Toys as Language Stimuli for Individuals with Alzheimer’s disease

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TOYS AS LANGUAGE STIMULI FOR INDIVIDUALS WITH ALZHEIMER’S DISEASE

by

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A Thesis
Submitted to the Faculty of The Graduate College in partial fulfillment of the requirements for the Degree of Master of Arts Department of Speech Pathology and Audiology

Western Michigan University
Kalamazoo, Michigan
April 1999
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ACKNOWLEDGMENTS

This thesis could not have happened without the support of those mentioned below. First, I must acknowledge my former students, Isaac and George, who made me curious about speech and language. Thanks to the subjects in this study, who welcomed me into their homes and kindly shared their time and thoughts with me.

Thanks to my dad, Ric Hawthorne, who taught us to believe in education and to my wonderful mom, Mary Burke, who believed in me, taught me about determination, and challenged me by getting her own master’s degree.

To my classmates who loved to ask, “How’s that thesis going?”, you helped me get this done. A big thank you goes to my future videoconference colleague, Donna Bankson, who listened, soothed, encouraged and (thank goodness!) proof-read.

Finally, my husband, Jeff, helped me navigate the minefield of computer mishaps, demonstrated love and patience above-and-beyond the call of duty, and almost never said “I told you so.” Thank you.

Cassandra M. Baer
The study of the use of toys with institutionalized adults began in the field of gerontological nursing (Bailey, Gilbert, & Herweyer, 1992; Francis & Baly, 1986; Mayers & Griffin, 1990; Milton & MacPhail, 1985). Hopper, Bayles, and Tomoeda (1998) described the comforting qualities of plush animals for people with dementia and began to explore the effects of these toys on the language production of women with Alzheimer’s Disease. Women were found to produce more information in fewer words when the toys were present.

This study builds on the work of Hopper et al. (1998), comparing language productions of two men and two women with probable Alzheimer’s Disease in a baseline condition using no stimuli and in an experimental condition which implemented either a toy car or dog. Subjects were asked identical questions in both baseline and experimental sessions. The number of words and information units produced was calculated.

The results of this study were inconclusive due to individual variations. The findings did not correlate with the results of the Hopper, et al. (1998) study. Qualitative, but not quantitative, gender-related differences were noted.
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CHAPTER I

INTRODUCTION

This study focuses on the language performance of adults with Alzheimer’s Disease (AD) in the presence and absence of a toy stimulus. Alzheimer’s Disease, a disorder affecting four million Americans in the United States (Small, et al., 1997), has language deterioration as one of its primary symptoms. The resulting communication impairments in expressive and receptive language cause misunderstandings between the AD patient and family members and contribute to emotional stress on caregivers. Additional research on the communication problems of this population is necessary to promote understanding and develop improved treatment methods to moderate the effects of the disease and to maintain the maximum quality of life possible for AD patients.

Dementia—Definition

Because dementia is the primary result of AD (Molloy & Lubinski, 1995; American Psychiatric Association, 1994), an understanding of the definition and classification system of dementia is needed. The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (1994) defines dementia as a disease “characterized by the development of multiple cognitive deficits that are due to the direct physiological effects of a general medical condition” (p. 133). To be classified as dementia, cognitive deficits must include memory impairment and either aphasia, apraxia, agnosia, or impaired executive functioning. Impairments must affect social and occupational domains, manifested through decline in performance. According to
Cummings and Benson (1983), three of the five following areas must be affected: language, memory, visuospatial skills, emotion or personality, and cognition. Reisburg, et al. (1985) described dementia as having three phases: "forgetfulness," "confusional," and "dementia." Behaviors associated with the phases can further be categorized into stages ranging from "no cognitive decline," in which neither the patient nor close family is aware of any deficits, to "very severe cognitive decline," in which the patient is not able to perform the most basic tasks such as eating.

**Alzheimer's Disease--Definition**

Other clinical symptoms are present in AD. Molloy and Lubinski (1995) noted that common clinical symptoms of AD include severe memory loss, communication, and cognitive impairments. During diagnosis, AD can be classified as possible, probable, or definite (McKhann, et al., 1984). Since other disorders such as manic-depressive disorder, Parkinson's disease, multi-infarct dementia, and drug intoxication must first be ruled out, a complete medical history must reveal progression of the disease by noting what tasks the patient can and cannot perform. A clinical examination reviews the exclusionary as well as inclusionary factors described previously (McKhann, et al., American Psychiatric Association, 1994). Typical AD progression is slow, with eight to ten years of decline predicted from time of onset (American Psychiatric Association). Yet, a definitive AD diagnosis is not considered possible until after death and brain autopsy (McKhann, et al.).

**Progression**

The progression of symptoms in AD is described as following predictable stages (Molloy & Lubinski, 1995). Cummings and Benson (1983) used a three-stage
model. During the first stage, subtle deficits in memory recall and language content become apparent to the patient and close family. For example, evidence of word-finding hesitancies or delays may become more frequent. In the second phase, deficits in all memory and learning processes as well as language content are present. Finally, during the third phase, global deficits appear in memory and language, resulting in little or no intelligible speech or language. These stages are similar to levels of dementia proposed by Reisburg, et al. (1985) as discussed above.

Prevalence and Cost

Research on AD diagnosis, treatment, and management is increasingly important as prevalence increases with an aging population. Estimates of the prevalence of AD in people 85 and older range from 20% to 47.2% (Small et al., 1997; American Psychiatric Association, 1994; Molloy & Lubinski, 1995). By the year 2020, 16.9% of the American population will be over 65 (Brock, Guralnik, & Brody, 1990). People who are considered the old-old, those over the age of 85, are becoming the fastest growing age group. Thus, AD is highly prevalent among the elderly at a time when the elderly are becoming a larger portion of the American society than ever before.

AD presents a growing public cost as well. Some estimate that the cost to care for a person with AD is $47,000 a year (National Institutes of Health, 1998). With ever larger numbers of affected elderly living two to twenty years after diagnosis, the yearly total cost of care and lost wages has been estimated to be between $80-100 billion (National Institutes of Health, 1998). The care of those with AD presents a burden on our healthcare resources.
Treatment

Research pertaining to this growing population has traditionally focused on early and definitive diagnosis, causative factors, medical treatment, and management of behaviors. Communication, maintenance of residual functioning, and the potential contribution of speech-language pathology have not been as thoroughly investigated, other than in the documentation of language decline. For example, a document written for physicians on the diagnosis and treatment of AD did not include speech-language pathology in its list of possible discipline referrals (Small et al., 1997). However, communication is essential as a link providing patients with a better quality of life and allowing loved ones and caregivers to experience some measure of comfort and relief. Speech-language pathologists provide vital services that promote meaningful communication despite the degenerative nature of AD (Molloy & Lubinski, 1995). However, the efficacy of these services must be documented through clinical research to encourage referrals and reimbursement.

Toy Stimuli

While speech-language pathologists offer a range of services, some of which will be summarized in chapter two, this study will focus primarily on the effect of a toy stimulus on the oral language of adult men and women with AD. The study of the use of toys with institutionalized adults began in the field of gerontological nursing (Bailey, Gilbert, & Herweyer, 1992; Francis & Baly, 1986; Mayers & Griffin, 1990; Milton & MacPhail, 1985). These studies explored the responses of institutionalized adults to different types of toys. They noted that many adults possessed stuffed toys and examined the reactions of families and caregivers to the toys.

Hopper, Bayles, and Tomoeda (1998) extended the research to examine the
language production of four female adults with AD when presented with two types of
dolls and two types of plush dogs. Their research indicated that the women provided
more on-topic information units with the stimuli than when the stimuli were not
present. The present study extended the work of Hopper, et al. by presenting a toy
dog and toy car to two men and two women under similar conditions. Two questions
were addressed in this study:

1. Will toy stimuli increase the information units produced by subjects as in the
   Hopper, et al. study?

2. Are there gender differences in response to the stuffed dog and the toy car
   stimuli?
CHAPTER II

REVIEW OF THE LITERATURE

Alzheimer’s Disease--Effect on Memory

Without question, human memory is a complex system, too broad to be thoroughly described here. Yet a brief review of current views of memory in relation to AD is necessary because some components of memory are more affected by AD than others.

Current theory describes memory as consisting of short term and long term components (Bayles, 1987). Within long term memory is the memory of procedure (semantic) and the memory of life events (episodic). Nebes (1989) defined semantic memory as an “organized body of knowledge involving words, concepts, their meanings and associations, and the rules for manipulating these symbols and concepts” (p. 377). He studied semantic memory by examining the AD patient’s use of vocabulary, word associations, category membership, and concept properties. The results of these studies will be discussed in the language section.

Episodic memory is affected in normal aging and AD, although more dramatically in AD (Nebes, 1989). Episodic memory includes both the formation of new memories and the recollection of old memories. In normal aging, episodic memories may gradually become semantic memories as they gain a folklore quality and lose their emotional components (Bayles, 1987).

Memory data are difficult to obtain regarding deficits found in the earliest stages of AD because subjects who are seen clinically are usually several years into the
disease (Bayles, 1987). In the first phase of AD, lapses in memory are often attributed to normal aging. Deficits in the second stage may include problems of orientation, concentration, and recall. For example, patients may frustrate caregivers by repetitively asking the same questions because they can not remember what is going to happen today or how to do activities they previously enjoyed. Third stage AD deficits involves severe memory problems and disorientation including deterioration of all memory for recent events and some life history.

Bayles (1987) reported that both short and long-term memory gradually worsen throughout the disease process when compared to memory lapses in normal aging. Patients also show corresponding deficits in semantic and episodic memory. AD patients appear to lose access to information, rather than the information itself, and therefore cannot encode new memories because they do not have access to the old memories and information necessary for encoding.

Memory loss is different in AD than in normal aging. AD patients lose episodic information more rapidly (Osimani & Freedman, 1995; Bayles, 1987). Bayles (1987) proposed that episodic memory is impaired in AD due to (a) increased forgetting in the consolidation phase and (b) difficulties with access. Older episodic memories are retained until very late in the disease process possibly because these memories are often highly emotional, and have been strengthened by many years of rehearsal. The effects of AD on memory can be clearly differentiated from the effects of normal aging.

**Alzheimer’s Disease--Effect on Language**

Although production of language is a complex process which requires the interaction of syntax, semantics, pragmatics, morphology and phonology, for the
purposes of this discussion, language dysfunction will be categorized according to
difficulties with form (syntax, morphology, phonology), content (semantics), and use
(pragmatics) as described by Lahey (1988). This division makes it possible to
illustrate clearly the areas in which adults with AD demonstrate significant language
impairments.

Language Form

Form of language is well preserved in people with AD until very late stages
(Cummings & Benson, 1983). Until the final stages of the disease, most people with
AD produce language that follows the rules of English, using intact phonology and
syntax (Bayles, 1987; Nebes, 1987; Cummings & Benson, 1983). For example,
Kempler, Anagnostopoulos, Lyons, and Heberlein (1994) reported that patients with mild
to moderate AD describing a picture to their spouse produced utterances that were
syntactically correct. Hart (1988) agreed, reporting that phonology and syntax were
spared for much longer than semantics and pragmatics. For example, Hart reported
that while mild AD patients could repeat sentences in a repetition task with high
frequency words, they had difficulty when repeating sentences composed of low
frequency words. Repetition remained good for overlearned items such as the
alphabet in all AD patients. In the latest stages, the patient may become mute or
produce unintelligible speech (Cummings & Benson, 1983).

Language Use

While content of language is affected progressively throughout the disease,
people with AD comprehend and use language socially for a relatively long time. In
order to explore when functional difficulties develop, Fromm and Holland (1989)
studied the performance of subjects with mild to moderate AD on the test of Communicative Abilities in Daily Living (CADL). Subjects in the moderate stage of AD had more difficulty than those in the mild stage in the categories of role-playing, nonverbal/symbolic, read/write/calculate, divergencies, and sequential relations. Social conventions, role playing, and speech acts were the least difficult for both groups. Ulatowska and Chapman (1995) reported AD patients were more often verbose in earlier stages and taciturn in later stages. For example, mild to moderate patients produced many unnecessary and irrelevant words in a conversation, while late stage AD patients often remained silent in a conversation.

Language Content

General Language Content Characteristics

The ability to use language with appropriate and meaningful content deteriorates as AD progresses. A longitudinal study by Tomoeda and Bayles (1993) followed three female subjects with probable AD and three matched normals for five years in order to describe the changes in language over the years. The women performed a picture description task annually. Discourse variables measured were total words, information units, conciseness, circumlocutions, frustrations, revisions, aborted phrases, and ideational repetitions. The variables most sensitive to AD discourse changes over time were total words, information units, and conciseness. Analysis revealed a progressive, consistent change in the language ability of the subjects as measured by reduction of total output and semantic “substance.”

The AD patient’s ability to manipulate content declines according to the stage of disease. When compared to normal elderly, Fromm and Holland (1989) found that patients with mild and moderate AD had more difficulty with functional language, such
as a conversation at the doctor's office. Additionally, Bayles (1982) reported that patients in early stages were more likely than normal speakers to avoid difficult tasks, such as describing a picture.

Middle stage AD patients demonstrate progressively more difficulty with language content than those in earlier stages. Fromm and Holland (1989) reported that a middle stage AD subject responded more incoherently or vaguely to questions about everyday activities such as shopping. When communication breakdowns occurred, subjects were often not aware of problems. When asked to repeat a sentence, they produced sentences that used similar parts of speech, but were not the same in vocabulary or meaning (Bayles, 1982).

Content in late stage AD is often meaningless (Bayles, 1982). Kempler et al. (1994) reported that the language of subjects in the late stage of AD included incoherent production, dysarthria, echolalia and palilalia, and impaired comprehension.

Some language content characteristics are generalized throughout the disease. Hart (1988) noted that the lexicon of AD patients is intact compared to other language areas. Osimani and Freedman (1995) reported finding deficits in the spontaneous speech, word-list generation, naming, and reading of AD subjects. Also observed were word-finding and word-retrieval difficulties, resulting in indefinite, empty, circuitous speech (Salmon, Heindel, & Butters, 1995; Hart, 1988). Barker and Lawson (1968) found that naming performance increased when the stimulus item was present.

Two of the most commonly studied types of discourse in the AD literature are conversation and narration (Chenery & Murdoch, 1994). Each has advantages and disadvantages related to methodology, which will be discussed in the next sections along with findings of recent research.
Language Content in Narrative Tasks

A large body of research has been conducted on the description abilities of AD patients. Studies have highlighted the importance of choosing the correct stimuli to distinguish early AD from normal language changes (Chapman, Ulatowska, Klug, Johnson, & McIntire, 1995). Many studies have been conducted using a set stimulus, such as the Cookie Theft Picture (Goodglass & Kaplan, 1983), and determining a priori information units that should be present (Cherney, Shadden, & Coelho, 1998). In a broad analysis, Cherney and Canter (1992) examined the speech of AD patients in descriptive, procedural, and narrative tasks and found that 42% of the AD patients' utterances were informative compared to 75% of those of the healthy elderly. Nicholas, Obler, Albert, and Helm-Estabrooks (1985) looked more closely at description of the Cookie Theft picture and noted that the AD patients produced more paraphasias, pronouns without antecedents, repetitions, empty phrases, and indefinite terms than normal controls.

Another common set of stimuli used are prints by Norman Rockwell, which are considered visually interesting and often meaningful to older adults (Chapman, et al., 1995; Tomoeda & Bayles, 1993). Studies using these stimuli include a five-year, longitudinal study by Tomoeda and Bayles (1993) in which AD patients were asked to describe the "Easter Morning" picture. This picture shows a man in pajamas reading a paper while his wife and children march behind him wearing their Easter best. Descriptions of this picture revealed improvements in the number of total words produced, information units produced, and conciseness.

Chapman, et al. (1995) used other Rockwell prints, "College," which depicts a son returning from college; "Runaway," showing a young boy running away from home; and "Soldier," in which a young man returns from war, as stimuli. The content
of discourse of AD patients compared to normal controls and healthy elderly was examined. Subjects with AD were found to have significantly more difficulties providing a "frame" or integration of the information in the scene, which demonstrated itself in production of fewer core and elaborative propositions.

Kempler, et al. (1994) studied the performance of AD patients compared to age matched normals in description tasks. Subjects, separated from their spouse by a screen, were asked to describe a picture so their spouse could identify it from similar pictures. Subjects with AD were noted to produce longer sentences; however, the increase in words was attributed to repetitions and meaningless words added to the sentence. Therefore increased output by the AD patients did not produce increased information for the spouse.

Chenery and Murdoch (1994) used computer-generated animations to elicit narratives from seven patients with AD and seven controls. After familiarizing the subjects with the names of the Peanuts characters in the animations, the subjects were asked to narrate each animated picture as it came on the screen. Transcripts were analyzed for references to information in the story text and information inferred by the subjects, propositions, errors in information, and specificity of reference. Subjects with AD produced narratives with significantly more ambiguous and incorrect components. They did not differ from controls in frequency of irrelevant errors.

A variety of stimuli has been used to elicit discourse from patients with AD. In descriptive and narrative tasks, these stimuli have allowed researchers to discover deficits in the amount and quality of narrative discourse produced by this population.

Language Content in Conversational Tasks

Analysis of conversational discourse is less common because of difficulties in
comparison across individuals and the wide range of possible topics within each conversation (Cheney & Murdoch, 1994). Mentis, Briggs-Whittaker, and Gramigna (1995) examined topic management in twenty-minute casual conversations of 12 subjects with AD compared to 12 normal elderly. They noted difficulties in changing topics and contributing to the development of the conversation. Possible reasons for the conversational difficulties included impaired access to relevant information and deficits in underlying memory.

Ripich and Terrell (1988) studied AD patients who were engaged in topic-directed interviews discussing family, daily activities, and health. Transcripts were coded for number of words, patterns of propositions, types of cohesive devices, and listeners' perceptions. Propositions were defined as complete when containing an argument plus its relations (e.g., “I’m tired.”). Patients with AD were found to produce twice as many words and more than four times as many turns as their control subjects. No significant differences were found in the production of complete and incomplete propositions. Both studies revealed conversational difficulties for patients with AD resulting from a variety of deficits including impaired memory and discourse skills.

Language Content in Conversation With Toy Stimulus

Hopper, et al. (1998) combined the use of stimuli to elicit language with the more natural context of conversation. They examined the language content of three female subjects with and without a toy stimulus present. Subjects in this single subject design study were found to produce more information units when a toy dog or doll were present than when asked the same questions without the toy present. No differences were found in the language productions when more and less realistic toys
were used as stimuli. Total words produced did not differ when the stimuli were present.

Alzheimer’s Disease--Treatment

Historically, treatment for AD has consisted of medical intervention to alleviate co-existing physical disorders. At this time, no approach can cure the disease. Therefore, the goal in treatment has been the maintenance of health and appropriate behavioral skills. Small et al. (1998) stated, “The primary goals of treatment of patients with AD are to improve quality of life and maximize functional performance by enhancing cognition, mood, and behavior” (p. 1365). Treatments reviewed are described under the categories of pharmacology, neurorehabilitation, compensatory, augmentative/assistive, caregiver training, pet therapies, and direct non-medical approaches.

Pharmacology

New drug treatments are under development for the AD population. Small et al. (1997) reported on two medications, Tacrine and Donepezil, currently used to enhance cognitive performance or delay decline. Tacrine allowed subjects to improve cognitive function in 20-30 % of mild to moderate AD patients. Donepezil was reported to be more effective and is recommended as a first line treatment because it produces fewer side effects. Long term data are incomplete for both drugs.

Other unproved treatments currently being tested are estrogen non-steroidal anti-inflammatory agents and botanical agents. Drachman and Lieber (1997) cautioned that results of drug intervention studies should be evaluated carefully
because studies use different criteria and procedures to evaluate reduction of disease progression.

Neurorehabilitation

Neurorehabilitation as a treatment modality presumes behavioral skill facilitation and practice will produce genuine neurological retraining. Treatment may focus on re-orienting the patient through highly structured group activities (Bianchetti, Zanetti, & Trabucchi, 1997), changing the consequences of communication (Bourgeois, 1991), or training superordinate categories and gestures (Kempler, 1995). Bianchetti, et al. reported that Reality Orientation Therapy and Procedural Memory Training are promising techniques leading to improvements in quality of life for patients and caregivers. Bourgeois (1991) noted, however, that little generalization of skills occurred outside of trained knowledge.

Compensatory Treatment

Another technique used to facilitate positive changes in communication is environmental compensation. Melin and Gotestam (1981) looked at the effects of changing furniture and meal routines on communication. The nineteen subjects with dementia and two with schizophrenia were judged to be unable to have a “meaningful conversation.” When the experimental group was allowed to have coffee time around a table as opposed to sitting lined up in the hall, subjects engaged in significantly more verbal or tactile interactions than in the baseline and the control group. The findings in the Melin and Gotestam study showed the importance of environmental factors on the communication of institutionalized adults. However, this and other studies have often not adequately described the population studied or proven a cause/effect relationship.
between the specific changes in the environment and in the subjects with AD (Bourgeois, 1991).

**Augmentative/Assistive Treatment**

Bourgeois (1991) reviewed the literature describing the use of internal and external memory aids and noted that internal aids such as mnemonic devices were not useful for AD patients because they forgot how to use the devices. In contrast, external aids such as calendars, notes, notebooks, timers, and signs were deemed helpful, especially during the early stages of the disease. At later stages, patients required reminders in the use of these tools at appropriate times. Bourgeois (1990, 1992) later studied the use of memory wallets which were constructed in cooperation with the family of patients. Patients’ comments about life events increased when communication was facilitated using representations of life events on wallet pages.

**Caregiver Assistance/Support**

Caregivers bear a great burden caring for a patient with AD. Many severely disabled elderly people are cared for outside of institutions, often by family members. Difficulties experienced by AD patients in institutional settings, such as self-care and reality orientation, are not primary concerns of home caregivers (Haley, Bowen, & Levine, 1987). In a study by Haley, Bowen, and Levine (1987), caregivers rated their family member’s disability in specific Activities of Daily Living Scale (ADL) and Instrumental Activities of Daily Living Scales (IADL) skills and behaviors on the Memory and Behavior Problems Checklist (MBPC). Caregivers then rated their own ability to cope with the stress caused by a given deficit. In general, the more common difficulties with IADL skills, such as managing finances or doing chores, were not seen
as highly stressful for the caregiver. Physical and behavioral problems were more disturbing for those surveyed. Incontinence was the most stressful ADL deficit. Agitation, embarrassing behavior, hallucinations, hiding things, and behavior dangerous to the patient were common MBPC difficulties, which were difficult for caregivers to manage. Caregivers may be more able to handle ADL /IADL difficulties than MBPC because the latter are less predictable and more dependent on the environment and the ability of the caregiver to protect the patient.

Caregivers receiving education about AD were found by Bianchetti, et al. (1997) to be more knowledgeable than controls and reported experiencing less stress in their duties. Kempler (1995) noted that training the communication of the caregiver might be useful. Small et al. (1997) recommended that physicians provide the following: regular check-ups, education for families and caregivers, and assistance in developing programs and modifications.

One speech-related aid in coping with the demands of a patient with AD is the FOCUSED Program for Caregivers created by Ripich and Wykle (1996). This program cues patient/caregiver interaction with the acronym FOCUSED (Face the person, Orient the topic, Continue the topic, Unstick communication blocks, Structure with questions, Exchange conversation, use Direct statements). The goal of this program is to enhance communications between those with AD and their caregivers.

**Direct Non-medical Management Approaches**

**Pets**

Many disciplines have experimented with therapies using animals (Katcher & Friedmann, 1980; Erikson 1985). Katcher and Friedmann (1980) reported that interactions with pets provide many benefits, including increased responsibility,
activity, intimacy, playfulness, exercise, and companionship, as well as a sense of security and increased health. Animals have been used in psychotherapy and provided to elderly living alone with the positive result of increased communication and interaction first with the animal, then with other people (Erickson, 1985). Erickson reported that some elderly might enjoy talking to animals because they appear empathetic and non-threatening. With other people, pets become a main topic of conversation, providing an easy point of discussion with visitors.

Criteria for choosing an animal should include patient interest, physical ability, and financial resources (Erickson, 1985). Regulations may prohibit some or all types of animals in public and low-income housing and institutions of all types.

Dolls/Toys

Pets are not always appropriate in the environment with AD patients because of sanitation requirements and health facility guidelines in institutions and homes. However, dolls and plush toys have been found to give many of the same benefits. For example, Francis and Baly (1986) found residents in an institutional setting who selected and named their own plush animal made improvements in the areas of psychological well being, social interest, mental function, life satisfaction, psychosocial function, and depression when compared to a control group. No gains were made in the areas of health, self-concept, social competence, and physical neatness.

Milton and MacPhail (1985) surveyed a hospital setting and found that 5% of hospitalized elderly possessed and interacted with dolls or stuffed animals with minimal negative feedback from other patients or families. The patients' use of the toy was not encouraged by nurses, but was given respect as a behavior important to the client. A similar study by Bailey, Gilbert, and Herweyer (1992) observed residents in
long term care who were given dolls and stuffed toys. According to surveys, the staff members did not see the toys as demeaning and they engaged in conversations about the toys with the residents, referring to the toys by the same names the patients used. The toys appeared to reduce distress and increase communication for most residents.

Mayers and Griffin (1990) gave male institutionalized AD patients toys for ten-minute intervals and measured the amount of time the patient spent manipulating the object. The subjects manipulated the toy car and the simple busy box the longest in the first session with the toys, and the more difficult busy boxes the longest in the second session. The plush dogs scored lower, presumably because interaction with the dog often involved quiet holding rather than the “play” or manipulation measured in the study.

Speech-language pathologists have just begun to explore the effects of toys on language production. Hopper, et al. (1998) examined the use of stuffed dogs and dolls of varying realism. The subjects in the study by Hopper, et al. were reported to differ in their comfort level with the toys although all of the subjects produced more IUs when the toys were present. The realism of the toy did not appear to have an effect on the language productions for the three women studied. This study raised the question of whether the results could be replicated with more subjects and if males with AD would have similar language productions in the presence of toys.
CHAPTER III

METHODS

This chapter discusses the methodology followed in this study. Subject selection, language elicitation, and analysis procedures will be described. It should be reiterated that this study is an elaboration of work done by Hopper, et al. (1998) using women and men and comparing responses to toys by gender.

Subjects

Two male and two female subjects with probable mild to moderate AD, as reported by their caregivers, participated in this study. Subjects were rated by the Mini Mental State Examination (MMSE), a brief 11-question test of cognitive mental status (Folstein, Folstein, & McHugh, 1975). Subjects were required to be over the age of 65 and have English as a first language. Vision and hearing were within normal limits for the age group with correction as judged by the researcher and caregiver by the subject’s ability to participate in a conversation. The subjects had no history of depression.

Subjects were recruited from Alzheimer’s Disease Support groups in Southwestern Michigan. The student researcher visited meetings to explain the purpose of the study and to distribute flyers and a brief letter detailing the purpose of the research and selection criteria. The leaders of the support groups gathered forms completed by the family or caregivers of interested subjects. No subjects were recruited from the first three meetings attended by the researcher.

The same presentation was given to the activity director at an assisted living
facility in Kalamazoo, MI. The activity director assisted in finding eligible subjects living in the facility and obtaining permission for the subjects to participate in the study.

Three men and three women were selected to participate as subjects. Two of the subjects were later disqualified because of previously unknown difficulties with hearing and/or vision.

Materials

Toy stimuli included a realistic plush dog and a realistic toy car. The car was a replica of a red, 1957 Chevrolet Bel-Air Convertible, measuring approximately nine inches long and three inches high (Figure 1). The car’s doors and trunk opened and closed and its steering wheel moved the wheels. The dog was a plush, black and white Boston terrier, in a seated position, measuring approximately twelve inches long and six inches high (Figure 2). Both the dog and the car were judged to be realistic by the researcher and two independent judges.

Figure 1. Toy Car.  Figure 2. Toy Dog.

Description of Sessions

This study was composed of six sessions with each subject. The first and the
fourth were considered baseline sessions designed to elicit responses without the stimuli present. The experimental sessions involved the presence of either the toy dog or car. The sessions took place in a quiet room at the assisted living facility, away from TV, radio, and other visually or auditorially distracting activities. The subject sat at a comfortable conversational distance from the researcher.

The baseline sessions consisted of two parts. The first was a one-minute period in which the researcher sat silently with the subject and waited quietly to see if the subject would initiate conversation. The subject was then asked five questions about either dogs or cars:

1. How do you feel about dogs (cars)?
2. Do you have a favorite type of dog (car)?
3. Can you tell me something about dogs (cars)?
4. What are the names of some different types of dogs (cars)?
5. What do you do with a dog (car)?

The researcher responded to the answers to the questions with assent and general comments. For example, if the subject said, “Oh, I like dogs.” The researcher responded, “Uh-huh” or “Yes, dogs are nice.” If no response was made to the question the researcher waited ten seconds and then moved to the next question.

The experimental sessions conducted with the stimuli present followed a similar format. Session two and session six included the toy dog and sessions three and five included the toy car for half of the subjects. The presentation order was reversed for the other half.

As with the baseline sessions, experimental sessions took place in a quiet room at the assisted living facility away from TV, radio, and other visually or auditorially distracting activities. The subject sat at a conversational distance from the researcher.
For the first minute of the session, the researcher sat with the stimulus item on her lap and waited for the subject to initiate conversation. If initiations occurred, the researcher responded with assent and appropriate comments.

The researcher then put the stimulus aside and engaged the subject in a 20-second distracter activity, such as counting backwards from 20. The researcher then placed the stimulus on the subject’s lap and asked the subject the same five questions about the stimulus as were asked in baseline sessions.

The researcher waited five seconds for a response and then moved to the next question. The researcher commented on responses in order to continue the conversation.

Analysis

All sessions were video recorded with an Olympus VX-403 video recorder on Sony T-120 videotapes. The sessions were transcribed from the videotapes by the researcher using the Systematic Analysis of Language Transcripts (SALT) computer program (Miller & Chapman, 1991). Each sample was separated into sentences using standard rules of English and subject inflections to determine boundaries. Sentences were analyzed by counting the number of words and information units (IUs) produced.

IUs were defined as “relevant, truthful, non-redundant facts expressed in response to facilitative questions” (Tomoeda & Bayles, 1993). IUs were words, phrases, or sentences, whichever delivers the information in the smallest unit. IUs could also be defined as words or phrases answering who, what, when, where and why. Therefore, action verbs and prepositional phrases usually made up separate IUs. Samples were not coded further after the subject made two deviations from the topic of the question. See Appendix B for samples of coded transcripts.
IUs were put in parentheses as seen in the following example from the Hopper, et al. (1988) study:

I (love) (music). It just (takes you away.) Look at that tree and you’ll never see um another like that in all your days.

**Interscorer Reliability**

One language sample from each phase was randomly selected and scored by a second person, an educator who was not a speech-language pathologist. Training involved an explanation of IUs and practice dividing the sentences into IUs with the researcher. Interscorer reliability was determined by calculating the number of agreements and dividing by the number of points of agreement possible. Interscorer reliability was calculated to be 88%.

**Intrascorer Reliability**

The researcher scored two random selections three weeks after the first scoring. Reliability was judged by calculating the number of agreements and dividing by the number of points of agreement possible. Intrascorer reliability was calculated to be 90%.
CHAPTER IV

FINDINGS

This chapter reviews the findings of this study in both quantitative and qualitative form. Information for each of the two female and two male subjects will be reviewed, followed by overall findings as they relate to the research questions.

Quantitative and Qualitative Observations

Subject 1. JF

JF is an 89-year-old female with moderate stage dementia, as reported by her caregivers and confirmed by the Mini Mental State Examination (MMSE). JF was friendly and communicative throughout the sessions and initiated conversation during the one-minute waiting periods before each session. Before the initiation of the first experimental session with the dog (session three), she informed the researcher that she might not be available for any additional sessions because she had “answered all the questions she could” and “told you my whole life story already.” She repeated the same phrases during the next two visits, refusing to sit and talk with the researcher. Although it was a friendly refusal, no more sessions were pursued to avoid agitating the subject.

In the sessions completed, JF produced fewer total words during the experimental sessions with the dog (n=226) and car (n=274) than in dog (n=265) or car (n=344) baseline conditions (see Figure 3). She produced more IUs in the experimental sessions with the car (n=42) than in the baseline session during which no
car was present (n=27). She produced identical IUs in both the baseline and experimental sessions about the dog (n=48) as seen in Figure 4.

![Figure 3. Total Words Produced by JF.](image)

![Figure 4. Information Units Produced by JF.](image)

After it was handed to her, JF held each toy throughout the session. In the experimental session with the dog, she held and petted the dog on her lap. In response to question one (How do you feel about dogs?) she said she loved them and then looked at the toy dog’s face saying, “Especially this one.” When asked if she had a favorite type of dog (question 2) she answered that she really liked cats better because,
“you can cuddle with cats...(with dogs) you can pet ‘em and scratch ‘em and everything, but when you go like this (moving dog to shoulder) they don’t like it.”

She concluded the session by looking at the dog and saying, “Come on, don’t look at me like that.”

JF’s comments were directly related to the car when the researcher was holding it by saying, “Oh, that’s neat. That looks like the chief’s, the fire chief’s car.”

When the car was handed to her, she held it with both hands on her lap and did not manipulate or move it until she was asked a direct question by the researcher. When questioned, she held it up to eye level to examine it.

Subject 2: EF

EF is an 83-year-old female with moderate stage dementia, as reported by her caregivers and confirmed by the MMSE. She welcomed the researcher warmly at the beginning of each session and participated willingly. EF’s husband was present during all the sessions. EF appeared to have been napping before the researcher arrived for some sessions and admitted that the researcher had awakened her for first experimental session with the dog (session 2). Additionally, the subject met and visited with a live dog before the researcher arrived to conduct the fourth session baseline on dogs. The visit with the live dog may have influenced the subject’s increase in the number of IUs and words produced in this session.

EF produced more words in the first baseline session about the car (n=597) than in either experimental sessions with the car (n=511, n=409). The number of words EF produced with the dog was variable. She produced fewer words in the first baseline (n=290) than in the experimental sessions with the dog (n=242). The number
of words produced was notably higher in the second baseline \((n=817)\), when she had recently visited with the live dog, and the number remained at an elevated level in second experimental sessions with the dog \((n=409)\) (see Figure 5).

![Figure 5. Total Words Produced by EF.](image)

EF produced more IUs in the two experimental sessions with the car \((n=40, n=38)\) than in the first baseline car session \((n=32)\). The second baseline for cars was higher \((n=43)\). Compared to the first baseline on dogs \((n=31)\), she produced an equal number of IUs during the first experimental session with the dog \((n=31)\) and more IUs in the second experimental session with the dog \((n=36)\). During the second dog baseline (session 4) \((n=92)\), EF produced more IUs \((817)\) than in any other session, although much of her discussion pertained to the live dog (see Figure 6).

EF willingly held each toy when it was handed to her. In the experimental sessions with the dog, she held the dog on her lap, petted it, and talked directly to it. For example, in session two she told the researcher that the dog would be "a pal to someone." She then looked at the dog’s face and said, "Yes, yes you would." The car was held on her lap; she only picked it up when asked to say something about it (question 3). She then looked at the car and pointed to various parts. In the second experimental session with the car, she handed it to her husband to view. In both
experimental sessions with the car, she returned the car to the researcher after question three was answered.

Although EF appeared to remember the researcher from visit to visit, she often told the same stories before and after the sessions and in response to the research questions. EF did not appear to remember the questions from previous sessions and showed no visible signs of recognizing either the dog or the car as familiar during the second experimental sessions with each.

Subject 3. SM

SM is a 91-year-old male with moderate stage dementia, as reported by his caregivers and confirmed by the MMSE. For the first baseline session (session one), SM was waiting for the researcher in a common room at the assisted living facility. Before each of the subsequent sessions, SM was either lying on the bed or the couch in his room. During the first experimental sessions with the dog and the car, he arose from bed after being asked to do so by the researcher. During the second baseline and experimental sessions with the dog and the car, he remained reclined on the couch. SM was always willing to talk with the researcher “for a little bit.” During the time in
which the sessions took place, SM was reported by his caregivers to have developed a less positive attitude, but no change was noted in his willingness to participate in the study.

SM consistently spoke few words. He produced fewer words in both baselines pertaining to dogs \((n=62, n=61)\) than in the experimental sessions with the dog \((n=73, n=101)\). He followed the same pattern with the car sessions, producing far fewer words during baseline \((n=31, n=61)\) activities than in experimental sessions with the car \((n=91, n=101)\) (see Figure 7).

![Figure 7. Total Words Produced by SM.](image)

SM produced more IUs in the experimental sessions with the car \((n=22, n=26)\) than in either of the baseline car sessions \((n=7, n=13)\). The number of IUs produced in the last experimental session was more than three times the number produced in the first baseline (Figure 8). He steadily increased his IUs when referring to the dog. In the first baseline \((n=13)\), he produced approximately half the number of IUs of the last experimental session with the dog \((n=25)\) (see Figure 8).
Figure 8. Information Units Produced by SM.

SM reacted differently to the toys during each session. In the first session with the dog, he reluctantly took the toy and held it on his lap. After the third question was asked, he took it off his lap and placed it next to him on the chair. In the first experimental car session, he took the car from the researcher, commenting, “Oh, that’s heavy. What’s it supposed to represent?” He then handed it back before question one was asked. During the second experimental session with the car, SM was lying on the sofa. When the car was offered to him, he said he had seen it before and did not take it. In the final experimental session with the dog, he smiled and held the dog throughout the session.

SM was the only subject to appear to remember events from previous sessions. During the first experimental session with the dog, he smiled and said, “Oh, this again,” when the researcher asked the first question. Four days after the first experimental session with the car, he stated that he had seen the car “yesterday.” He made no comment of recognition about the dog.

Subject 4. RM

RM is an 88-year-old male with moderate stage dementia, as reported by his
caregivers and confirmed by the MMSE. RM reportedly did not often leave his room except for meals and did not receive many visitors. He welcomed the researcher warmly at the beginning of each session and participated willingly.

While the number of IUs remained fairly constant across all car sessions, RM produced more words in baseline sessions ($n=148, n=149$) than in experimental sessions with the car ($n=103, n=109$). The pattern was repeated, with RM producing more words in the baselines sessions about dogs ($n=157, n=115$) than in the experimental sessions about the dog ($n=72, n=110$) (see Figure 9).

![Figure 9. Total Words Produced by RM.](image)

When discussing cars, RM produced approximately the same number of IUs in both baseline ($n=23, n=23$) and experimental car sessions ($n=21, n=22$), differing only by two IUs across the four sessions. Differences in the sessions that focused on the dog were greater. He produced more IUs in the first baseline ($n=27$) than in the first experimental dog session ($n=19$). The number of IUs for the second baseline ($n=24$) was smaller than in the second experimental dog session ($n=29$), which was the largest number of all sessions (see Figure 10).
RM held each toy when it was handed to him. In both cases, he expressed amazement about the realism and workmanship of the toy. In the first experimental session with the dog he said, "Quite an art job here.... He looks so real." In the second experimental session with the dog he stated, "I don't see how people make things like this.... Quite a talent." In both sessions with the dog, he held the dog on his lap, petted it, picked it up and looked at it until the session was over.

Similarly, in the first experimental session with the car RM commented, "Darn near heavy as gold." He manipulated the car in both sessions, opening doors, spinning wheels, turning the steering wheel, and stating in the second experimental session with the car, "I just wanna see if the front wheels will work."

**Overall Results**

The results of this study in reference to the first research question are inconclusive. A pattern of behavior cannot be generalized from the subjects. One of the subjects in this study produced slightly more IUs, using fewer words when the toy stimulus was present. The other three subjects produced about the same number in
both conditions. The difference in quantity of IUs is not as great as differences noted in the Hopper, et al. (1998) study. Three of the four subjects produced an equal or greater number of IUs in the first experimental sessions with the toys than in the corresponding baseline sessions. However, the results varied across subjects for the rest of the sessions.

The answer to the second research question is also inconclusive. One man in the study appeared to respond somewhat more favorably to the car by demonstrating an increase from seven IUs in baseline and twenty-two IUs in the experimental session with the car. In the experimental session with the dog, he increased his IUs only from 13 to 21. RM spoke somewhat more efficiently by conveying the same amount of information about cars in fewer words when the car was present. The women did not show notable differences in the language produced with the dog and with the car.

Qualitatively, the women interacted more with the dog than with the car. They both held it longer and talked directly to it. They did not hold the car as long or speak to it. There were no qualitative differences in the way the men interacted with the two toys.
CHAPTER V

DISCUSSION

This chapter examines the results, explores possible explanations of the outcomes, and accounts for differences between the findings of this study and the findings of Hopper, et al. (1998). Strengths and weaknesses of the methodology of the study will be discussed and suggestions for further research will be presented.

Discussion of the Research Questions

Question One

The answer to the first research question, "Will toy stimuli increase the IUs produced by subjects as in the Hopper, et al. study?" was inconclusive. The individual differences between the subjects in the present study overshadowed any generalities in their performance, whereas, the Hopper et al. (1998) study found strong evidence to support the use of the toys. Explanations of these differences may be related to variations in baseline questions, timing and duration of the sessions, and subject personality characteristics.

The most obvious difference between the design of the two studies related to the content of the questions used in the baseline sessions. Hopper, et al. (1998) used questions about music to elicit baseline information. In the current study, the same questions about dogs and cars that were used in sessions with toys were also used in baseline sessions. This procedure was used because the researcher suspected that the questions about music may have been more vague or abstract and the questions about
cars and dogs more concrete. It was hypothesized that the use of the same questions would clearly illustrate differences in oral expressive language the subject used in response to the physical presence of the object.

Another difference in the design of the studies was related to the timeline of the experimental process. All six sessions for all subjects in the current study were conducted within a two-week period. The researcher often interacted with the subjects on three consecutive days. The concentration of visits in which dogs and cars were discussed may have contributed to the subjects' performance. Baseline measures may have been higher in some cases because of the novelty of the object and may have been less striking when the subject was familiar with the topic. Hopper et al. (1998) did not describe the frequency with which sessions were conducted.

Ideally, the timelines for conducting research would be altered. Although the use of identical questions allowed the collection of a realistic and quantifiable baseline measure, it would have been preferable to conduct no more than two sessions per week to minimize subject familiarity and/or introduce a memory/recall (short term) variable into the design. SM was the only subject to appear to remember the questions being asked; yet, the other subjects may have been stimulated by the repetition of the topics within a short time period.

The third difference in the two studies is related to the population of subjects. The characteristics of the two women in this study appeared to be quite different from the women studied by Hopper, et al., (1998) especially with regard to the quantity of words and IUs produced both in baseline and toy session. Although it is not known how the subjects in the Hopper et al. study communicated on a daily basis, the staff at the subjects' residence reported that the women in this study were active and talkative participants in daily activities. Perhaps people who have been and are currently very
communicative do not receive the same benefits of having the toy present as those who are not as social, as may have been the situation in the previous study.

**Question Two**

Question two asked, "Are there gender differences in response to the stuffed dog and the toy car stimuli?" The qualitative results of this study were inconclusive due to individual differences. Some qualitative gender differences in the subjects were noted. No conclusive data showed subjects of either gender preferred a given toy.

**Results for Female Subjects**

Because both female subjects voluntarily took part in the formal and informal activities at the facility, they both appeared to have been very social before the onset of AD. They both initiated conversation during the one-minute waiting period and chatted with the researcher before and after questions were asked. Although the female subjects generally produced more information in fewer words, their results were not conclusive in terms of clarifying the usefulness of the toys in stimulating language.

They reacted nonverbally to the dog and the car in different ways. Both women expressed admiration for the toys. They both talked directly to the dog, asking the dog to help them remember specific names of dogs or cars. They did not interact with the car by talking to it and in most sessions handed the car back to the researcher before the questions were completed.

In the car discussions, the women talked about the cars owned and operated by their fathers or husbands rather than discussing their own experiences with driving. In answer to the question about her favorite type of car (question two) JF stated, "Well,
my husband was a Ford man. He didn’t work there, he worked for Upjohns, but still Ford was his car.” JF mentioned that she had just had an accident and probably would not drive again, “Since I had the accident, of course I will not be driving anymore because, well, today I’m 86 [sic].” EF talked only about the difficulty her husband had experienced while adjusting to the fact he could no longer drive. “You know these outfits, that they didn’t think he should drive anymore. So they had him not drive his car anymore and that darn near killed him.”

Results for Male Subjects

One of the men showed more of a change than the other subjects between the baseline sessions and the toy sessions. SM produced markedly more IUs in the experimental sessions with the car and the dog than in the baseline sessions, especially in the sessions with the car. RM did not produce more IUs in the presence of the toys. However, he used fewer words to convey the same amount of information, thus increasing the efficiency of his communication.

The men did not talk directly to the dog as the women did, but they commented on its realism and construction, as presented in the results section. Although SM removed the dog from his lap to the chair the first time he held the dog, he appeared to enjoy its presence. He smiled and was willing to hold the dog when the researcher offered it in the second experimental session (session six). RM held the dog on both occasions and spent the whole time manipulating and petting it.

The reactions and comments related to the car were different. SM appeared less interested in holding the car and, in the first experimental session, handed it back to the researcher before the first question was presented. In the second experimental session with the car, SM did not hold it. RM held the car the entire session in both
experimental sessions with the car. He manipulated it while talking and continued to explore it after the questions were answered.

The men’s reactions to the car may suggest the importance of emotional reactions as related to the quantity and quality of language production. The researcher had hoped that the car would elicit good memories and an increase in language from the men. However, both men reacted to questions about the car by discussing the loss of their driving privileges. In the first experimental session with the car, RM focused his discussion on the loss of driving privileges in response to four of the five questions. When asked how he felt about cars and his favorite type, he stated, “I like them, but they won’t let me have one.... Just a two door usually, but I can’t have it no more.” In response to being asked to name different kinds of car he responded, “When you get as old as I am, they don’t let you drive one.” Finally, he stated that he was doing “nothing right now” with a car. His focus on his loss also served to avoid answering questions requiring specific recall. SM made some similar comments. In answer to question one, “How do you feel about cars?” he replied, “There was a time I was interested, but I’m not interested anymore. I’m too old to drive. That part of my life has gone past.” The emotional aspect of discussion of the car may have limited the scope of language the car could have elicited.

Because the men had such strong negative associations with the car, a different “masculine” toy could be used to elicit language, perhaps something related to sports or tools. In the residential facility, the men often go to “Men’s Coffee” in which topics of interest are discussed. These discussions serve as a good opportunity to elicit ideas about topics about which the men still hold positive feelings. On the other hand, a study could be conducted with men and women using the same stimuli as Hopper, et al. (1998), the doll and the dog. The use of these stimuli would allow a researcher to
examine the effect of a more “feminine” toy, the doll, on men’s oral language productions.

Stimuli Variables

The individuals’ reactions to the toys highlight a number of variables related to qualities of the stimuli. The first of which is the animate nature of the dog versus the inanimate nature of the car. Both women interacted with the dog by talking directly to it. They did not talk directly to the car. The animate quality of the dog or of what the toy represented may have contributed to the differences in of interaction. Although addressing the dogs directly did not result in higher numbers of IUs, talking directly to the dogs allowed the subjects to find an alternative way of answering difficult questions.

Another variable that could be examined is the abstract versus concrete nature of the stimuli. Although toys were used in this study as a concrete way to draw AD patients into meaningful conversations, there are indications that stimuli which are more concrete are even more valuable. One variable that may have affected the results of this study was related to the presence of a live dog in the facility during the time of the visits. Romeo was a golden retriever who visited the facility at least weekly. Two subjects mentioned Romeo in their discussions with the researcher. EF talked at length about the animal while responding to several questions during the second baseline session. SM talked about him during his second session with the toy dog. Although Romeo’s presence may have affected the results of this study, the enthusiastic responses of the subjects made clear the observation that live animals had a positive effect on the number of words and IUs produced by subjects with AD. The concrete nature of Romeo’s presence in the facility may have been an important factor
in the language productions of these subjects.

Given the surprising verbal change in the output of two of the subjects in response to the live dog in the facility, it would be interesting to consider the use of a live animal/pet as the stimulus. Results of such a study could be compared to results from a no stimulus condition or to results obtained with an inanimate stimulus. If a facility could be found that already incorporates the dog into its activities, the research could be a natural extension of the residents’ existing experiences.

Implications for Further Research

As with most research, this study caused the researcher to ask many more questions than were answered. Additionally, the nature of the results suggested that the research paradigm could be improved or strengthened in a variety of ways. In the first place, these results could be replicated with more subjects. Because this study did not involve as many subjects as planned, more data is crucial to fully answer the research questions. The study of more subjects, after addressing the concerns raised in the discussion of the research questions, will allow researchers to reach a more informed conclusion about the efficacy of toy stimuli in stimulating language and to better assess the variability or heterogeneity of patterns across individuals with AD.

The results of this study highlight the importance of considering and measuring individual differences in studies which stimulate and analyze language variables. The characteristics of the experimental questions may have limited the naturalness of the discussion about the toy. In future studies, the researcher may prepare a series of questions, ranging from basic recall to requests for reminiscences. The researcher would have more freedom to tailor the discussion to the conversational needs of the subject. The discussion would then be analyzed to discover what types of questions
allowed the subject to discuss the topic to the best of their abilities.

Another subject-centered approach would be to engage the subject prepared to use materials ranging from abstract, such as a simple line drawing, to concrete, such as live pets. The researcher would then stimulate conversation using the various items and determine the best or the minimal stimulus needed for each individual. If enough subjects participated, perhaps some generalizations could be drawn in order to recommend stimuli needed to produce meaningful communication relative to a specific stage of AD.

Finally, given the benefits for AD patients reported by the nursing literature, it is logical for speech-language pathologists to continue to find ways to utilize toys within therapy, taking into consideration individual differences. Monitoring the literature of other allied health professions is important in order to integrate new findings with our speech and language treatment best practices.
Appendix A

Protocol Clearance From the Human Subjects
Institutional Review Board
Date 1 December 1998

To John Hanley, Principal Investigator
Cassandre Baer, Student Investigator for thesis

From Sylvia Culp, Chair

Re HSSIRB Project Number 98-09-04

This letter will serve as confirmation that your research project entitled “Toys as Language Stimuli for Individuals with Alzheimer’s Disease” has been approved under the full category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination 1 December 1999
Appendix B

Information Unit Scoring Sample
Sample One: SM

= Question 1 car
S There was a time (I was interested).
S But I'm (not interested anymore).
S I'm (too old) (to drive).
S (That part of my life) (has gone past).
C Yeah.
=Question 2 car
S Yeah, (mustang).
C Oh, they still have those out and about.
S I (had) (three of those).
C Oh.
=Question 3 car
S Well they were (a good reliable car).
S (Well kept).
S (Never failed) (to start) (in cold weather).
S At least (I never did).
C That's important.
S Yep.
=Question 4 car
S Uh, well there's the (two door) and the (four door) and (station wagons).
C Mm hmm.

=Question 5 car
S (Drive it) {laughs}.

Sample Two: EF

= Question 1 dogs
E Oh, I (like them).
E (We used to have them) (on the farm) (when I was a kid at home).
E We (were attached to them).
C Mm hmm.
E Then Vern had one, had a dog that he liked before we got married.
E Then after we got married he sort of forgot about dogs so much.
E {to V} We didn't have one of our own, did we, a dog?
E {to C} Not for a while.

= Question 2 dogs
E (No), not especially.
E Just (like them).
E On the farm we had (this big dog) and when we'd go away, my folks, we'd come back (he'd be right there at the edge of the road just waiting).
E And (he would run to the house), oh.
E (He was so tickled that we was back).
C That's neat.
E They're smarter than people think they are.
C Oh yeah.

= Question 3 dogs
E Well, let's see.
E (Looks) he'd be a (real good watchdog).
E A (pal to somebody).
E Yes, (yes you would) {to dog}.
C He does look friendly.
E He's (cute).

= Question 4 dogs
E Well, some of them they (want them) (for hunting).
E and some of them, they want them just (for pals).
E Uh, some of them (need them) (for privacy) or, {pause} (keep them {pause},
bad things away).
E (People break in their houses) and (if you have a dog that's all it takes).
E They're pretty precious.

= Question 5 dogs
E What do you do with a dog.
E Well (teach them) (to obey orders).
E And (to see that you're safe around them).
E (If strangers come around) (to know that they're not welcome).
E There's (so many things you can teach them).
E They (pick that up pretty quick).
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