded edges extending from back to seat front, level seats with rounded edges, approx.18" high, contrasting with floor, and supportive backs.



GARDEN AND PATIO

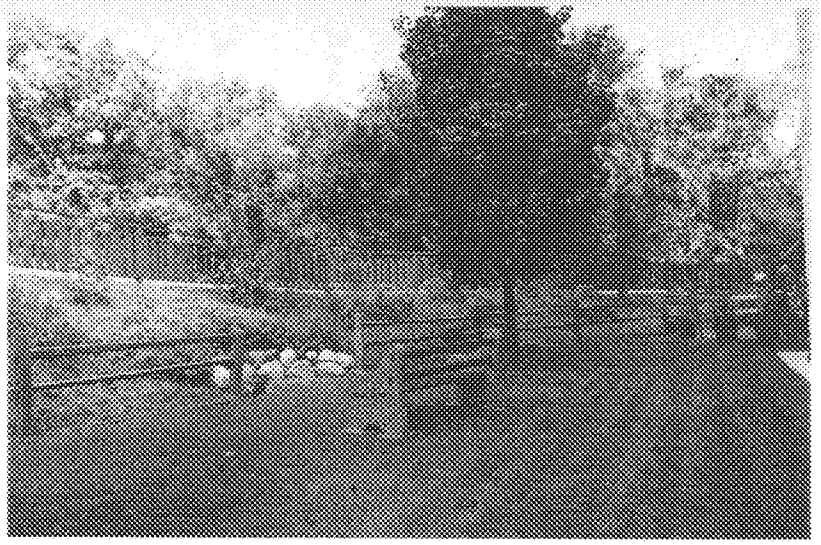
DESIGN ISSUES

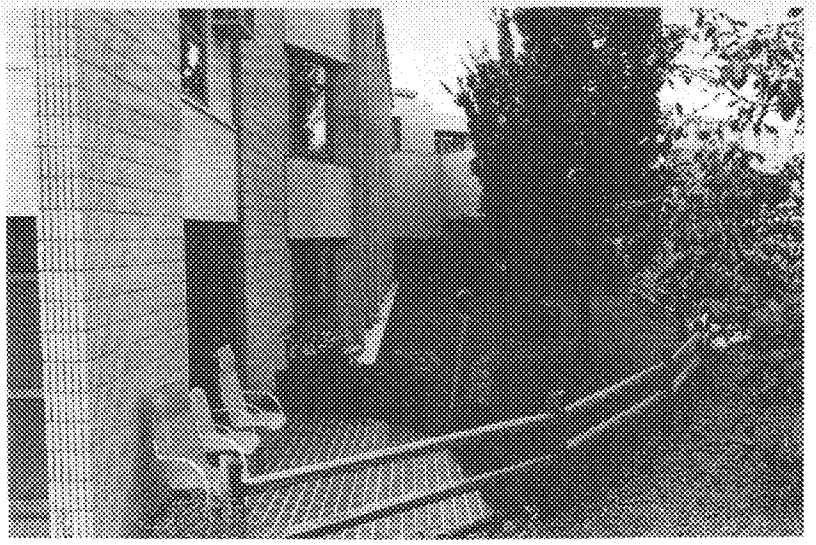
1. No formal walking path
2. Limited seating
3. Patio chairs not supportive to sitting and rising
4. No seating with protection from elements
5. Limited gardening opportunities

GUIDELINES

1. Install connecting path between dining room and patio
2. Add benches and supportive chairs
3. Replace patio chairs*
4. Install one seating area with roofed shelter
5. Install raised garden beds

*Chairs should have 3" wide armrests with rounded edges extending from back to seat front, level seats with rounded edges, approx. 18" high, contrasting with the floor, and supportive backs.





GARDEN AND PATIO

DESIGN ISSUES	GUIDELINES
1. No formal walking path	1. Install connecting path between dining room and patio
2. Limited seating	2. Add benches and supportive chairs
3. Patio chairs not supportive to sitting and rising	3. Replace patio chairs*
4. No seating with protection from elements	4. Install one seating area with roofed shelter
5. Limited gardening opportunities	5. Install raised garden beds

*Chairs should have 3" wide armrests with rounded edges extending from back to seat front, level seats with rounded edges, approx. 18" high, contrasting with the floor, and supportive backs.

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APPENDIX A

STAFF INTERVIEW QUESTIONS

POST-OCCUPANCY EVALUATION OF A SPECIAL NEEDS UNIT USING DEMENTIA-SPECIFIC DESIGN CRITERIA

FOCUSED INTERVIEWS WITH REPRESENTATIVES (ONE EACH) FROM ADMINISTRATION, ACTIVITIES, CHAPLAINCY, HOUSEKEEPING, NURSING, AND SOCIAL WORK REGARDING ENVIRONMENTAL DESIGN ISSUES ON UNIT 4A.

Interview Introduction:

As you know, Skaalen intends to initiate environmental design changes on the special needs unit. As a caregiver and advocate for residents on the unit, your opinions about the present environmental design are important. Your comments will help identify design problems and provide suggestions for improvements.

This interview is part of a post-occupancy evaluation of the special needs unit being conducted to prepare recommendations for design changes on the unit. In addition, the evaluation will provide partial fullfillment of the requirements for my master degree.

Participation is completely voluntary, and you may stop at any time. Your responses will be completely confidential, and your opinions will contribute to a better understanding of what changes are needed on the unit to improve the physical environment for residents, staff, families, and other visitors.

Thank you for agreeing to be interviewed.

FOCUSED INTERVIEW QUESTIONS:

(1) Please give a brief description of your job. (How do you serve residents on the unit)?

(a) How long have you worked at Skaalen?

(b) How long have you worked on the special needs unit?

(2) Have any members of your family or friends you know had dementia? If so, please explain.

(3) How do residents on this unit differ from residents on other units?

(4) What environmental supports do they need that are different?

(5) What are the three best design attributes of the unit?

(6) What are the three most troublesome design attributes of the unit?

(7) What design attribute, if not changed, will bring you the most disappointment?

(8) What design changes are needed to improve safety and security on the unit?

(9) What design changes are needed to accommodate vision deficits of residents?

(10) What design changes are needed to accommodate hearing deficits of residents?

(11) What design changes are needed to help residents function more independently on the unit?

(12) Do residents have a range of spaces including public, semiprivate, and private areas available where they can spend time on the unit?

(13) Overall, would you describe the unit as homelike?

(a) If yes, what attributes are homelike?

(b) If no, what attributes are not homelike?

(c) What design changes would make the unit more homelike?

(14) Are you aware of any design problems which families have expressed?

(15) Given the intention by facility administrators to make environmental design changes on the unit, what words would you use to describe the image you think the unit should convey to staff, family, and other visitors?

(16) Do you have any other comments about unit design?

APPENDIX B

FAMILY CAREGIVER STUDY INTRODUCTION LETTER

SKAALEN SUNSET HOME, INC.
400 NORTH MORRIS STREET
STOUGHTON, WISCONSIN 53589

PHONE (608) 873-5651

AFFILIATED WITH
THE EVANGELICAL LUTHERAN
CHURCH IN AMERICA

November 20, 1993

Dear family member:

Most of you already know that we have organized a planning committee to investigate the possibility of making environmental changes on our special needs dementia care unit. The committee has been meeting for several months to discuss various issues related to the unit such as admission and discharge criteria, responsibilities of staff, activity programming, concerns about the physical environment, and other topics that impact on the continuing development of a successful special care unit.

The focus of this letter is the physical environment. We are aware that providing a safe and comfortable home for people with dementia requires a great deal of planning and continuing dialogue with both staff and family caregivers. We welcome the opinions of caregivers as we anticipate future environmental changes on the unit.

We have joined in our efforts by Susan Torgrude, a graduate student in the Department of Environment, Textiles & Design at the University of Wisconsin-Madison. Her research area is the design of living environments for people with dementia, and she is conducting a post-occupancy evaluation of our special needs unit in order to prepare recommendations for environmental design changes for the unit.

Enclosed is an environment design questionnaire which is part of the post-occupancy evaluation. Participation in the evaluation is completely voluntary, and all confidential responses will be collected and monitored by the researcher. We encourage you to participate in the evaluation to help us make informed decisions about changes on the unit. However, we do ask that you refrain from collaboration with others about responses. **Please return the completed questionnaire to the researcher in the self-addressed stamped envelope by December 8, 1993.**

No one at Skaalen Sunset Home will have access to the actual data collected. Skaalen will have a list of questionnaire numbers and names of people to whom they are given, but the researcher will not have access to that list. Skaalen will only refer to the list for mailings to check on the receipt of materials or for later reminders if nescessary. Skaalen will be provided with a design program document with recommendations for design changes based on the evaluation results.

We encourage you to give serious consideration to participation in the study, but regardless of your decision, we appreciate your support and want to continue to work with you to provide a caring environment which affirms the worth and dignity of those who live and work on the unit.

Sincerely,

Kris Gabert
Administrator

APPENDIX C

FAMILY ENVIRONMENTAL DESIGN QUESTIONNAIRE

SPECIAL NEEDS UNIT ENVIRONMENTAL DESIGN QUESTIONNAIRE

As caregivers and advocates for residents on the special needs unit, your insights about the following design issues are important. Please share your opinions about design issues as they are presented in the questionnaire, including suggestions for improvements.

Participation is completely voluntary, and you may stop at any time. Your responses will be completely confidential, and your opinions will contribute to a better understanding of what changes are needed on the unit to enhance the physical environment.

Thank you for your assistance.

INSTRUCTIONS:

PLEASE READ THE INTRODUCTION TO EACH SECTION OF THE QUESTIONNAIRE AND THEN CIRCLE THE NUMBER WHICH MOST ACCURATELY REPRESENTS YOUR OPINION CONCERNING EACH DESIGN ISSUE.

>>

Generally speaking, residents with dementia are at increased risk for accidents because of impaired judgment and declining motor skill coordination. Therefore, to reduce risk and promote independent functioning for as long as possible, safety and security are prime considerations in areas where residents spend time. The following questions are about safety and security issues on the unit.

>>

(1) The unit provides enough safe places for wandering, a common behavior among people with dementia.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(2) Corridor railings are high enough to provide appropriate support for residents who:

(a) Use wheelchairs.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(b) Walk without canes or walkers.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(3) There are enough grab bars in toileting areas to give adequate support to residents.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(4) There are enough grab bars in showering/bath areas to give adequate support to residents.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(5) Generally speaking, the floor on the unit is not slippery.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(6) Generally speaking, outdoor paths near the unit are not slippery.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(7) Walking paths in the dining room are free of obstructions.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(8) The following areas are usually free of obstructions:

(a) THE ENTRANCE DOORWAY TO THE SPECIAL NEEDS UNIT.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(b) THE DOORWAY FROM THE CORRIDOR TO THE DINING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(c) THE DOORWAY FROM THE CORRIDOR TO THE LIVING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Question #8 Continued: The following area is usually free of obstructions:

(d) THE DOORWAY FROM THE LIVING ROOM TO THE PORCH.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(9) The corridor is generally free of obstructions.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(10) Overall, chairs in the living room allow residents to safely sit and rise with minimal assistance.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Please share any additional concerns or suggestions for the improvement of unit design that relate to safety and security. Use the other side of this sheet if more room is needed. Otherwise, proceed to the next group of items.

>>

Environments for people with dementia can help compensate for typical age-related sensory declines in vision and hearing which can cause difficulty in behavioral functions. The next questions are about sensory issues.

>>

(1) Please rate the lighting level:

(a) IN THE DINING ROOM.

Much Too Bright	Too Bright	About Right	Too Dim	Much Too Dim
5	4	3	2	1

(b) IN THE LIVING ROOM.

Much Too Bright	Too Bright	About Right	Too Dim	Much Too Dim
5	4	3	2	1

(c) IN THE CORRIDOR.

Much Too Bright	Too Bright	About Right	Too Dim	Much Too Dim
5	4	3	2	1

(d) IN RESIDENTS' ROOMS.

Much Too Bright	Too Bright	About Right	Too Dim	Much Too Dim
5	4	3	2	1

(2) There is glare from light reflecting on surfaces:

(a) IN THE DINING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(b) IN THE LIVING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(c) IN THE CORRIDOR.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(d) IN RESIDENTS' ROOMS.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(3) There is distinct color contrast (light/dark) between walls and floors:

(a) IN THE CORRIDOR (along which residents' rooms are located).

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Question #3 Continued: There is distinct color contrast between walls and floors:

(b) IN THE DINING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(c) IN THE LIVING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(d) IN RESIDENTS' ROOMS.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(4) Unwanted noise is often a problem on the unit.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(5) Sounds from alarms, intercoms, and public address systems are kept to a minimum on the unit.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Please share any additional concerns or suggestions for the improvement of unit design that relate to providing compensation for sensory losses. Use the other side of this sheet if more room is needed. Otherwise, please continue.

>>>

The self-esteem and dignity of a person with dementia may be strengthened by promoting independence as much as possible. In addition, providing a range of spaces from public to private allows residents choices. The next questions are about independence and autonomy (choices).

>>>

(1) There are enough spaces for small group activities.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(2) The unit has areas that provide opportunities for exploration and discovery (working with puzzles, touching various fabric textures, etc.)

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(3) There are enough spaces for relaxation and reflection (places to listen to music, places to view interesting landscape features, bird feeders, etc.).

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(4) Private space is needed for staff (nursing, social work, chaplain, etc.) near the unit to consult with families.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(5) There are enough spaces on the unit where residents can spend time alone.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(6) Toileting areas on the unit offer adequate privacy for residents.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(7) Bathing areas allow for adequate privacy.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(8) There are enough spaces for family visits on the the unit.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(9) There are outdoor spaces where residents can spend time with minimal supervision.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(10) Outdoor spaces provide activity spaces that encourage social interaction.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Please share any additional concerns or suggestions for the improvement of unit design that relate to promoting independence and providing choices. Use the other side of the sheet if needed. Otherwise, please continue.

>>>

The transition from home to a group living situation can be confusing and stressful particularly for a resident with dementia. To minimize confusion and stress, some authors have suggested creating environments which offer spaces and decors with residential or homelike qualities. The following questions are about homelike attributes.

>>>

(1) The entry to the unit is homelike in appearance.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(2) Furniture is homelike in appearance:

(a) IN RESIDENTS' ROOMS.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Question #2 Continued: Furniture is homelike in appearance:

(b) IN THE LIVING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(c) IN THE DINING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(3) Wall surfaces are homelike in appearance:

(a) IN THE LIVING ROOM

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(b) IN THE DINING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(c) IN THE CORRIDOR.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Question #3 Continued: Wall surfaces are homelike in appearance:

(d) IN RESIDENTS' ROOMS.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(4) Window coverings (blinds, drapes, etc.) are homelike in appearance:

(a) IN THE LIVING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(b) IN RESIDENTS' ROOMS.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(5) There is adequate provision for each resident to display personal momentos in his/her room.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(6) Entries to residents' rooms are easily identified by wall hangings personalized to each resident.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(7) Reminders of residents' past occupations (farming, homemaking, teaching, etc.), are incorporated into unit design with wall hangings, fabrics, and other objects.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(8) The wall colors in residents' rooms should vary throughout the unit.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(9) Reminders of residents' ethnic backgrounds are in-corporated into unit design with color(s), wall hangings, fabrics, or decorative objects.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(10) There is adequate space available to residents for large group activities relating to cultural traditions, spiritual needs, or holiday celebrations.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Please share any additional concerns or suggestions for the improvement of unit design that relate to providing a homelike environment. Use the other side if needed.

For the next three items, continue on the other side or attach a separate sheet if needed.

Please share any other concerns you may have about unit design or suggestions for improvement which do not apply to the previous categories.

In your view, what are the best design attributes of the unit?

Given the intention to make environmental design changes on the unit, what words would you use to describe the image you think the unit should convey to staff, family, and visitors?

Please place an "X" or check mark near the categories which apply to you in the demographic section below.

How long has your relative lived on the unit?

___ Less Than Six Months ___ 6 Months-1 Year

___ 1 Year-18 Months ___ 18 Months-2 Years

___ More Than Two Years

How often do you visit?

___ Less Than Once a Month ___ 1-2 Times Per Month

___ Once Weekly ___ Two or More Times Weekly

Your sex is ___ Female. ___ Male.

Your age is ___ years.

THANK YOU FOR COMPLETING THE QUESTIONNAIRE.

APPENDIX D

STAFF CAREGIVER STUDY INTRODUCTION LETTER

AFFILIATED WITH
THE EVANGELICAL LUTHERAN
CHURCH IN AMERICA

SKAALEN SUNSET HOME, INC.
400 NORTH MORRIS STREET
STOUGHTON, WISCONSIN 53589

PHONE (608) 873-5651

November 20, 1993

Dear Caregiver:

Most of you already know that we have organized a planning committee to investigate the possibility of making environmental changes on our special needs dementia care unit. The committee has been meeting for several months to discuss various issues related to the unit such as admission and discharge criteria, responsibilities of staff, activity programming, concerns about the physical environment, and other topics that impact on the continuing development of a successful special care unit.

The focus of this letter is the physical environment. We are aware that providing a safe and comfortable home for people with dementia requires a great deal of planning and continuing dialogue with both staff and family caregivers. We welcome the opinions of caregivers as we anticipate future environmental changes on the unit.

We have joined in our efforts by Susan Torgrude, a graduate student in the Department of Environment, Textiles & Design at the University of Wisconsin-Madison. Her research area is the design of living environments for people with dementia, and she is conducting a post-occupancy evaluation of our special needs unit in order to prepare recommendations for environmental design changes for the unit.

Enclosed is an environment design questionnaire which is part of the post-occupancy evaluation. Participation in the evaluation is completely voluntary, and all confidential responses will be collected and monitored by the researcher. We encourage you to participate in the evaluation to help us make informed decisions about changes on the unit. However, we do ask that you refrain from collaboration with others about responses. **Please return the completed questionnaire to the researcher in the self-addressed stamped envelope by December 8, 1993.**

No one at Skaalen Sunset Home will have access to the actual data collected. Skaalen will have a list of questionnaire numbers and names of people to whom they are given, but the researcher will not have access to that list. Skaalen will only refer to the list for mailings to check on the receipt of materials or for later reminders if nescessary. Skaalen will be provided with a design program document with recommendations for design changes based on the evaluation results.

We encourage you to give serious consideration to participation in the study, but regardless of your decision, we appreciate your support and want to continue to work with you to provide a caring environment which affirms the worth and dignity of those who live and work on the unit.

Sincerely,

Kris Gabert
Administrator

APPENDIX E

STAFF ENVIRONMENTAL DESIGN QUESTIONNAIRE

SPECIAL NEEDS UNIT ENVIRONMENTAL DESIGN QUESTIONNAIRE

As caregivers and advocates for residents on the special needs unit, your insights about the following design issues are important. Please share your opinions about design issues as they are presented in the questionnaire, including suggestions for improvements.

Participation is completely voluntary, and you may stop at any time. Your responses will be completely confidential, and your opinions will contribute to a better understanding of what changes are needed on the unit to enhance the physical environment.

Thank you for your assistance.

INSTRUCTIONS:

PLEASE READ THE INTRODUCTION TO EACH SECTION OF THE QUESTIONNAIRE AND THEN CIRCLE THE NUMBER WHICH MOST ACCURATELY REPRESENTS YOUR OPINION CONCERNING EACH DESIGN ISSUE.

>>>

Generally speaking, residents with dementia are at increased risk for accidents because of impaired judgment and declining motor skill coordination. Therefore, to reduce risk and promote independent functioning for as long as possible, safety and security are prime considerations in areas where residents spend time. The following questions are about safety and security issues on the unit.

>>>

(1) The unit provides enough safe places for wandering, a common behavior among people with dementia.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(2) Corridor railings are high enough to provide appropriate support for residents who:

(a) Use wheelchairs.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(b) Walk without canes or walkers.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(3) There are enough grab bars in toileting areas to give adequate support to residents.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(4) There are enough grab bars in showering/bath areas to give adequate support to residents.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(5) Generally speaking, the floor on the unit is not slippery.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(6) Generally speaking, outdoor paths near the unit are not slippery.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(7) Walking paths in the dining room are free of obstructions.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(8) The following areas are usually free of obstructions:

(a) THE ENTRANCE DOORWAY TO THE SPECIAL NEEDS UNIT.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(b) THE DOORWAY FROM THE CORRIDOR TO THE DINING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(c) THE DOORWAY FROM THE CORRIDOR TO THE LIVING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Question #8 Continued: The following area is usually free of obstructions:

(d) THE DOORWAY FROM THE LIVING ROOM TO THE PORCH.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(9) The corridor is generally free of obstructions.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(10) Overall, chairs in the living room allow residents to safely sit and rise with minimal assistance.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Please share any additional concerns or suggestions for the improvement of unit design that relate to safety and security. Use the other side of this sheet if more room is needed. Otherwise, proceed to the next group of items.

>>

Environments for people with dementia can help compensate for typical age-related sensory declines in vision and hearing which can cause difficulty in behavioral functions. The next questions are about sensory issues.

>>

(1) Please rate the lighting level:

(a) IN THE DINING ROOM.

Much Too Bright	Too Bright	About Right	Too Dim	Much Too Dim
5	4	3	2	1

(b) IN THE LIVING ROOM.

Much Too Bright	Too Bright	About Right	Too Dim	Much Too Dim
5	4	3	2	1

(c) IN THE CORRIDOR.

Much Too Bright	Too Bright	About Right	Too Dim	Much Too Dim
5	4	3	2	1

(d) IN RESIDENTS' ROOMS.

Much Too Bright	Too Bright	About Right	Too Dim	Much Too Dim
5	4	3	2	1

(2) There is glare from light reflecting on surfaces:

(a) IN THE DINING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(b) IN THE LIVING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(c) IN THE CORRIDOR.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(d) IN RESIDENTS' ROOMS.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(3) There is distinct color contrast (light/dark) between walls and floors:

(a) IN THE CORRIDOR (along which residents' rooms are located).

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Question #3 Continued: There is distinct color contrast between walls and floors:

(b) IN THE DINING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(c) IN THE LIVING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(d) IN RESIDENTS' ROOMS.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(4) Unwanted noise is often a problem on the unit.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(5) Sounds from alarms, intercoms, and public address systems are kept to a minimum on the unit.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Please share any additional concerns or suggestions for the improvement of unit design that relate to providing compensation for sensory losses. Use the other side of this sheet if more room is needed. Otherwise, please continue.

>>

The self-esteem and dignity of a person with dementia may be strengthened by promoting independence as much as possible. In addition, providing a range of spaces from public to private allows residents choices. The next questions are about independence and autonomy (choices).

>>

(1) There are enough spaces for small group activities.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(2) The unit has areas that provide opportunities for exploration and discovery (working with puzzles, touching various fabric textures, etc.)

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(3) There are enough spaces for relaxation and reflection (places to listen to music, places to view interesting landscape features, bird feeders, etc.).

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(4) Private space is needed for staff (nursing, social work, chaplain, etc.) near the unit to consult with families.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(5) There are enough spaces on the unit where residents can spend time alone.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(6) Toileting areas on the unit offer adequate privacy for residents.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(7) Bathing areas allow for adequate privacy.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(8) There are enough spaces for family visits on the the unit.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(9) There are outdoor spaces where residents can spend time with minimal supervision.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(10) Outdoor spaces provide activity spaces that encourage social interaction.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Please share any additional concerns or suggestions for the improvement of unit design that relate to promoting independence and providing choices. Use the other side of the sheet if needed. Otherwise, please continue.

>>

The transition from home to a group living situation can be confusing and stressful particularly for a resident with dementia. To minimize confusion and stress, some authors have suggested creating environments which offer spaces and decors with residential or homelike qualities. The following questions are about homelike attributes.

>>

(1) The entry to the unit is homelike in appearance.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(2) Furniture is homelike in appearance:

(a) IN RESIDENTS' ROOMS.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Question #2 Continued: Furniture is homelike in appearance:

(b) IN THE LIVING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(c) IN THE DINING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(3) Wall surfaces are homelike in appearance:

(a) IN THE LIVING ROOM

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(b) IN THE DINING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(c) IN THE CORRIDOR.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Question #3 Continued: Wall surfaces are homelike in appearance:

(d) IN RESIDENTS' ROOMS.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(4) Window coverings (blinds, drapes, etc.) are homelike in appearance:

(a) IN THE LIVING ROOM.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(b) IN RESIDENTS' ROOMS.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(5) There is adequate provision for each resident to display personal momentos in his/her room.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(6) Entries to residents' rooms are easily identified by wall hangings personalized to each resident.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(7) Reminders of residents' past occupations (farming, homemaking, teaching, etc.), are incorporated into unit design with wall hangings, fabrics, and other objects.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(8) The wall colors in residents' rooms should vary throughout the unit.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(9) Reminders of residents' ethnic backgrounds are in-corporated into unit design with color(s), wall hangings, fabrics, or decorative objects.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

(10) There is adequate space available to residents for large group activities relating to cultural traditions, spiritual needs, or holiday celebrations.

Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
5	4	3	2	1

Please share any additional concerns or suggestions for the improvement of unit design that relate to providing a homelike environment. Use the other side if needed.

For the next three items, continue on the other side or attach a separate sheet if needed.

Please share any other concerns you may have about unit design or suggestions for improvement which do not apply to the previous categories.

In your view, what are the best design attributes of the unit?

Given the intention to make environmental design changes on the unit, what words would you use to describe the image you think the unit should convey to staff, family, and visitors?

Please place an "X" or check mark near the categories which apply to you in the demographic section below.

How long have you worked on the unit?

___ Less Than Six Months ___ 6 Months-1 Year

___ 1 Year-18 Months ___ 18 Months-2 Years

___ More Than Two Years

Your department is: _____

Your sex is ___ Female. ___ Male.

Your age is ___ years.

THANK YOU FOR COMPLETING THE QUESTIONNAIRE.

APPENDIX F

COUNTS AND PERCENTAGES -- INDIVIDUAL QUESTIONNAIRE ITEMS

QUESTIONNAIRE FINDINGS: CAREGIVER RESPONSES ON INDIVIDUAL ITEMS

Tables with counts and percentages of caregiver responses on individual items in the questionnaire are presented by criterion category. The questionnaire response categories of "Strongly Agree" and "Agree" have been collapsed into "Agree," and "Strongly Disagree" and "Disagree" have been collapsed into "Disagree" because of the small sample size.

SAFETY AND SECURITY

Safety and Security Counts and Percentages By Item:

Unit attributes with over 50% of overall respondents in **agreement** regarding meeting the Safety and Security issue defined in each item:

ITEM #SS1: (Enough safe places for wandering).

"The unit provides enough safe places for wandering, a common behavior among people with dementia."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	17	85.0%	5	21.7%	**22**	**51.1%**
Disagree	2	10.0%	**16**	**69.6%**	18	41.9%
Uncertain	1	5.0%	2	8.7%	3	7.0%

ITEM #SS2A: (Corridor railings are high enough for wheel chair users).

"Corridor railings are high enough to provide appropriate support for residents who use wheel chairs."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	13	65.0%	19	82.6%	**32**	**74.4%**
Disagree	1	5.0%	0	0.0%	1	2.3%
Uncertain	6	30.0%	4	17.4%	10	23.3%

ITEM #SS2B: (Corridor railings are high enough for ambulatory residents).

"Corridor railings are high enough to provide appropriate support for residents who walk without canes or walkers."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	18	90.0%	19	82.6%	**37**	**86.0%**
Disagree	0	0.0%	1	4.3%	1	2.3%
Uncertain	2	10.0%	3	13.0%	5	11.6%

ITEM #SS3: (Enough grab bars in toileting areas).

"There are enough grab bars in toileting areas to give adequate support to residents."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	13	65.0%	13	56.5%	**26**	**60.5%**
Disagree	0	0.0%	6	26.0%	6	13.9%
Uncertain	7	35.0%	4	17.4%	11	25.6%

ITEM #SS5: (Unit flooring -- not slippery).

"Generally speaking, the floor on the unit is not slippery.

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	16	80.0%	13	56.5%	**29**	**67.4%**
Disagree	1	5.0%	9	39.1%	10	23.3%
Uncertain	3	15.0%	1	4.3%	4	9.3%

ITEM #SS6: (Outdoor paths -- not slippery).

"Generally speaking, outdoor paths near the unit are not slippery."

Responses: Caregiver Groups

	Family n = 20		Staff n = 22		Overall N = 42	
	Number	Percent	Number	Percent	Number	Percent
Agree	14	70.0%	13	59.1%	**27**	**64.3%**
Disagree	1	5.0%	1	4.5%	2	4.8%
Uncertain	5	25.0%	8	36.4%	13	31.0%

ITEM #SS7: (Dining room walking paths -- obstruction free).

"Walking paths in the dining room are free of obstructions."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	16	80.0%	9	39.1%	**25**	**58.1%**
Disagree	2	10.0%	**12**	**52.1%**	14	32.6%
Uncertain	2	10.0%	2	8.7%	4	9.3%

ITEM #SS8A: (Unit entrance doorway -- usually obstruction free).

"The entrance doorway to the special needs unit is usually free of obstructions."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	19	95.0%	18	78.2%	**37**	**86.1%**
Disagree	0	0.0%	3	13.0%	3	7.0%
Uncertain	1	5.0%	2	8.7%	3	7.0%

ITEM #SS8B: (Corridor/dining room doorway -- usually obstruction free).

"The doorway from the corridor to the dining room is usually free of obstructions."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	19	95.0%	18	78.2%	**37**	**86.1%**
Disagree	0	0.0%	3	13.0%	3	7.0%
Uncertain	1	5.0%	2	8.7%	3	7.0%

ITEM #SS8C: (Corridor/living room doorway -- usually obstruction free).

"The doorway from the corridor to the living room is usually free of obstructions."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	19	95.0%	18	78.2%	**37**	**86.0%**
Disagree	0	0.0%	4	17.4%	4	9.3%
Uncertain	1	5.0%	1	4.3%	2	4.7%

ITEM #SS9: (Corridor -- obstruction free).

"The corridor is generally free of obstructions."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	19	95.0%	22	95.6%	**41**	**95.3%**
Disagree	0	0.0%	1	4.3%	1	2.3%
Uncertain	1	5.0%	0	0.0%	1	2.3%

ITEM #SS10: (Chairs -- safe in living room).

"Overall, chairs in the living room allow residents to safely sit and rise with minimal assistance."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	14	70.0%	9	39.1%	**23**	**53.5%**
Disagree	1	5.0%	11	47.8%	12	27.9%
Uncertain	5	25.0%	3	13.0%	8	18.6%

Unit attributes under 50% of overall respondents in **agreement** or **disagreement**, with a range of uncertainly from 21.4% to 45.2%, about meeting the Safety and Security issue defined in each item:

ITEM #SS4: (Enough grab bars in showering/bath areas).

"There are enough grab bars in showering/bath areas to give adequate support to residents."

Responses: Caregiver Groups

	Family n = 19		Staff n = 22		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	8	42.1%	7	30.4%	**15**	**35.7%**
Disagree	0	0.0%	8	34.7%	**8**	**19.1%**
Uncertain	11	57.9%	8	34.8%	**19**	**45.2%**

ITEM #SS8D: (Living room/porch doorway -- usually obstruction free).

"The doorway from the living room to the porch is usually free of obstructions."

Responses: Caregiver Groups

	Family n = 20		Staff n = 22		Overall N = 42	
	Number	Percent	Number	Percent	Number	Percent
Agree	12	60.0%	6	27.3%	**18**	**42.9%**
Disagree	4	20.0%	**11**	**50.0%**	**15**	**35.8%**
Uncertain	4	20.0%	5	22.7%	**9**	**21.4%**

COMPENSATION FOR NORMAL AGE-RELATED SENSORY LOSSES

Compensation for Normal Age-Related Sensory Losses Counts and Percentages By Item:

ITEM #CSL1A: (Lighting levels -- dining room).

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
About Right	18	90.0%	16	69.6%	**34**	**79.1%**
Too Bright	1	5.0%	7	30.4%	8	18.6%
Too Dim	1	5.0%	0	0.0%	1	2.3%

ITEM #CSL1B: (Lighting Levels -- living room).

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
About Right	18	90.0%	13	56.5%	**31**	**72.1%**
Too Bright	0	0.0%	6	26.0%	6	14.0%
Too Dim	2	10.0%	4	17.4%	6	14.0%

ITEM #CSL1C: (Lighting Levels -- corridor).

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
About Right	20	100.0%	12	52.2%	**32**	**74.4%**
Too Bright	0	0.0%	10	43.5%	10	23.3%
Too Dim	0	0.0%	1	4.3%	1	2.3%

ITEM #CSL1D: (Lighting Levels -- residents' rooms).

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
About Right	15	75.0%	15	65.2%	**30**	**69.8%**
Too Bright	0	0.0%	2	8.6%	2	4.6%
Too Dim	5	25.0%	6	26.1%	11	25.6%

Unit attribute with over 50% of overall respondents in **agreement** about meeting the Compensation for Normal Age-Related Sensory Loss issue defined in the item:

ITEM #CSL5: (Unwanted sounds -- kept to a minimum).

"Sounds from alarms, intercoms, and public address systems are kept to a minimum on the unit."

Responses: Caregiver Groups

	Family n = 19		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	13	68.5%	13	56.5%	**26**	**61.9%**
Disagree	2	10.5%	6	26.0%	8	19.1%
Uncertain	4	21.1%	4	17.4%	8	19.0%

Unit attributes with over 50% of overall respondents in **disagreement** about meeting the Compensation for Normal Age-Related Sensory Losses issue defined in each item:

ITEM #CSL3A: (Wall/floor color contrast -- corridor).

"There is distinct color contrast (light/dark) between walls and floors in the corridor (along which residents' rooms are located)."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	6	30.0%	6	26.1%	12	27.9%
Disagree	8	40.0%	15	65.2%	**23**	**53.5%**
Uncertain	6	30.0%	2	8.7%	8	18.6%

ITEM #CSL3D: (Wall/floor color contrast -- residents' rooms).

"There is distinct color contrast (light/dark) between walls and floors in residents' rooms."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	6	30.0%	6	26.1%	12	27.9%
Disagree	6	30.0%	17	73.9%	**23**	**53.5%**
Uncertain	8	40.0%	0	0.0%	8	18.6%

Unit attributes with under 50% of overall respondents in **agreement** or **disagreement**, with a range of uncertainly of 16.3% to 46.5%, about meeting the Compensation for Normal Age-Related Sensory Losses issue defined in each item:

ITEM #CSL2A: (Glare in dining room).

"There is glare from light reflecting on surfaces in the dining room."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	3	15.0%	8	34.8%	**11**	**25.6%**
Disagree	5	25.0%	7	30.4%	**12**	**27.9%**
Uncertain	12	60.0%	8	34.8%	**20**	**46.5%**

ITEM #CSL2B: (Glare in living room).

"There is glare from light reflecting on surfaces in the living room."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	4	20.0%	6	26.1%	**10**	**23.3%**
Disagree	7	35.0%	7	30.4%	**14**	**32.6%**
Uncertain	9	45.0%	10	43.5%	**19**	**44.2%**

ITEM #CSL2C: (Glare in the corridor).

"There is glare from light reflecting on surfaces in the corridor."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	3	15.0%	**14**	**60.9%**	**17**	**39.5%**
Disagree	12	60.0%	7	30.4%	**19**	**44.2%**
Uncertain	5	25.0%	2	8.7%	**7**	**16.3%**

ITEM #CSL2D: (Glare in residents' rooms).

"There is glare from light reflecting on surfaces in residents' rooms."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	5	25.0%	4	17.3%	**9**	**20.9%**
Disagree	10	50.0%	9	39.1%	**19**	**44.2%**
Uncertain	5	25.0%	10	43.5%	**15**	**34.9%**

ITEM #CSL3B: (Wall/floor color contrast -- dining room).

"There is distinct color contrast (light/dark) between walls and floors in the dining room."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	9	45.0%	9	39.1%	**18**	**41.9%**
Disagree	6	30.0%	**13**	**56.5%**	**19**	**44.2%**
Uncertain	5	25.0%	1	4.3%	**6**	**14.0%**

ITEM #CSL3C: (Wall/floor color contrast -- living room).

"There is distinct color contrast (light/dark) between walls and floors in the living room."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	7	36.9%	9	39.1%	**16**	**38.1%**
Disagree	4	21.1%	**12**	**52.1%**	**16**	**38.1%**
Uncertain	8	42.1%	2	8.7%	**10**	**23.8%**

ITEM #CSL4: (Unwanted noise -- problem on unit).

"Unwanted noise is often a problem on the unit."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	6	30.0%	12	43.5%	**18**	**41.9%**
Disagree	11	55.0%	10	43.5%	**21**	**48.8%**
Uncertain	3	15.0%	1	4.3%	**4**	**9.3%**

INDEPENDENCE AND AUTONOMY

Independence and Autonomy Counts and Percentages By Item:

Unit attributes with over 50% of overall respondents in **agreement** about meeting Independence and Autonomy issue defined in each item:

ITEM #IA4: (Private space -- staff/family consults).

"Private space is needed for staff (nursing, social work, chaplain, etc.) near the unit to consult with families."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	9	45.0%	18	78.3%	**27**	**62.8%**
Disagree	2	10.0%	5	21.7%	7	16.3%
Uncertain	9	45.0%	0	0.0%	9	20.9%

ITEM #IA6: (Toileting areas -- adequate privacy).

"Toileting areas on the unit offer adequate privacy for residents."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	15	75.0%	14	60.8%	**29**	**67.5%**
Disagree	4	20.0%	9	39.1%	13	30.2%
Uncertain	1	5.0%	0	0.0%	1	2.3%

ITEM #IA7: (Bathing areas -- adequate privacy).

"Bathing areas allow for adequate privacy."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	8	40.0%	14	60.9%	**22**	**51.2%**
Disagree	1	5.0%	9	39.1%	10	23.3%
Uncertain	11	55.0%	0	0.0%	11	25.6%

Unit attribute with over 50% of overall respondents in **disagreement** about meeting the Independence and Autonomy issue defined in the item:

ITEM #IA8: (Enough spaces -- family visits).

"There are enough spaces for family visits on the unit."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	11	55.0%	5	21.7%	16	27.3%
Disagree	6	30.0%	16	69.5%	**22**	**51.1%**
Uncertain	3	15.0%	2	8.7%	5	11.6%

Unit attributes with under 50% of overall respondents in **agreement** or **disagreement**, with a range of uncertainly from 16.3% to 46.5% about meeting the Independence and Autonomy criterion defined in each item:

ITEM #IA1: (Enough spaces--small group activities).

"There are enough spaces for small group activities."

Responses: Care giver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	8	40.0%	4	17.4%	**12**	**27.9%**
Disagree	6	30.0%	**14**	**60.8%**	**20**	**46.5%**
Uncertain	6	30.0%	5	21.7%	**11**	**25.6%**

ITEM #IA2: (Areas provided for exploration and discovery).

"The unit has areas that provide opportunities for exploration and discovery (working with puzzles, touching various fabric textures, etc.)."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	10	50.0%	9	39.1%	**19**	**44.2%**
Disagree	2	10.0%	**12**	**52.1%**	**14**	**32.6%**
Uncertain	8	40.0%	2	8.7%	**10**	**23.3%**

ITEM #IA3: (Spaces for relaxation and reflection).

"There are enough spaces for relaxation and reflection (places to listen to music, places to view interesting landscape features, bird feeders, etc.).

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	13	65.0%	8	34.8%	**21**	**48.8%**
Disagree	3	15.0%	**12**	**52.1%**	**15**	**34.9%**
Uncertain	4	20.0%	3	13.0%	**7**	**16.3%**

ITEM #IA5: (Spaces for time alone).

"There are enough spaces on the unit where residents can spend time alone."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	6	30.0%	6	26.1%	**12**	**28.0%**
Disagree	5	25.0%	**14**	**60.8%**	**19**	**44.2%**
Uncertain	9	45.0%	3	13.0%	**12**	**27.9%**

ITEM #IA9: (Outdoor spaces -- residents need minimal supervision).

"There are outdoor spaces where residents can spend time with minimal supervision."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	6	30.0%	8	34.8%	**14**	**32.6%**
Disagree	5	25.0%	**14**	**60.8%**	**19**	**44.2%**
Uncertain	9	45.0%	1	4.3%	**10**	**23.3%**

ITEM #IA10: (Outdoor spaces -- encourage social interaction).

"Outdoor spaces provide activity spaces that encourage social interaction."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	6	30.0%	3	13.0%	**9**	**20.9%**
Disagree	3	15.0%	11	47.8%	**14**	**32.6%**
Uncertain	11	55.0%	9	39.1%	**20**	**46.5%**

HOMELIKE QUALITIES

Homelike Qualities Counts and Percentages By Item:

Unit attributes with over 50% of overall respondents in **agreement** about meeting the Homelike Qualities issue defined in each item:

ITEM #HQ2C: (Furniture -- homelike in dining room).

"Furniture is homelike in appearance in the dining room."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	15	75.5%	8	34.8%	**23**	**53.5%**
Disagree	3	15.0%	**13**	**56.5%**	16	37.3%
Uncertain	2	10.0%	2	8.7%	4	9.3%

ITEM #HQ3B: (Wall surfaces -- homelike in dining room).

"Wall surfaces are homelike in appearance in the dining room."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	15	75.0%	15	65.2%	**30**	**69.8%**
Disagree	4	20.0%	8	34.8%	12	27.9%
Uncertain	1	5.0%	0	0.0%	1	2.3%

ITEM #HQ3D: (Wall surfaces -- homelike in residents' rooms).

"Wall surfaces are homelike in appearance in residents' rooms."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	16	80.0%	8	34.7%	**24**	**55.8%**
Disagree	3	15.0%	**14**	**60.8%**	17	39.5%
Uncertain	1	5.0%	1	4.3%	2	4.7%

ITEM #HQ4A: (Window coverings -- homelike in living room).

"Window coverings (blinds, drapes, etc.) are homelike in appearance in the living room."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	15	75.0%	10	43.5%	**25**	**58.1%**
Disagree	1	5.0%	11	47.8%	12	27.9%
Uncertain	4	20.0%	2	8.7%	6	14.0%

ITEM #HQ4B: (Window coverings -- homelike in residents' rooms).

"Window coverings (blinds, drapes, etc.) are homelike in appearance in residents' rooms."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	18	90.0%	16	69.5%	**34**	**79.1%**
Disagree	2	10.0%	5	21.7%	7	16.3%
Uncertain	0	0.0%	2	8.7%	2	4.7%

ITEM #HQ5: (Provision for display – personal momentos).

"There is adequate provision for each resident to display personal momentos in his/her room."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	17	85.0%	16	69.5%	**33**	**76.7%**
Disagree	2	10.0%	6	26.1%	8	18.6%
Uncertain	1	5.0%	1	4.3%	2	4.7%

ITEM #HQ6: (Entries personalized).

"Entries to residents' rooms are easily identified by wall hangings personalized to each resident."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	18	90.0%	8	34.8%	**26**	**60.5%**
Disagree	2	10.0%	**13**	**56.5%**	15	34.9%
Uncertain	0	0.0%	2	8.7%	2	4.7%

ITEM #HQ8: (Vary wall colors -- residents' rooms).

"The wall colors in residents' rooms should vary throughout the unit."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	14	73.7%	16	69.5%	**30**	**71.4%**
Disagree	0	0.0%	5	21.7%	5	11.9%
Uncertain	5	26.3%	2	8.7%	7	16.7%

Note: Item #HQ8 was not included in the composite score because it is structured as an assessment of preferences for future planning, not as an assessment of an existing attribute.

Unit attributes with over 50% of overall respondents in **disagreement** about meeting the Homelike Qualities issue defined in each item:

ITEM #HQ1: (Unit entry -- homelike).

"The entry to the unit is homelike in appearance."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	7	35.0%	0	0.0%	7	16.3%
Disagree	9	45.0%	20	86.9%	**29**	**67.4%**
Uncertain	4	20.0%	3	13.0%	7	16.3%

ITEM #HQ7: (Reminders of residents' pasts reflected in unit design).

"Reminders of residents' past occupations (farming, homemaking, teaching, etc.), are incorporated into unit design with wall hangings, fabrics, and other objects."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	7	35.0%	1	4.3%	8	18.6%
Disagree	5	25.0%	19	82.6%	**24**	**55.8%**
Uncertain	8	40.0%	3	13.0%	11	25.6%

Unit attributes with under 50% in **agreement** or **disagreement** from all respondents but more than 50% disagreement from staff respondents with a range of uncertainty from 9.3% to 34.9%, about meeting the Homelike Qualities issue defined in each item:

ITEM #HQ2A: (Furniture -- homelike in residents' rooms).

"Furniture is homelike in appearance in residents' rooms."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	12	60.0%	8	34.8%	**20**	**46.5%**
Disagree	6	30.0%	**13**	**56.5%**	**19**	**44.2%**
Uncertain	2	10.0%	2	8.7%	**4**	**9.3%**

ITEM #HQ2B: (Furniture -- homelike in the living room).

"Furniture is homelike in appearance in the living room."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	13	65.0%	7	30.4%	**20**	**46.5%**
Disagree	5	25.0%	**16**	**69.6%**	**21**	**48.8%**
Uncertain	2	10.0%	0	0.0%	**2**	**4.7%**

ITEM #HQ3A: (Wall surfaces -- homelike in living room).

"Wall surfaces are homelike in appearance in the living room."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	13	65.0%	6	26.1%	**19**	**44.2%**
Disagree	2	10.0%	**14**	**60.9%**	**16**	**37.2%**
Uncertain	5	25.0%	3	13.0%	**8**	**18.6%**

ITEM #HQ3C: (Wall surfaces -- homelike in corridor).

"Wall surfaces are homelike in appearance in the corridor."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	13	65.0%	7	30.4%	**20**	**46.5%**
Disagree	3	15.0%	**15**	**65.2%**	**18**	**41.9%**
Uncertain	4	20.0%	1	4.3%	**5**	**11.6%**

QUESTIONNAIRE ITEM #HQ9:

"Reminders of residents' ethnic backgrounds are incorporated into unit design with color(s), wall hangings, fabrics, or decorative objects."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	4	20.0%	4	17.3%	**8**	**18.7%**
Disagree	5	25.0%	**15**	**65.2%**	**20**	**46.5%**
Uncertain	11	55.0%	4	17.4%	**15**	**34.9%**

QUESTIONNAIRE ITEM #HQ10:

"There is adequate space available to residents for large group activities relating to cultural traditions, spiritual needs, or holiday celebrations."

Responses: Caregiver Groups

	Family n = 20		Staff n = 23		Overall N = 43	
	Number	Percent	Number	Percent	Number	Percent
Agree	10	50.0%	3	13.0%	**13**	**30.2%**
Disagree	2	10.0%	**16**	**69.6%**	**18**	**41.9%**
Uncertain	8	40.0%	4	17.4%	**12**	**27.9%**

APPENDIX G

QUESTIONNAIRE QUALITATIVE DATA BY CAREGIVER GROUP

QUESTIONNAIRE QUALITATIVE DATA

The following areas were identified by questionnaire respondents as the best attributes of the unit:

(1) Living room with adjoining patio.
(2) Large windows for viewing the outdoors.
(3) Garden area outside the unit.
(4) Kitchen off the dining room.
(5) Dining room walls decorated in good taste.
(6) Outdoor potential -- secluded area -- can add to shrubs and bird feeders.
(7) Private rooms.
(8) Noninstitutional look in eating area.
(9) Appearance: clean, bright, and uncluttered.

Comments of Family Caregivers:

"...Furniture should, as much as possible, be left in one place. People with dementia become confused when things are always changed around. Their rooms are for them...things shouldn't be moved unless family suggests or does it themselves."

"...unit is sterile and institutional....difficult to visit with a resident individually....need alternatives for privacy."

"I wish there was a way to keep people from wandering into individuals' rooms."

"There should be more chairs in the patient's room for visitors."

"....decor is terrible and actively institutional...I'm so glad it will be changed."

"Unwanted noise is caused only by other residents."

"...need more regular living room chairs in day room....my husband has missed the small seat several times."

"I would like to see a safe and secure outside area that could be used with a small amount of supervision."

Comments of Staff Caregivers:

"The unit manager's office is on another wing and shared with supplies."

"...Furniture should be a little heavier so that the residents can't move or push it into walk areas."

"...living room needs better furniture."

"The residents themselves complain about too much noise."

"I feel the glare between the ceiling, walls, and floor is just too much. I feel that floor in the corridor and residents' rooms is too slippery."

"I think there should be more room for residents to pace than just hallway."

"...circular design is needed to end "dead end" when pacing."

"High gloss on floors...especially hallway...looks like pools of water up and down hall..hard to see when there is an actual water spill."

"...more subdued hallway flooring needed."

"...dining room cluttered...no real path at meal times, no grab bars by shower itself, corridor lighting -- overstimulating with glare, living room too small for number of residents on unit, not enough spaces for relaxation and reflection, not enough visiting areas for families, not enough consult areas for staff and families, wall surfaces very institutional throughout, contrasting blind colors (in living room) not homelike, mismatched curtains and spreads (in residents' rooms), wall colors should vary."

"...congestion in dining room."

"I think the living room and dining room and fine except both could be larger."

"...need more things from home in residents' rooms."

"Landscape outside by dining room for safety of residents and to increase its use; staff noise and interaction too loud at times."

"...I feel that the garden outside is great, but we need walkways in it so that the residents can utilize it during warm weather."

Staff Caregiver Comments Continued:

"I think one of the double rooms should be made into living room so it would be more like home when families come to visit or have parties."

"There should be a place centrally located in the building where staff -- nursing, social work, chaplain, etc., can consult with families...bath/shower room should be redesigned, dining room should be bigger."

"Staff should wear street clothes so they are more accepted by residents, unit should always be simply furnished -- no throw rugs, plants get damaged or broken, no aquariums or magazines, intercom and PA system terrible."

The following is a list of words family and staff caregivers used to describe the image they thought the unit should convey to staff, family, and other visitors:

FAMILY CAREGIVERS

warm	safe	inviting
cozy	secure	clean
comfortable	emotional safety	bright
friendly	caring	cheery
homey	serenity	variety
homelike	happy	familiar

STAFF CAREGIVERS

homelike	safe	pleasant	bright
homey	sense of security	soothing	inviting
noninstitutional	peaceful	calming	good food
comfortable	harmony	relaxed	caring staff
nice place to live		welcome	privacy for family groups
warm		pleasant	spacious

APPROVED BY: for L. dobre

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