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USE OF A BATH CALENDAR
AS A CUE FOR BATHING
FOR PATIENTS
SUFFERING FROM ALZHEIMER'S DISEASE

BY

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Submitted in partial fulfillment of the
requirements for the Master of Nursing Degree
in the College of Nursing
Medical University of South Carolina

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ABSTRACT

This pilot study determined the ability of Alzheimer patients to recognize bath day using a bath calendar with a specific visual cue to denote bath day. A quasi-experimental design using a control and experimental group receiving a pre and post test was employed. Sixteen subjects scoring on the MSQ in the middle dementia area and living in an area nursing home participated in this study. Caregivers of subjects in the experimental group were responsible for reinforcing the cue to the subjects daily for four (4) weeks. Pre and post recognition and MSQ scores were tallied and differences between groups were tested at the .05 level of significance using a Kruskal Wallis 1-Way ANOVA test. Results of the study demonstrated that a direct relationship exists between the use of the bath calendar and recognition of bath day as evidenced by a chi-square of 12.1739, $p < .0005$. No relationship was found in MSQ scores. Results indicate that pictorial cues may be useful in structuring the functional activities of daily living in Alzheimer patients.

Dedicated to my Grandfather,
John Martin Tonkovich,
who taught me so much about life and living
until he became a victim of Alzheimer's Disease,
which not only destroyed his mind,
but also took his life.

Accepted by the faculty of the College of Nursing,
Medical University of South Carolina, in partial
fulfillment of the requirements for the Master of
Nursing Degree.

Barbara K. Hight R.N.C. Dr.Ph

Director of Research Project

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Lastly, I wish to thank those older friends who looked at the duck picture and knew what it meant.

Cathy Jean Bailey

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	v
LIST OF TABLES.....	viii
Chapter	
1. INTRODUCTION.....	1
Theoretical Framework.....	4
Purpose of the Study.....	5
Hypotheses.....	6
Definition of terms.....	7
2. REVIEW OF THE LITERATURE.....	8
Normal Cognitive Development.....	9
Piaget's Cognitive Theory.....	10
Reisberg Alzheimer's Disease.....	14
Relation of Piaget and Reisberg...	17
Testing of Cognitive Function.....	19
Treatment Approaches.....	21
3. METHODOLOGY	25
Research Design.....	25
Sample.....	27
Setting.....	29
Procedure.....	30
Data Analysis.....	34
Risk to the Subject.....	35

	Assumptions and Limitations.....	36
4.	PRESENTATION OF DATA AND ANALYSIS...	38
	Description of the Sample.....	39
	Procedure for Data Collection.....	40
	Discussion of Data Analysis.....	43
	Discussion of Results.....	47
5.	SUMMARY AND CONCLUSIONS.....	51
	Conclusions.....	53
	Recommendations.....	53
	Implications for Nursing.....	53
	REFERENCES.....	54
	APPENDICES.....	59
	APPENDIX A: Bath Calendar.....	61
	APPENDIX B: Recognition Chart.....	72
	APPENDIX C: Mental Status Questionnaire.....	74
	APPENDIX D: Reisberg; Stages of Alzheimer's Disease related to Normal Cognitive Development.....	76
	APPENDIX E: Piaget; Sensorimotor Period of Cognitive Development.....	78
	APPENDIX F: Piaget; Preoperational Period of Cognitive Development.....	80
	APPENDIX G: Reisberg; Sixth Stage of Alzheimer's Disease.....	82
	APPENDIX H: Instructions to Caregivers.....	84
	APPENDIX I: Consent Form.....	88

LIST OF TABLES

TABLE

1	DEMOGRAPHIC DATA.....	40
2	MSQ SCORES.....	41
3	CALENDAR RECOGNITION SCORES.....	43
4	CALENDAR RECOGNITION CHART SCORES.....	44
5	MSQ MEAN SCORES.....	45
6	KRUSKAL WALLIS 1-WAY ANOVA.....	47

Chapter I

INTRODUCTION

Alzheimer's disease is presently the fourth leading cause of death in the nation's population of individuals 65 years and older, and has become a major priority of the National Institute of Aging (Leroux,1981; Wagner,1987). Persons 75 years and older are the fastest growing segment of the nation's population. The incidence of Alzheimer's disease in individuals over 65 is 5% and for individuals over 80, the rate increases dramatically to 20% (Gwyther,1983). Currently, 65% of the nations individuals 65 years and older are believed to have Alzheimer's disease. By the year 2000, it is estimated that 12% or approximately 32 million people of the nation's population will be over the age of 65. If the current statistics hold true, by that time, nearly 4 million Americans will suffer from this disease (Williams,1985).

Alzheimer's disease is a progressive, dementing illness that prematurely attacks and destroys the human mind and ultimately requires long-term care. Unfortunately, little knowledge exists concerning the most effective way to care for Alzheimer patients,

particularly those in the end stage of the disease who are residents of nursing homes. Consequently, most of the care delivered in these facilities is nothing more than custodial, and the Alzheimer patient is often viewed by the staff as simply a demented old individual (Eisdorfer, 1984; Shoham & Neuschatz, 1985). A problematic area for the nursing profession in providing care to patients with Alzheimer's disease relates directly to the patients' diminished cognitive abilities. The type of care delivered to the aged population must consider the wasting cognitive abilities of the Alzheimer patient.

Reisberg (1983) defines Alzheimer's as an age-associated disease of gradual onset and course that attacks and destroys the cognitive abilities of affected individuals. Cognitive abilities of patients with Alzheimer's disease gradually decline from a level of independent cognitive functioning to a level of total cognitive dysfunction. Patients with Alzheimer's disease regress in their ability to maintain an independent life-style to total dependence on others for their care.

Nursing has initiated minimal research regarding the delivery of care to this increasingly dependent population, particularly the last stages of Alzheimer's disease when patient care becomes the nurses' domain.

Until a cure for Alzheimer's disease is found, nurses must provide care for these patients, and only through documented nursing research can the quality of care be improved. One area requiring improvement is that of communication between the patient and caregiver.

The patient's ability to understand and communicate appropriately with caregivers is affected by their loss of cognitive functions (Williams,1985). Because of this, making a simple request such as asking the patient to bathe at bath time, becomes a major task for the caregiver. Williams (1985) states "that problems associated with simple daily activities, such as bathing, are frustrating and overwhelming" (p.24). So often a patient will verbalize "But I just had a bath", when they, in fact, have not.

Conveyance of bath time by the caregiver and recognition by the patient of the need to bathe are areas of major concern to caregivers. "Sometimes, of course, it is just plain impossible to talk persons into taking a bath or shower, and many caregivers report hair-pulling frustrations in this area" (Carroll,1989,p.86). With decreased cognitive function, verbal communication must give way to nonverbal communication in an attempt to relate significant activities that must be performed to maintain an acceptable quality of life. Innovative

forms of non-verbal communication will ease the burden caused by loss of communication skills for both the Alzheimer's patient and the caregiver.

Theoretical Foundation

Piaget's (1966) theory of normal cognitive development was used as the theoretical framework for this study because of its relationship to Reisberg's (1983) clinical staging of Alzheimer patients. Piaget (1966) identified four periods of cognitive development in children (sensorimotor, preoperational, operational, concrete operational). For purposes specific to this study, only the first two periods (sensorimotor and preoperational) will be discussed in detail.

Language in the sensorimotor and preoperational period is undeveloped and the infant/child is forced to rely on a caregiver to meet basic needs necessary to sustain life. Because verbal communication is impossible, and the infant/child is unable to process meaning of words, other forms of communication are necessary for interaction between the caregiver and the infant/child (Piaget, 1966).

Reisberg (1983) reports that Alzheimer's diseased patients regress from normal cognitive function and ability to a state of total cognitive dysfunction. This disease cognitively debilitates affected individuals in their ability to safely communicate and

interact with the environment. Alzheimer's diseased patients lose their ability to appropriately communicate their needs to others, and eventually regress to utilizing communication techniques that were learned as children and infants.

To determine appropriate communication techniques with Alzheimer's diseased patients, it is essential to have an understanding of normal cognitive development. A comparison of these two staging theories provides a basis for the use of pictorial cues as non-verbal communication tools.

Purpose of the study

The purpose of this study is to determine if patients with Alzheimer's disease can recognize and respond to a non-verbal communication cue represented by a pictorial bath calendar.

Rationale

Identifying the Alzheimer patient's ability to adapt to another form of communication will help reduce "day to day management problems" (Gugel, 1988, p.44), increase the quality of life for the patient, and reduce the stress experienced by the caregiver.

"Nonverbal communication is often the only avenue of exchange that remains" (Carroll, 1989, p.117) between the patient and caregiver. One example of nonverbal communication is the use of environmental cues that use

symbols other than words. An example of a nonverbal cue is a daily pictorial bath calendar.

The investigator's personal clinical experience with Alzheimer patients using the bath calendar was highly successful and indicated a need for further study. Two patients with Alzheimer's disease utilized individual bath calendars for one week. At that time no guidelines had been established to evaluate the effectiveness of the calendar. Immediate caregivers of the patients verbalized positive reception of the calendar and its' use as a cue to remind patients of bath day. Other patients with dementia requested their own calendar to help remind them of bath day. This positive response to the bath calendar indicated a need for a potentially effective communication tool for Alzheimer victims and their caregivers.

Hypotheses

HO₁ Patients with Alzheimer's disease who use a bath calendar will recognize bath day as measured by a recognition chart more often than patients with Alzheimer's disease who do not use a bath calendar.

HO₂ Patients who use a bath calendar will have improved Mental Status Questionnaire (MSQ) scores as compared to the MSQ scores of those who do not use a bath calendar.

Definition of terms

- Bath Calendar:** A seven day animal picture flip calendar. (See Appendix A)
- Bath day:** Duck picture is the symbolic cue in the bath calendar to denote bath day.
- Recognize:** Acknowledge in some way the duck picture as the cue for bath day.
- Recognition chart:** A tool developed by this researcher to record answers from participants in the study. (See Appendix B)
- Alzheimer's Disease:** "A form of dementia, a global neurological impairment characterized by slowly progressive and irreversible deterioration of the cognitive functions--speech, abstract thought, emotion, memory--and hence of the ability to take care of oneself, to identify time and place, to relate socially to others, to think and speak and act in a clear and reasonable way"
(Carroll, 1989, p.5).
- Mental Status Questionnaire (MSQ):** A ten item questionnaire that assesses cognitive function in the elderly. (See Appendix C)
- 0-2 errors = none or minimal
3-8 errors = moderate
9-10 errors = severe
(Kane & Kane, 1981)

developmental stages in children. (See Appendix D) These stages may be compared to Piaget's (1966) theory of normal cognitive development in children and an analogy drawn. Knowing the cognitive level of the infant/child and understanding his/her communication techniques at various stages, provides an understanding of the Alzheimer patient in the middle dementia stage of the disease.

Normal Cognitive Development and Functioning

Cognition is a person's ability to perceive factors in his/her external environment and internally organize this acquired information into useful knowledge. Cognitive functioning is a person's ability to think and make decisions, which determines his/her abilities to function, and interact as a competent, rational person in his/her environment. Acquired knowledge allows a person to advance intellectually to become a rational, logical thinking human being. Necessary factors for developing cognition are an intact sensorimotor system, an appropriate external stimuli, a nurturing environment, an inherent curiosity and motivation (Bortner, 1979; Gruber & Voneche, 1977; Howe & Brainerd, 1988; Kail & Hagen, 1977; Kaplan & Kaplan, 1982).

Cognitive development begins in early infancy and progresses through adulthood. Theories of cognitive

developmental stages in children. (See Appendix D) These stages may be compared to Piaget's (1966) theory of normal cognitive development in children and an analogy drawn. Knowing the cognitive level of the infant/child and understanding his/her communication techniques at various stages, provides an understanding of the Alzheimer patient in the middle dementia stage of the disease.

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Cognitive development begins in early infancy and progresses through adulthood. Theories of cognitive

development in children need to be understood to comprehend normal cognitive functioning in adults (Ault,1977).

Piaget's cognitive theory.

Studies on cognitive development and functioning date back to the early 1900's when Jean Piaget first reported his findings on cognitive development of children (Brainerd,1978). Piaget (1966) employs deductive logic to state that if all anatomical organs of the body are organized, therefore, so must the intellectual and mental functions be organized. In other words, as the physical body becomes increasingly organized with age and development, so do the intellectual and mental functions. Piaget (1966) uses several descriptive terms to identify the various processes that lead to cognitive development: adaptation, assimilation, accommodation, and organization.

Sensorimotor period of Piaget's theory.

Piaget (1966) identified the sensorimotor period which begins at birth and lasts to approximately age two as the foundation of cognitive intelligence. (See Appendix E) He believes that infants adapt to new things in their environment by modifying old, learned behaviors to discover new behaviors (Piaget,1966). Bower (1989) supports Piaget's findings and believes

that infants utilize all sensorimotor faculties to logically discover new behaviors to develop cognition. For an infant to learn a new process, there must be a preceding behavior that allows the infant to associate and connect ideas and internalize them to form an advanced behavior.

One way an infant can internalize conceptual thought is through visual imagery. "The newborn can perceive color and shape when there is good contrast to the surrounding visual pattern. Infants develop visual recognition memory around sixteen weeks of age and can determine size, shape, and color to determine the identity of objects" (Ault, 1977, p.23). Studies (Bornstein & Krasnegor, 1989) on visual recognition memory in infants have been conducted and results reveal that infants do possess the ability to distinguish cause and effect and recognize familiar objects. Cognitive development is related to the visual capabilities of children and their ability to store information in memory. Kail & Hagen (1977) state that infants "are quite able to recognize a picture that has been shown to them previously...adults as well, memory for pictures...is greater than retention of verbal stimuli" (p.67). Infants "have fairly acute pattern vision, show greater visual interest in patterns than in plain colors and can differentiate

among patterns of similar complexity" (Stone, Smith, & Murphy, 1973, p.314).

Piaget (1966) refers to memory when he discusses object recognition and "memory of evocation" (p.685). Object recognition is the infant's ability to store a sensory stimulus and evocation is the ability to call forth the mental image of the object when the stimulus is no longer present. An infant's degree of recognition may be modified by attention, and the degree or number of exposures to the stimuli (Gruber & Vonecke, 1977). Stone, Smith, & Murphy (1973) also agree that infants start with object recognition and begin to store information in long-term memory for retrieval at a later date. Remembering is the process of object recognition, the ability to recall what the object represents, and the cueing or association of remembered things to stimulate the recall of another related item (Kail & Hagen, 1977).

During the sensorimotor period, children rely on a caregiver to meet their needs. Their communication techniques consist of vocal babbling, one word vocalizations, and crying. Having a caregiver who is familiar with the child's method of communication will ensure that the child's needs are properly met. Teaching the child to communicate with nonverbal gestures or pictures assists the child in communicating

his/her needs to the caregiver. Repetition of words or pictures by the caregiver is beneficial for the cognitive development of communication (Piaget,1966).

The attention span of children in the above mentioned stage is not matured to a functional level. Therefore, when communicating with them, repeating commands is a positive reinforcement technique that helps them increase and refine their communication skills.

Preoperational period of Piaget's theory.

The next stage of cognitive development is the preoperational period. (See Appendix F) This stage is divided into two substages of preconceptual thought (ages 2 to 4 years), and the perceptual or intuitive thought period (ages 4 to 7 years) (Singer & Reverson,1978). During this stage children develop symbolic functioning which "is the ability to make one thing represent a different thing which is not present" (Ault,1983,p.42). This allows the child to utilize mental imagery to advance cognitively. Mental imagery occurs when thoughts are internalized and organized in the mind (Brainerd,1978).

Children, in the preoperational stage, develop the ability to categorize properties according to classes and to distinguish the basic properties of classes (Gruber & Vonecke,1977). "Classes are, in essence, the

categories into which we divide objects"

(Ault,1977,p.50). Children in the preoperational stage have abilities to classify objects according to size, color, and shape; however, preoperational children can only focus on one class at a time and are unable to differentiate multiple classes simultaneously (Gruber & Vonecke,1977).

The communication techniques utilized by preoperational children are more refined than in the sensorimotor period. Verbal babbling and one word vocalizations give way to complete sentences. Children in this stage still rely on a caregiver to help them meet their needs, but communicating those needs becomes easier. The caregiver teaches the child to refine communication techniques so that he/she may interact safely in the environment.

Reisberg, Alzheimer's disease

Reisberg (1983) states the primary disability in Alzheimer's disease is related to the loss of cognitive functioning and the resulting behavioral disabilities that are created. Individuals with Alzheimer's disease exhibit overt antisocial behavior because they forget how to act in an appropriate manner in normal situations.

Individuals in the fifth stage (early dementia) complain of memory disturbances and are unable to

retrieve information stored in their memory banks. As an individual moves into the sixth stage (middle dementia) of the disease, his/her cognitive abilities decline even further. (See Appendix G) Memory retrieval becomes more difficult and orientation to familiar surroundings is diminished. Attention to personal hygiene and activities of daily living are not thought about and the individual begins to rely on a caregiver for maintenance of life (Reisberg,1983).

Reisberg (1983) describes middle dementia as a time when a patient exhibits overt agitation and views his/her environment as dangerous. Patient's may experience some psychiatric disturbances and begin talking to themselves or look into mirrors and talk to the reflection they see. Visual hallucinations are not uncommon, and patients may consciously or unconsciously mourn the loss of their intellect which could explain their anger and agitated state. Patients in the middle dementia phase begin to show signs of decreased ambulation and require assistance with walking and with utilization of eating utensils. Speech and language are also affected as the cognitive abilities diminish. Patients can no longer speak in full sentences and verbal responses may be limited to only one word.

Reisberg (1983) describes the communication abilities of Alzheimer's diseased patients in the

middle dementia phase as being noticeably affected by the disease. These individuals require assistance from a caregiver to meet their basic needs and have difficulty communicating those needs. Patients are unable to speak in full sentences and often babble or use one word to communicate a message. Verbal communication must give way to forms of nonverbal communication in an attempt to meet the needs of the Alzheimer's diseased patient. The seventh stage (late dementia) of the disease is one of total cognitive dysfunction, and individuals are totally dependent on a caregiver to fulfill the necessary requirements of activities of daily living and survival (Reisberg,1983). The progressive symptoms of Alzheimer's disease appear to be in reverse correlation to the sequence of normal cognitive development. As Alzheimer's disease progresses, individuals eventually return to an infant like state and "the brain appears to no longer be able to tell the body what to do (Reisberg,1983,p.175).

Williams (1985) agrees with Reisberg and describes Alzheimer's as a slow, progressive, ongoing disease that affects selected individuals sixty years of age and older and can last up to ten years. This disease is a form of dementia that manifests itself in memory disturbances and memory loss, language disturbances,

perception problems, and decreased ability to learn necessary skills, to solve problems, to think abstractly, and to make judgments. Personality disturbances can also occur in some individuals. Cox (1985) states "this disease insidiously and relentlessly threatens not only a sense of self but a sense of what it means to be human" (p.152).

As Alzheimer's disease progresses, patients lose their ability to follow verbal instructions. They cannot comprehend the spoken word and often become aphasic. When this happens, caregivers must resort to other forms of communication such as pictures to relay a message (Ninos & Makohan,1985). Once the cognitive ability of comprehension is diminished, the patient may be directed to a simpler form of communication, such as a bath calendar to denote bath day.

Relation of Piaget and Reisberg

Reviewing Piaget's (1966) stages of human cognitive development, and Reisberg's (1983) stages of Alzheimer's disease, a direct correlation can be made between the progression of cognitive development and the declining cognitive abilities of Alzheimer's diseased patients. (See Appendix D)

Piaget, (1966) described cognitive intelligence as beginning in a sensorimotor period in the newborn and expanding through several stages to the concrete

operational stage. In the sensorimotor period, although the infant is receiving numerous stimuli from his/her external environment and is constantly recycling and incorporating these experiences into his/her cognitive internal world, the ability to express him/herself verbally has not yet been achieved. Therefore, the child is forced to use nonverbal methods of communication for expression of needs and emotions. These methods of nonverbal communication may be incoherent vocalizations and many types of body language, such as gesturing.

Reisberg (1983) believes that patients with Alzheimer's disease regress from independent cognitive functions and abilities to total cognitive dysfunction. He describes several of the characteristic behaviors of Alzheimer's diseased patients in an increasing order of deterioration and correlates each behavior with the approximate age and developmental level that it is acquired in the growing normal child. (Appendix D)

Reisberg (1986) has developmentally classified the middle dementia patient as being at the same level as a normal seven year old, and Piaget's (1966) sensorimotor and preoperational periods start at birth and last to approximately age seven (See Appendix D). During this time the infant/child can perceive color and shape, and shows greater interest in patterns than in plain

colors. The child can utilize mental imagery and categorize classes according to size, color, and shape. Therefore, Alzheimer patients, in the middle dementia stage, can also be said to possess these same abilities. Knowing this relationship between the two theories and recognizing the need for assistance in caring for Alzheimer patients in the middle dementia stage, a bath calendar of common animals with colored pictures was developed to assist caregivers of Alzheimer patients with bathing. Because "a patient's most vivid memory may go back to age four or five" (Gwyther, 1983, p.75), common animals were chosen for the bath calendar. Choosing animals learned as children enhances the patient's ability to remember them. It is important to know the cognitive level of functioning of the individual, and assign tasks according to that level of function and not according to chronological age.

Testing of Cognitive Function

Testing of cognitive function in aged individuals is done whenever there is a question of cognitive impairment. The most commonly used tool to test cognitive function is the Mental Status Questionnaire (MSQ) (Kahn, Goldfarb, Pollack, & Peck, 1960). The MSQ was developed to determine the mental status of the aged individual. The questionnaire consists of ten

questions, is scored according to numbers of errors, and shows severity of chronic brain syndrome.

The MSQ, developed by Kahn, Goldfarb, Pollack, & Peck (1960), was produced to systematize the measurement of mental functioning in aged individuals. The questionnaire consists of ten questions that pertain to orientation of time and place, recent and remote memory, and general information. The MSQ provides a measure of cognitive ability based on number of errors. Cognitive ability is scored on a scale from 0 errors (normal) to 10 errors (severe) (Mueller & Geoffrey, 1987). Kane & Kane (1981) report the alpha reliability of the MSQ to be .84.

Lieberman & Tobin (1983) used the MSQ in a study because it measures "such simple functions as orientation in time and place" (p.167). They state the MSQ is "designed to indicate major functional decrements in orientation to reality" (p.168). The reliability of the MSQ in this study was reported as .91.

Mueller & Goeffrey (1987) state the MSQ "is a popular screening device for use with aged individuals with suspected dementia and those with dementia" (p.278). The MSQ is a simple test to administer and does not require a lot of time. Although the MSQ was designed not to be used alone, it is a good test of

orientation to time and place (Mueller & Geoffrey, 1987).

Treatment Approaches

Nonpharmacologic treatment of cognitively impaired individuals involves the use of reality orientation, and "memory tricks" (Yesavage & Sheikh, 1988, p.44)

Reality orientation "is specifically designed to prevent, halt or reverse memory loss, episodes of confusion and time/place/person disorientation" (Clarke, 1987, p.27). There are many approaches to reality orientation, but no matter what the approach, the main premise of reality orientation is to help the cognitively impaired individual remain aware of and interact with his/her environment, maintain a sense of identity, and utilize his/her remaining cognitive abilities to the fullest extent (Bertram, 1989; Clarke, 1987; Geiger, 1988;).

"Memory tricks are often called mnemonics...it usually means a memory tool based on associated visual images" (Yesavage & Sheikh, 1988, p.44). Using a visual image, or cue repeatedly will increase recognition (memory) of the cue. Colored pictures can be used and modified to accommodate the individual being trained (Yesavage & Sheikh, 1988).

Cue focusing can be regarded as a memory tool. A literature review reveals many articles regarding cue-

focusing and the role it plays in communication with patients with Alzheimer's disease (Bertram,1989; Roberts & Agase,1988; Tariot, Sunderland, Murphy, Cohen, Weingartner, & Makohon,1985; Yesavage & Sheikh,1988). Visual cues are used when the cognitively impaired patient can no longer distinguish words or letters. "With progressive dementing illnesses the person will eventually be unable to read or will not be able to make sense out of what he reads. He may be able to read the words but unable to act on them" (Mace & Rabins,1981,p.25). Tariot, Sunderland, Murphy, Cohen, Weingartner, and Makohon (1985) suggest "substituting pictures for words" (p.145) as an innovative technique to communicate with patients with Alzheimer's disease. For this reason, a bath calendar consisting of colored pictures of common animals was developed to relate bath day to the patient with Alzheimer's disease. The calendar has no numbers and no words; it contains pictures of animals that are sequenced to the individual's bath schedule in a one week format.

The seven day bath calendar is an animal picture flip calendar that consists of nine pictures which can be sequenced to accommodate the patient who is on a one day, two day, or three day bath schedule. (See Appendix A) The pictures are familiar animals that people learn

as children, specifically: a dog, a cat, a bird, a rabbit, a horse, a cow, and three ducks. Each duck is sitting in a pond during a rain shower and is used as the cue to symbolize bath or shower. If a patient is on a three day bath schedule, the animals are sequenced so a duck will appear on each bath day. The other animal pictures are used as fillers for the seven day calendar to help incorporate the calendar into the patient's daily routine and reinforce recognition of the cue.

Common knowledge among caregivers is that patients with Alzheimer's disease eventually become afraid of the water; therefore, it is important to convey that bathing is a safe and natural activity. A duck was chosen as the cue for bath day because water is a duck's natural environment. Each picture shows the duck as being safe and unharmed from the water.

Colored pictures of common animals, with emphasis on the duck picture as the cue for bath day, were chosen as the intervention to enhance communication with the patient with Alzheimer's disease because studies have been done that validate that the infant/child can distinguish color, categorize classes, recognize familiar objects, and utilize mental imagery to make one thing represent another (Ault,1977; Ault,1983; Bornstein & Krasnegor,1989; Gruber &

Vonecke,1977; Kail & Hagen,1977; Stone, Smith, & Murphy,1973). Comparing the level of cognitive function of the middle dementia Alzheimer's diseased patient (Reisberg,1983) to that of the infant/child (Piaget,1966), use of the bath calendar as a means to communicate with the Alzheimer's diseased patient in the middle dementia stage would seem to be an appropriate intervention.

Utilization of this bath calendar with patient's with Alzheimer's disease may be viewed as infantilism by some. However, this researcher believes that some investigators, when developing interventions, address the Alzheimer's diseased patient's chronological age and overlook or fail to take into consideration the patient's developmental level of cognitive ability.

Several authors refer to methods that encourage the use of visual and pictorial cues when delivering care to patients with Alzheimer's disease once verbal communication and cognitive comprehension have been diminished (Betram,1989; Roberts & Agase,1988; Tariot, Sunderland, Murphy, Cohen, Weingartner, & Makohon,1985; Yesavage & Sheikh,1988;). Yet, there are no known studies that validate the use of visual cues in relation to recognition when assisting Alzheimer's diseased patients with activities of daily living.

Chapter III

METHODOLOGY

The methodology contains a description of the research design, data analysis, and selection criteria for participants in the study. The procedure describes risk, subject selection, use of the bath calendar, and data collection by the caregivers.

Research Design

This pilot study examined the validity and reliability of a bath calendar designed as a pictorial cue for patients in the middle dementia stage of Alzheimer's disease. A quasi-experimental design with an experimental group (A) and a control group (B) was used for this study. Both groups were pre-tested and post-tested with the experimental group receiving the intervention of a pictorial cue delivered by a bath calendar. A convenience sample of 16 subjects was randomly assigned with 8 participants to group A and 8 participants to group B. This design is presented as follows:

Group A	R ₁	O ₁	X	O ₂	EXPERIMENTAL
Group B	R ₂	O ₁		O ₂	CONTROL

R_1 and R_2 indicate randomization of individuals in the two groups. X represents the intervention (bath calendar) in the experimental group, O_1 indicates the pre-test, and O_2 indicates the post-test.

Pre-tests and post-tests were given to the experimental and control groups during the same one week period. The dependent variable; recognition of bath day, was measured by the recognition chart before and after reinforcement with the bath calendar. The independent variable, daily use of the bath calendar, was reinforced by repeated exposure to the experimental group. Differences between the two groups post test scores were assumed to be caused by manipulation of the independent variable; the bath calendar.

Recognition chart scores were scored by hand and entered into the computer. Differences between the two groups were tested statistically using a Kruskal-Wallis 1-Way Analysis of Variance (ANOVA) test. This test was employed because it is a strong non-parametric test that decides genuine population differences as compared to chance variations that might occur from a random sample of the same population. Kruskal-Wallis 1-Way ANOVA tests the null hypothesis at the ordinal level of rank order data (Siegel, 1956). The hypotheses were tested at the .05 level of significance.

Variables

Independent Variable Pictorial cue represented by the animal bath calendar

Dependent Variable Patient's ability to recognize pictorial cue of the duck picture on the bath calendar to denote bath day

Operational definition of dependent variable

The recognition chart is a check-list used by the caregivers to record the patient's responses to the bath calendar

Sample

A convenience sample of 16 elderly individuals was chosen from the population of one nursing home in a small south-eastern town who met the following criteria:

1. Medical diagnosis of dementia of the Alzheimer's type, or organic brain syndrome.
2. Ability to see, hear, and communicate in some manner.
3. Score in the middle dementia area (3-8 errors) on the MSQ.

The MSQ was chosen as the screening instrument to select participants for this study because it is a

well-known assessment tool used to determine cognitive abilities in the aged individual (Kahn, Goldfarb, Pollack, & Peck, 1960). Wolk & Goldfarb (1967) completed a study in a Psychiatric hospital on 50 randomly selected patients over the age of 65 years. The MSQ was used as a guideline to ensure that all the subjects selected had equal cognitive impairment. Use of the MSQ provided the researcher a valid and reliable way to ensure homogeneity in the cognitive abilities of the sample.

Before administration of the MSQ, each subject was shown a copy of the bath calendar and asked to name each animal that appeared as the calendar was flipped. All subjects were able to identify and name the animals with the exception of two duck pictures. The duck pictures differed in the following way: one duck was floating on a pond facing left, one duck was floating on a pond facing right, and the final duck was flying above the pond. Although all the ducks were the same size, the patients were unable to identify the flying duck as a duck and had difficulty distinguishing the duck facing right. Therefore, all calendars were changed to include three identical pictures of the duck facing left.

The recognition chart was developed by this investigator to record responses from subjects in the

study. Therefore, validity and reliability of the recognition chart has not been established.

Setting

A convalescent nursing home, located in suburban South Carolina, was the facility in which this study took place. The nursing home opened in 1981 and is licensed as a long-term care facility under medicare/medicaid guidelines. The facility has 132 beds, 88 of which are skilled nursing care beds. Payment for patient care is provided by medicare/medicaid, veteran's administration, and private pay.

The nursing home has three wings (A,B,C) with room for 44 patients on each wing. "A" wing consists of private rooms, with private pay patients, and "B" and "C" wing consist of semi-private rooms. The facility has a Director of Nurses, three activity directors and two social workers. Nursing staff and caregivers for the three shifts are as follows: Dayshift, 2 LPN's/44 patients, and 5 NA's/44 patients; Afternoon shift, 1 LPN/44 patients, and 3 NA's/44 patients; Nightshift, 1 LPN/44 patients, and 2 NA's/44 patients. Patients on "A" wing are allowed to employ their own "sitters" and currently 6 patients have "sitters". Each "sitter" works with the staff in planning the patient's care.

Procedure

Subject Selection

To insure an adequate sample for the study, this nursing home was selected because it provides care for 42 patients with a current diagnosis of dementia of the Alzheimer's type, or organic brain syndrome.

A meeting was arranged with the Administrator/Director of Nurses (DON) and the investigator to discuss and outline the total study, secure permission and cooperation, and to request utilization of the facility and patients. After permission was granted, the Administrator/DON provided a list of all patients with a current diagnosis of Alzheimer's disease. A time convenient for the investigator and the facility was arranged for interviewing the individuals on the list.

All individuals were tested with the MSQ (Kahn, et al., 1960) and those who scored in the 3-8 category were selected for further consideration as participants. The ability to see, hear, and respond by some overt communication was a necessity for inclusion in the study. Of the 42 patients, 17 fulfilled these criteria.

In order to maintain confidentiality and assure randomization, each patient was assigned a number. These numbers were placed in a hat and drawn out one at

a time. The first number drawn was placed in a pile on the left and the second number in a pile on the right, until each pile had eight members which comprised the two groups. A flip of the coin determined the groups; experimental or control. Coding of calendars, pre tests, and post tests were then numbered according to the participants. For example; participant #1 had calendar #1, pre test #1, and post test #1. The calendars were then sequenced to the individual's bath schedule to ensure appearance of the bath cue on the appropriate day.

Caregiver Training

A list of caregivers providing care for the selected participants in the study was obtained from the DON. Meetings were arranged with these caregivers to explain the study, their role in the study, and to request their assistance and cooperation. Specific instructions on reinforcement techniques of the calendar were discussed with the caregivers. (See Appendix H)

Caregivers focused the patient's attention on the calendar each day and explained how the appearance of the duck related to their personal bath schedule. The caregiver pointed to the calendar daily and discussed each animal. Each time the duck appeared the caregiver reinforced the cue to encourage the patient's

recognition of bath day. Gugel (1988) states that "Over time and with sufficient repetition, the individual will often become habit-trained to the cue" (p.44).

Proper maintenance of the recognition charts was explained to each caregiver providing care to participants in the study. The caregivers were instructed to circle yes or no appropriately depending on the patient's recognition of the animal and the duck as the bath cue to denote bath day. (See Appendix B)

Of the caregivers who participated in the study 98% were black certified nursing assistants with at least a high school education and an average of two years employment. To help control the variable of reinforcement techniques utilized by the caregivers, a weekly prize program was instituted. An explanation of how to become involved in the program was given to all caregivers. Caregivers were asked to record (on a piece of paper provided next to each calendar) the day and number of times they reminded the patient about the bath cue to mean bath day. These sheets were collected each week and replaced with new ones. The caregiver who reported the most reminders on the paper was awarded a prize at the end of each week. This encouraged more caregivers to become involved in the study.

The study was completed within six weeks. The first week every participant in each group was shown the bath calendar, and pre test data were collected at that time. The caregiver discussed with the participant the animal that appeared each day. Using the recognition chart, caregivers asked the participant to name the animal that appeared each day and specifically asked when the duck appeared to state what it meant to them. The caregivers then charted the response accordingly on the recognition chart. After one week, the bath calendars were taken away from the control group, and all recognition charts from both groups were collected at that time. The experimental group continued to receive the intervention of the bath calendar.

Separate recognition charts for each participant were used to collect pre test and post test data. Responses from the recognition charts were categorized and assigned a number value as follows:

Did not recognize animal-----0
Did recognize animal-----1
Did recognize duck cue to mean bath day--2

Intervention Procedure

During the next four weeks the experimental group continued to observe a bath calendar with caregivers reinforcing the duck as the bath cue. Caregivers focused the participants' attention on the bath

calendar each day and asked them to name the animal that appeared. Reinforcement of the duck picture to mean bath day was given each day even if the duck picture was not showing. The control group did not observe a bath calendar or receive reinforcement during these four weeks.

During the sixth week of the study all participants in both groups were post-tested on the recognition of the bath cue to denote bath day and were retested on the MSQ. The recognition chart was used to compile answers and/or responses of recognition from the participants. Instructions for the post test were identical to the pre test. Using the recognition chart, caregivers asked the participants to name the animal that appeared each day and specifically asked when the duck appeared to state what it meant to them. The caregivers then charted the response accordingly on the recognition chart.

Data Analysis

Nominal data were collected, and the sample size was small, therefore, nonparametric statistical analysis was used. A Kruskal-Wallis 1-Way ANOVA was used to test the following statistical hypotheses:

- 1) Patients with Alzheimer's disease who use a bath calendar will recognize bath day as measured by a recognition chart more often than patients with

Alzheimer's disease who do not use a bath calendar.

2) Patients with Alzheimer's disease who use a bath calendar will have improved MSQ scores as compared to the control group who do not use a bath calendar.

The number of people recognizing the cue in the experimental group was compared to the number of people recognizing the cue in the control group. Hypotheses were tested at the .05 level of significance.

Risks to Subjects

Participants in the study were solicited on a voluntary basis with consideration of their impaired cognitive abilities. One to one interviews explaining the purpose of the study and requesting the individuals participation were conducted between each participant, caregiver, and this investigator. Verbal consent was received from each participant, or guardian, at that time. The social worker at the facility was also apprised of the purpose of the study. As guardian over such affairs for some of the participants, signed consent forms were obtained for each participant from the social worker. (See Appendix I)

Confidentiality of the participants was maintained, so only the researcher had knowledge of their identity. The participants were assigned numbers and all references and documentation reflected the number specific to each participant. Only the

aggregate was reported. There were no risks involved in this study, only benefits to the subjects. Expedited review was obtained from the College of Nursing Research Committee at the Medical University of South Carolina.

Assumptions

- 1) That Alzheimer patients may not know when it is bath day.
- 2) That all subjects in the study are familiar with the animals in the bath calendar.
- 3) Reinforcement techniques used by the caregivers will be as consistent as possible with each participant. (See Appendix H)

Limitations

- 1) The ability of patients with Alzheimer's disease to communicate to the caregiver the recognition of the bath cue to mean bath day.
- 2) The six weeks to run the study may not be long enough to show any statistical difference between the two groups.
- 3) The sample size is too small to generalize results to the aging population as a whole.
- 4) The cognitive function of individuals may be influenced by their physical condition and surrounding environment (Matteson & McConnell, 1988; Nagley, 1986; Roe, 1987; Seymour, Henschke, Cape, & Campbell, 1980).

5) Bath time for all individuals may not be uniform, schedules may vary from morning to evening.

6) The reinforcement techniques of the bath calendar by the caregivers may vary, some caregivers may be more skillful than others.

Chapter IV

PRESENTATION OF DATA AND ANALYSIS

Chapter four consists of three parts; 1) description of the sample; 2) description of the data and analysis; and 3) a discussion of the results of this study.

This study focused on the cognitive age of function of the Alzheimer's diseased individual and not on the individual's chronological age. Consequently, Piaget's (1966) theory of normal cognitive development and function and Reisberg's (1983) staging theory of Alzheimer's disease were used as the theoretical framework for this study. Reisberg (1983) states that the cognitive abilities of Alzheimer patients may be equal to that of a four or five year old, and Piaget (1966) describes those cognitive abilities in his theory of cognitive development. Correlating these two theories allowed for a suitable intervention to be developed that was appropriate for the cognitive age measured in this sample. Therefore, an animal bath calendar, consisting of pictures of common animals with a duck picture as the cue for bath day, was developed to communicate an activity of daily living to the

Alzheimer's diseased individual.

A quasi-experimental design using a control and experimental group receiving a pre and post test was employed. Subjects were patients over the age of 65 years with Alzheimer's disease who resided in a nursing home and scored between three and eight on the MSQ. Other criteria for subject selection included the individuals ability to see, hear, and communicate in some way. Sixteen subjects were randomly placed in the experimental and control group respectively.

Description of the Sample

Fifteen subjects, ranging in age from 75 to 90 years, provided the data for this study. All subjects lived in the same nursing home, twelve subjects occupied beds in semi-private rooms and three subjects occupied beds in private rooms. All subjects possessed the ability to see, hear, and communicate verbally. Data concerning the age, sex, race of subjects, and length of stay in the nursing home are presented in Table 1 (See next page). The average length of stay in the nursing home for subjects in the experimental group was 13 months, and for the control group, 18 months. Sixty percent of the group was white and 40% was black. Only one subject, in the control group, was dropped from the study because the individual was transferred out of the facility before completion of the study.

TABLE 1
DEMOGRAPHIC DATA

Subjects	Sex	Race	Age	Length of Stay
01E	F	W	77	14 months
03E	M	B	88	07 months
06E	M	B	76	10 months
07E	F	W	84	18 months
11E	F	W	87	13 months
12E	F	B	81	17 months
15E	F	B	76	02 months
16E	M	W	80	20 months
Subjects	Sex	Race	Age	Length of Stay
02C	F	W	85	01 month
04C	F	W	85	20 months
05C	F	W	87	10 months
09C	F	B	87	35 months
10C	F	W	75	23 months
13C	F	B	85	36 months
14C	M	B	90	04 months

E = Experimental C = Control

Subjects in the study were on a three (3) day bath schedule, assigned by day and shift by the facility. Each group had a similar number of subjects on the same bath schedule.

Procedure for Data Collection

The MSQ was used as a screening instrument for subject selection because it is a well known assessment tool used to determine cognitive abilities in aged individuals. Utilization of the MSQ provided a valid and reliable way to ensure that the cognitive abilities of the sample were homogenous. All subjects were given the MSQ pre and post study. Each of the 10 questions

comprising the MSQ were scored by hand, using the scoring method recommended by Kane & Kane (1981):

- 0 - 2 errors = none or minimal
- 3 - 8 errors = moderate
- 9 -10 errors = severe

Calculated pre and post test MSQ scores are shown in Table 2. The gain scores for both the experimental group and control group either remained the same or decreased, with only one subject in the control group having an increase of one.

TABLE 2

MSQ Scores

Experimental Group			
Subjects	Pre test	Post test	Gain
01	6	5	-1
03	6	3	-3
06	8	8	0
07	5	5	0
11	8	8	0
12	5	4	-1
15	3	1	-2
16	6	4	-2
Control Group			
02	7	7	0
04	8	8	0
05	5	6	+1
09	5	5	0
10	8	8	0
13	6	4	-2
14	3	3	0

All subjects in the study had an animal bath calendar with three duck pictures, one each on the appropriate day to denote bath day. Caregivers turned

each calendar daily and asked the subject to state the animal that appeared. When a duck picture appeared the caregiver asked the subject to state what it meant to them. All responses from the subjects were charted in the appropriate space on the recognition chart by the caregiver. Caregivers circled one of three responses on the recognition chart and wrote out what the subject stated in reference to the animal that appeared. (See Appendix B) Separate recognition charts were used to collect pre and post study data and were scored in the following manner:

Did not recognize animal	0
Did recognize animal	1
Did recognize duck cue to mean bath day	2

This method of scoring allowed for a range of 0-6, two points each on the three days the duck picture appeared.

These data were run using the statistical package for the social sciences (SPSS) at the Medical University of South Carolina. Pre and post test recognition scores and gain scores were calculated for each subject in both the experimental and control group. These scores are typified in Table 3 (See next page).

TABLE 3

Calendar Recognition Scores

Experimental Group				
Subjects	Pre test	Post test	Gain	
01	3	6	3	
03	3	6	3	
06	3	6	3	
07	3	6	3	
11	3	5	2	
12	3	6	3	
15	3	6	3	
16	3	6	3	
Control Group				
02	3	3	0	
04	3	3	0	
05	3	2	-1	
09	3	3	0	
10	3	2	-1	
13	3	3	0	
14	3	3	0	

The gain scores in Table 3 show that all subjects in the experimental group had a significant increase in their recognition scores after receiving the intervention of the bath calendar. Conversely, two members of the control group experienced an actual decrease in their recognition scores and five subjects experienced no change at all.

Discussion of Data Analysis

Using the Statistical Package for the Social Sciences (SPSS) at the Medical University of South Carolina, recognition and MSQ mean scores were calculated for both groups. Gain mean scores were

determined and compared.

Pre and post test recognition mean scores are presented in table 4.

Table 4

Calendar Recognition Chart Scores				
Subjects - N	Pre test Mean	Post test Mean	Gain Mean	S.D.
Group A (N=8) Experimental	3	5.88	2.875	.3536
Group B (N=7) Control	3	2.71	-.2857	.4880

Data analysis suggests that the experimental group experienced a mean gain of 2.875 in recognition scores while the control group realized a decrease of -.2857 in their mean gain score. This finding is significant because it statistically supports that the intervention of the bath calendar does affect the subjects ability to recognize a pictorial cue that relates to an activity of daily living, specifically, bath day.

Though the MSQ was originally used as a screening tool, it was also used in a pre and post test. No significant relationship between pre and post MSQ mean scores was found in either group as noted in Table 5 (See next page).

TABLE 5

MSQ SCORES				
Subjects - N	Pre test Mean	Post test Mean	Gain Mean	S.D.
Group A (N=8) Experimental	5.375	4.75	-.6250	1.5059
Group B (N=7) Control	6	5.85	-.1429	.8997

Calculated MSQ mean gain scores show a $-.6250$ decrease in the experimental group and a $-.1429$ decrease in the control group. This finding concludes that the intervention of the bath calendar does not positively affect individual MSQ scores.

A Kruskal-Wallis 1-Way ANOVA test was selected to statistically analyze the data. A Kruskal-Wallis tests genuine population differences when employing rank order of data and decreases chance variations that occur from a random sample of the same population. The Kruskal-Wallis 1-Way ANOVA is a powerful non-parametric test that assigns a rank value to the scores which preserves the strength of the scores, and the differences among the scores. Kruskal-Wallis assigns a rank number to scores, and because of this there is a chance that ties could occur between two or more scores. When this happens, each score is assigned the mean of the ranks for which it is tied. Correcting for ties strengthens rejection of the alternate hypothesis

and rarely changes the outcome of the statistical analysis by more than 10 percent. As compared to the F test, the most powerful parametric test, Kruskal-Wallis 1-Way ANOVA has a power-efficiency of 95.5 percent (Siegel, 1956).

Utilizing the Kruskal-Wallis 1-Way ANOVA test the following hypotheses were tested at the .05 level of significance;

HO₁ Patients with Alzheimer's disease who use a bath calendar will recognize bath day as measured by a recognition chart more often than patients with Alzheimer's disease who do not use a bath calendar.

HO₂ Patients who use a bath calendar will have improved Mental Status Questionnaire (MSQ) scores as compared to the MSQ scores of those who do not use a bath calendar.

A Kruskal-Wallis 1 way ANOVA was used to statistically analyze the difference between the group means on the recognition chart, resulting in a chi-square of 12.1739, $p < .0005$. Table 6 presents this information. (See next page)

Table 6

Kruskal Wallis 1-Way ANOVA			
	Number of Subjects	Chi-Square	P Value
MSQ	15	1.0127	.3143
Bath Calendar	15	12.1739	.0005

Tested at the .05 level of significance

As evidenced in Table 6 there was no significance in the MSQ scores with a chi-square of 1.0127, $p > .3143$.

Discussion of Results

This study examined the possibility of utilizing a pictorial cue to communicate an activity of daily living to the Alzheimer individual, and results showed that this was a successful intervention. It would be difficult, however, to generalize the results of this study to the demented elderly population as a whole based on a sample size of fifteen. However, statistical significance was great enough to suggest continued research on the subject of habit-training an Alzheimer's diseased individual to recognize a pictorial cue that relates an activity of daily living.

Using a Kruskal-Wallis 1-Way ANOVA test, to statistically analyze the post recognition mean scores, a significant relationship between the use of the bath calendar and recognition of bath day was evident as demonstrated by a chi-square of 12.1739, $p < .0005$. This

value has statistical significance even when considering the small sample size.

There are no other known studies that validate utilization of pictorial cues as a form of communication with the Alzheimer's patient, "most evidence is anecdotal" (Roberts & Agase, 1988, p.43). Therefore, more studies need to be generated on the recognition of pictorial cues as a means of communication with Alzheimer individuals.

An interesting finding during selection of subjects for this study was the Alzheimer patient's ability to recognize and identify the animals in the bath calendar. Once it had been determined that these individuals could see, hear, and communicate verbally, each individual was shown the bath calendar and asked to name the animal that appeared, then the MSQ was administered. All the patients who progressed to taking the MSQ could recognize and identify all the animals, but did not necessarily score between 3-8 errors on the MSQ, several of them scored 10. This finding supported the selection of common animals learned as children for the bath calendar and reinforced the selection of the theoretical framework for this study.

This study tested the bath calendar as a practical tool of communication to be used by a caregiver of an

Alzheimer patient to communicate an activity of daily living. Statistical analysis of the results of this study yielded a chi-square of 12.1739, $p < .0005$. This indicates, with proper reinforcement of the cue by the caregiver, that the Alzheimer individual can be habit-trained to recognize and respond to a pictorial cue that relates an activity of daily living.

The statistical evidence supports the hypothesis: Patients with Alzheimer's disease who use a bath calendar will recognize bath day as measured by a recognition chart more often than patients with Alzheimer's disease who do not use a bath calendar.

The MSQ scores of the group ($N=15$), when statistically analyzed, demonstrated a chi-square of 1.0127, $p > .3143$. Because this is $> .05$, statistical evidence rejects the hypothesis: Patients who use a bath calendar will have improved MSQ scores as compared to the MSQ scores of those who do not use a bath calendar. Even though H_2 was rejected, it is interesting to look at the pre and post test MSQ mean scores of the experimental group as compared the control group. The MSQ scores of the experimental group show the experimental group was more cognitively impaired than the control group and still did better on calendar recognition scores. In addition, it should be noted that one subject in the control group experienced

an increase of one in the post test MSQ score and no one in the experimental group demonstrated any increase. The reinforcement techniques utilized by caregivers using the pictorial cue does not supply any information to assist in correctly answering the MSQ. Perhaps pictorial cue reinforcement assists in orientation as well as in activities of daily living. At least this would lead one to believe that, with proper reinforcement of the bath cue by a caregiver, Alzheimer's diseased patients, no matter how cognitively impaired, can be habit-trained to identify a pictorial cue that relates an activity of daily living.

Chapter V

SUMMARY AND CONCLUSIONS

The purpose of this study was to determine whether patients with Alzheimer's disease can recognize and respond to a nonverbal communication cue represented by a pictorial bath calendar.

Fifteen subjects, age 75 years and older, were chosen from a group of Alzheimer's diseased patients at one nursing home in a small southeastern town. The experimental design of an experimental group and a control group with eight subjects in the experimental group and seven subjects in the control was chosen. Subjects were randomly assigned to the groups using an odd-even approach. Each group was administered the MSQ and was tested on a bath recognition chart to collect pre and post study data. This allowed for measurement of the dependent variable, recognition of the bath cue.

The experimental group received the intervention of the bath calendar for four consecutive weeks. Caregivers of the patients turned the calendar daily and repeated the meaning of the duck cue to denote bath day.

The following hypotheses were tested:

Ho₁ Patients with Alzheimer's disease who use a bath calendar will recognize bath day as measured by a recognition chart more often than patients with Alzheimer's disease who do not use a bath calendar.

Ho₂ Patients who use a bath calendar will have improved Mental Status Questionnaire (MSQ) scores as compared to the MSQ scores of those who do not use a bath calendar.

Pre and post bath calendar recognition scores revealed a mean gain of +23 for the experimental group and -2 for the control group. Analysis of the recognition mean scores of the group (N=15) resulted in a chi-square of 12.1739, $p < .0005$. Because this is $< .05$, Ho₁ was accepted.

Pre and post study MSQ scores revealed a mean gain score of -5 for the experimental group and a -1 for the control group. Analysis of the MSQ mean scores of the group (N=15) had a p value of .3143. Because this is $> .05$, Ho₂ was rejected.

This study, though small, suggests that the bath calendar is a significant intervention when attempting to communicate an activity of daily living to an individual with Alzheimer's disease. The variable of reinforcement techniques by caregivers did not appear to affect the results of this study. In summary, this study demonstrated that the use of a pictorial bath

calendar with Alzheimer's diseased patients may play a significant role in communicating an activity of daily living.

Conclusion of the Study

Alzheimer's diseased patients can recognize and correctly name common animals that were learned as children. Utilization of a bath calendar, which contains pictures of common animals, may be an important nonverbal communication tool when attempting to relate an activity of daily living to an Alzheimer's diseased individual.

Recommendations

Based on the data and conclusions of this study, several recommendations are suggested for future research. Replication of this study using a much larger sample of Alzheimer's diseased patients, as well as replication of this study using community based Alzheimer's diseased patients with family caregivers. Further, the development of other pictorial cues to relate activities of daily living to the Alzheimer's diseased individual might be of value.

Implications for Nursing

This study implies that the cognitively impaired Alzheimer's diseased patient can be habit-trained to recognize a pictorial cue that relates an activity of daily living. Because of this, caregivers should

assess the Alzheimer's diseased individual's cognitive level of function and develop interventions that appropriately address that level of function.

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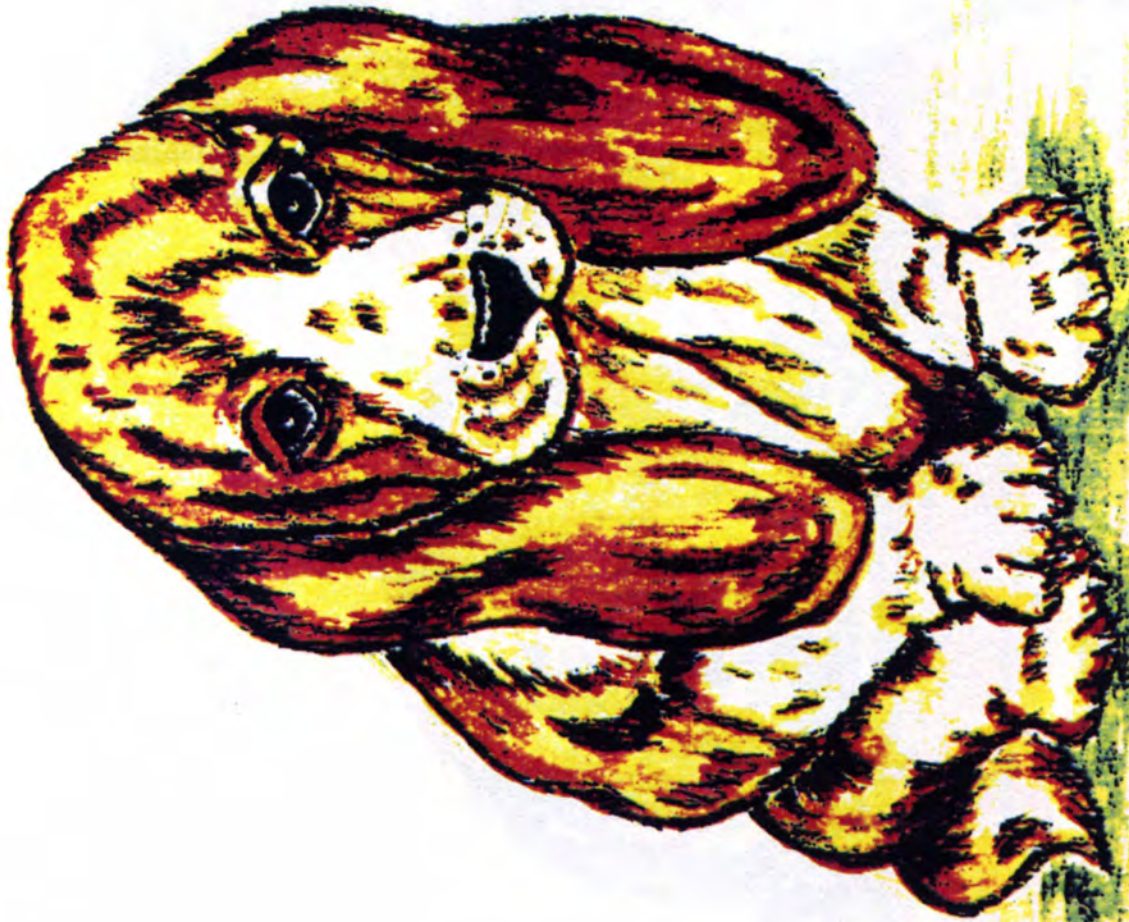
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APPENDICES

APPENDIX A

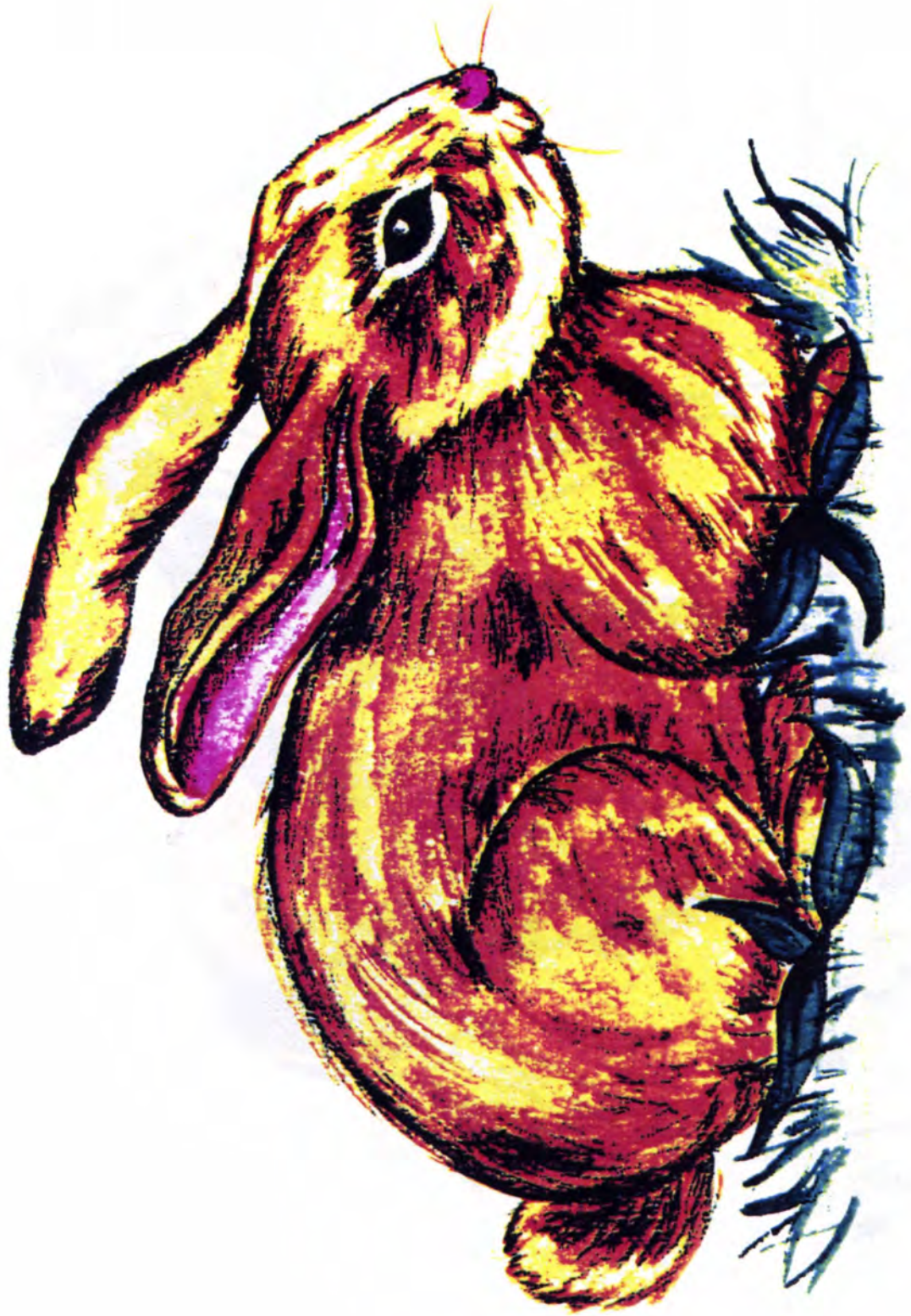
BAILLY BATH CALENDAR





















APPENDIX B

RECOGNITION CHART

Circle appropriate response and describe how the patient responded

Day 1	DID KNOW ANIMAL (YES) DID NOT KNOW ANIMAL (NO) DID KNOW DUCK TO MEAN BATH DAY (YES)
Day 2	DID KNOW ANIMAL (YES) DID NOT KNOW ANIMAL (NO) DID KNOW DUCK TO MEAN BATH DAY (YES)
Day 3	DID KNOW ANIMAL (YES) DID NOT KNOW ANIMAL (NO) DID KNOW DUCK TO MEAN BATH DAY (YES)
Day 4	DID KNOW ANIMAL (YES) DID NOT KNOW ANIMAL (NO) DID KNOW DUCK TO MEAN BATH DAY (YES)
Day 5	DID KNOW ANIMAL (YES) DID NOT KNOW ANIMAL (NO) DID KNOW DUCK TO MEAN BATH DAY (YES)
Day 6	DID KNOW ANIMAL (YES) DID NOT KNOW ANIMAL (NO) DID KNOW DUCK TO MEAN BATH DAY (YES)
Day 7	DID KNOW ANIMAL (YES) DID NOT KNOW ANIMAL (NO) DID KNOW DUCK TO MEAN BATH DAY (YES)

APPENDIX C

MENTAL STATUS QUESTIONNAIRE (MSQ)

(Kahn, Goldfarb, Pollack, & Peck, 1960)

1. What is this place?
2. Where is this place located?
3. What day in the month is it today?
4. What day of the week is it ?
5. What year is it?
6. How old are you?
7. When is your birthday?
8. In what year were you born?
9. What is the name of the president?
10. Who was president before this one?

Score shows severity of brain syndrome

0-2 errors = none or minimal

3-8 errors = moderate

9-10 errors = severe

(Kane & Kane, 1981)

APPENDIX D

REISBERG'S (1986) CONCEPTION OF ALZHEIMER'S DISEASE
 STAGES RELATED TO NORMAL DEVELOPMENTAL STAGES AND
 APPROPRIATE AGE

<u>CHARACTERISTICS</u>	<u>CLINICAL DIAGNOSIS</u>	<u>APPROXIMATE AGE</u> <u>FUNCTION IS</u> <u>ACQUIRED</u>
Requires assistance handling finances	Mild AD	8 years to adolescence
Requires assistance choosing proper attire	Middle dementia	5 to 7 years
Requires assistance dressing		5 years
bathing		4 years
toileting		
Urinary incontinence		36-54 months
Fecal incontinence		24-36 months
Speech limited to babbling	Severe dementia	15 months
Single word vocal responses		12 months
Ambulatory ability lost		
Can no longer sit up		24-40 weeks
Can no longer smile		8-16 weeks
Can no longer hold head up		4-12 weeks

APPENDIX E

PIAGET'S SENSORIMOTOR PERIOD OF COGNITIVE DEVELOPMENT

(Ault, 1983)

Approximate age ranges

Birth to 1 1/2--2 years

Developmental Abilities

Possess simple reflexes

Organization and adaptation of environmental stimuli

Can perceive color and shape

Memory for pictures greater than memory of verbal
stimuli

Show greater interest in patterns than plain colors

Begin to have representational thought

Have primary, secondary, and tertiary circular
reactions; repeat interesting chance-occurring
events

Develop object permanence

APPENDIX F

PIAGET'S PREOPERATIONAL PERIOD OF COGNITIVE DEVELOPMENT

(Ault, 1983)

Approximate age ranges

1 1/2 or 2 to 6 or 7 years

Developmental Abilities

Develop symbolic functioning, can make one thing
represent another

Utilize mental imagery

Internalize thoughts to think logically

Can categorize classes according to size, color, and
shape

Language develops and is used symbolically

Begin to learn formal properties of classes

Have mental representations as well as behavioral
schemes

Unable to class two dimensions simultaneously; such
as number and shape

APPENDIX G

REISBERG'S SIXTH STAGE OF ALZHEIMER'S DISEASE

Stage

Severe Cognitive
decline

Clinical Phase

Middle Dementia

Clinical Characteristics

Forgets name of spouse

Unaware of:

recent events

recent experiences

year or season

surroundings

Has difficulty counting

Requires assistance with activities of daily living

May become incontinent

Exhibits personality and emotional changes

May talk to imaginary figures or their own reflection
in the mirror

Exhibits anxiety symptoms and agitation

Has cognitive abulia

APPENDIX H

INSTRUCTIONS TO CAREGIVERS

Inservice meetings were held for all caregivers of the participants in the study. The following is an outline of the instructions and information that was given:

-----Introduced myself and gave background information of educational experiences and current educational status.

1. Graduate student at MUSC, majoring in Gerontology.

2. Started as a nurse's aide, worked 17 yrs. in the operating room, nursing home experience, Home Health nursing experience.

-----Discussed Alzheimer's disease

1. Alzheimer's disease effects older persons, usually 65 yrs. and older.

2. Patients regress in their thinking and ability to care for themselves. Need assistance with ADL'S.

3. Bath time not clear to patient, rely on caregiver to help keep patient clean.

-----Described research project; development of calendar; and purpose for study

1. Encourage feedback from caregivers on their

experiences with bath day and Alzheimer's patients.

2. Research study to test bath calendar to determine if calendar will help patients to recognize (know) when it is bath day.

3. Calendar developed because other research studies show that Alzheimer's diseased patients can relate to pictures and with proper reinforcement of the pictures, the patients often can be trained to the picture.

4. Reason for study---many articles written that say Alzheimer's diseased patients may not know when it is bath day and caregivers (nurse's aides in long-term care facilities) have said that bathing time is frustrating to both them and the patient.

5. Six weeks to complete study.

6. Calendar was developed because of own personal experience with bathing time and Alzheimer's diseased patients.

-----Discuss caregivers role in research study

A. Experimental group

1. Turn calendar daily for six weeks.

2. First week use recognition chart--write in appropriate space if the patient recognized the animal and knew that the duck picture meant bath day.

3. Next four weeks, show calendar to patient every day and discuss picture that is showing.

Tell patient duck picture means bath day. (Repeat several times throughout the day when the duck appears)

4. Sixth week of study, turn calendar daily, show calendar to patient. The day a duck appears, ask patient if they know what it means and write their response in the appropriate space on the recognition chart. Discuss with patient every day what picture appears and what it means.

B. Control group

1. Turn calendar daily for one week. (Week 1 and week 6 of the study)

2. When duck picture appears ask patient what the picture means to them.

3. Record patient response on recognition chart in the appropriate space.

-----Discussed maintenance of recognition chart

1. A chart to write how the patient responded to the duck picture.

2. Caregiver aware of patient's behavior, could respond by verbal, incoherent verbal, or by using body language to show that he/she did know or did not know what the duck picture meant.

3. Each day a duck appears, write the response from the patient in the appropriate space on the recognition chart.

-----Asked for volunteers to assist in research study

APPENDIX I

CONSENT FORM

By signing this consent form I agree to voluntarily participate in this study. I have been informed that the purpose of this study is to help health professionals better understand the communication abilities of the Alzheimer's patient.

My participation will involve the use of a daily bath calendar.

I understand that:

1. This study will take six weeks to complete.
2. My identity will be confidential.
3. I will not be harmed in any way.
4. I may withdraw my participation in the study at any time by requesting to do so.

Signature/Participant/Responsible Party/Date

The above information has been given to _____

Investigator's Signature Date