Effects of Memory Aids on the Conversations of Elderly Chinese Persons

THESIS

Presented in Partial Fulfillment of the Requirements for the Degree Master of Arts in the
Graduate School of The Ohio State University

By

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2011

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Abstract

The effects of memory books on the quantity and quality of conversations of 3 Chinese persons with mild, moderate, and severe dementia were evaluated. Each memory book contained 30 simple sentences and pictures related to subjects' daily life, family, and themselves. Effects were measured through 5-min daily conversational sessions and at 1- or 2-week follow-up sessions with the experimenter. The results revealed that all subjects increased the number of on-topic factual statements and reduced ambiguous, unintelligible, and perseverative utterances during treatment and follow-up phases with the memory book. Partner prompts diminished to nearly 1 per topic whereas Partner statements and Partner other speech acts increased during memory book conditions. These findings replicate previous research on the effects of memory books on the conversation of English speaking persons with dementia.

Acknowledgments

This thesis would not have been possible without the valuable guidance, assistance, and support of several individuals.

First and foremost, I would like to express my deepest gratitude to my thesis advisor, Professor Michelle Bourgeois, who gave me the inspiration of this study. Without her continuous guidance, persistent help, and genuine encouragement ever since preparation, the completion of this thesis would not have been possible.

Professor Rebecca McCauley and Assistant Professor Lisa Milman, whose sincere encouragement helped me immensely in believing in myself to hurdle all obstacles both in academia and in research.

All the participants and their families, who participated and shared their valuable experience before, during, and after the study.

Dr. Chang, Shu-Ing, who suggested various accesses for subject recruitment in the United States and provided useful guidelines in interacting with people with dementia.

My parents and relatives, who supported and helped me with subject recruitment in the United States and in Taiwan.

Last but not least, Wan-Jane Janiffer Chang, who completed reliability coding for this study.

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INTRODUCTION

Memory impairment is one of the most salient symptoms of individuals with dementia. The chronic and progressive deterioration of short-term and long-term memory retrieval causes deficits in language, cognition, and social skills of these individuals, compromising their ability to maintain their quality of life with full independence. This can lead to many repetitive verbalizations or behaviors, anomia, topic digression, confusion and incoherence, difficulties in executing judgment, and communication breakdowns with family members and caregivers (Appell, Kertesz, & Fisherman, 1982; Ballard, 2000; Bourgeois, 1990, 1993; Bourgeois & Hickey, 2009; Ripich & Terrell, 1988). These behaviors increase tension, frustration and irritation on the part of the person with dementia and the caregiver alike, and therefore decrease the quality of caregiving. In the Chinese (including the Chinese American) community, this situation becomes particularly stressful to the caregiver, as the “inability to provide such care may bring shame and loss of face to the individual caregiver and to the family as a whole, a very serious consequence within the context of traditional Chinese values and interpersonal relationships” (Elliott, Di Minno, Lam, & Tu, 1996). With no prevention or cure at this time for dementia or to reverse the neurological damage, speech-language pathologists (SLPs) and researchers have been trying to find compensatory and

supportive strategies to assist people with dementia in enhancing communicative competency and to lessen the stress of caregivers.

Memory books and wallets are the most commonly used prosthetic visual aids to circumvent problems generated by memory loss. By presenting “factual information in a written and picture format, activating visual pathways through reading” and organizing these visual cues “for more efficient access whenever desired,” these simple and inexpensive aids were found to be useful in a variety of settings (private, personal care and nursing homes), with a variety of conversational partners (spouse, adult children, nursing staff, friends), and with patients with mild to severe dementia (Bourgeois, 2006; Bourgeois & Mason, 1996). Studies also demonstrated positive effects of memory books and memory wallets in stimulating conversational content, skills, and memory in one-on-one situations between individuals with and without dementia (Bourgeois, 1990, 1992b; Bourgeois, Burgio, Schulz, Beach, & Palmer, 1997; Bourgeois, Dijkstra, Burgio, & Allen-Burge, 2001; Bourgeois & Mason, 1996), and between patients with dementia (Bourgeois, 1993; Hoerster, Hickey, & Bourgeois, 2001). In addition, Bourgeois (2006) found that memory aids enhanced the conversations persons with varying degrees of cognitive impairment (Bourgeois, 1991, 1992b).

The studies aforementioned were conducted by collecting 5-min conversational samples on 3 familiar topics in a multiple baseline design. During Baseline sessions, each participant was asked to converse about the topics for which he or she may have difficulty remembering (e.g. family, biographical information, daily life, etc.) without the access to the external memory aids. Bourgeois noticed that the subjects produced limited

content; high rate of ambiguous, perseverative, erroneous, and unintelligible utterances (Bourgeois, 1990, 1992b, 1993; Bourgeois, Dijkstra, Burgio, & Allen-Burge, 2001; Bourgeois & Mason, 1996) and tangential statements (Bourgeois, 1990, 1992b, 1993; Bourgeois, Burgio, Schulz, Beach, & Palmer, 1997). Memory aids containing one photograph and one to two declarative factual statements that corresponded to the subject per page were developed with the assistance of caregivers; each aid varied in size and the number of pages as a response to subjects' individual needs.

The efficacy of Memory aids during treatment phases was well documented. In the initial study, Bourgeois (1990) found that all subjects provided on-topic statements, doubling or tripling their level of baseline performance; there was also evidence of increased factual statements (Bourgeois, 1992b). Subsequent research with people with severe dementia (Andrews-Slavia, Roy, & Cameron, 2003; McPherson et al., 2001) also demonstrated improvement in increasing on-topic facts on most subjects, whether with or without the provision of extra time. Furthermore, Bourgeois and Mason (1996) observed that clients generally provided novel statements of facts and decreased ambiguous, error, and repetitive utterances during conversations. An overall decrease in the amount of negative verbalizations has been revealed during conversations produced by individuals with dementia (Bourgeois, 1993, 1997; Bourgeois, Dijkstra, Burgio, & Allen-Burge, 2001) and by their caregivers (Bourgeois, 1997). In addition, significant improvements were also recorded in meaningful interactions. The experimenters (Bourgeois, 1993; Hoerster, Hickey, & Bourgeois, 2001) discovered that the memory aids facilitated participants to “diminish nonproductive utterances, lengthen their conversational turn,

and/or increase the frequency of turns taken,” reduce partner prompting and conversational dominance (Bourgeois, 1993). Because of the improvement in communicative behaviors, the aided conversational situations were determined to be more informative and more comfortable by naïve judges (Bourgeois, 1990, 1993) and/or the caregivers. Furthermore, maintenance of the effect of memory aids from 3 weeks to 30 months was demonstrated (Bourgeois, 1990, 1992b), suggesting success of memory aids usage triggering information retrieval from both long-and short-term memory via sensory registration.

The value of memory aids is indisputable as a behavioral treatment for communication and for enhancing sensory and working memory without any concerns about side effects. This is in contrast to the effects of pharmacological interventions. In medical fields, different medications have been explored in hope of providing treatments to alleviate symptoms caused by dementia. While they “have either been shown to demonstrate some symptomatic improvements... or to have potential disease-modifying effects” (Bourgeois & Hickey, 2009), they do not demonstrate strong effects for improving cognition and memory. In fact, many of these medicines have known memory-impairing properties or side effects, such as dizziness and nausea (Bourgeois & Hickey, 2009; Massey & Ghazvini, 2005). Reports of side effects of medications on persons of Chinese ethnicity indicate that rivastigmine resulted in nausea, anorexia, dizziness and vomiting (Chan, Chan, & Li, 2006). These paradoxical treatment results create a degree of discomfort on the part of the patients in addition to the inconveniences engendered by dementia. As a result, burdens on their caregivers increase by having to deal with patients’

complaints and other negative consequences of the drugs and issues brought by deteriorated memory. Indirectly, this situation further conceals the fact that individuals with cognitive deficits can “learn new information or maintain treatment effects over the long term... when individuals are provided with the appropriate system of external cues and training procedure for their condition” (Bourgeois, 2006).

Because “getting people with memory losses to use a memory aid is usually not a difficult task... They generally appear to recognize the usefulness [of it]” (Bourgeois, 1997), a memory aid might be particularly beneficial to both Chinese persons with dementia and their caregivers. In the Chinese culture, people commonly interpret dementia as a form of mental illness, place a strong emphasis on the Confucian value of filial piety (the importance of children taking care of their elders) (Wu, Emerson Lombardo, & Chang, 2010), regard the family as a unit, and are taught that “bad deeds that happen in a family are not to be disclosed to outsiders” (Elliott, Di Minno, Lam, & Tu, 1996). These perceptions result in caregivers (mostly family members) of people with dementia very “unlikely... [to] seek outside services, preferring instead to hide both the demented elder and the problem with the family” (Elliott, Di Minno, Lam, & Tu, 1996). Memory aids are cost-effective and low-tech tools for communication and memory enhancement; their applications in settings with family members (e.g. Bourgeois, 1990, 1992b) have been effective. These positive outcomes raise the possibility that memory aids could also be used effectively in the Chinese culture.

To date, although multiple research studies have shown the practicality of memory books in conversations with native speakers of English in the United States, little is

known about their application and effectiveness with Chinese persons with dementia. In the last two decades, research and discussions about Chinese persons with dementia have gradually expanded from investigations of prevalence (e.g. Gao, Xie, Fang, & Pan, 1999; Ineichen, 1996; Liu et al., 1995; Wang et al., 2000; Zhang et al., 1990) to the relationship between care receivers and their caregivers (e.g. Chou, LaMontagne, & Hepworth, 1999; Fuh, Liu, Mega, Wang, & Cummings, 2001; Liu, Hinton, Tran, Hinton, & Barker, 2008). Efforts to examine diagnostic instruments in Chinese language versions have continued to progress (e.g. Chiu, Shyu, Liang, & Huang, 2008; Fuh et al., 1995; Guo et al., 1988). Resources to educate professionals about cultural differences, how these discrepancies may affect the establishment of personal relationships and rapport between the SLPs and the patients and families, and studies on relevant program services have also become available (e.g. Elliott, Di Minno, Lam, & Tu, 1996; Emerson Lombardo, Wu, Hohnstein, & Chang, 2002; Fung & Chien, 2002; Wu, Emerson Lombardo, & Chang, 2010). This knowledge is helpful in terms of raising the Chinese public's awareness of dementia, assisting SLPs to understand and adapt their mainstream model to the Chinese culture, and promoting available clinical services. However, few studies mentioned the establishment of meaningful content in conversations for Chinese persons with dementia. In fact, there is a paucity of research about exploring specific approaches for memory retrieval and increasing the effectiveness of communication between the caregiver and the person with dementia of this minority group.

The purpose of this study was to explore the use of memory books and to examine the effect on conversations of Chinese persons with dementia. Specifically, this study

determined whether memory aids would result in increased conversation and improved meaningfulness of the conversational content. The research question addressed in this study was: Will a memory book containing photos and captions in Mandarin Chinese increase the quality and quantity of conversations of Chinese persons with dementia?

METHOD

Participants

The participants were three monolingual Chinese persons (two females, one male; age range: 82 to 88 years old) who spoke Mandarin Chinese as their native language and were diagnosed with dementia by their physician. Table 1 displays individual subject pertinent descriptive data. All were recruited through staff at the Ohio State University Memory Disorder Clinic, through a recruitment ad published in a local Chinese newsletter, or a recruitment flyer. They had documented memory loss and no evidence of other psychiatric or neurologic illness. Subjects had been residing at home with at least one family member, with one in the United States (Subject 1) and two in Taiwan (Subject 2 and 3). Among the three subjects, Subject 1 and 3 attained college level education, and Subject 2 at high school level. The researcher discussed the study and the consent form with the person's family member over the telephone. Interested families arranged to meet with the researcher at their own home or at the Ohio State University's Speech and Hearing Clinic.

During the initial meeting, this researcher reviewed the consent form with the potential participant and their family member, answered all questions about the study, and obtained signatures on the form. Then this researcher conducted the following screening procedures: 1) The Chinese language translated version of *Oral Reading*

Screen (Bourgeois, 1992a) in a five-page mock memory aid format was administered to assess Subjects' oral reading and comprehension abilities. Due to the different numbers between English words and the Chinese characters after translation, the total score was modified from the original score of 24 to 30. In addition, because of the different writing presentations in Chinese characters, printed captions in both simplified and traditional Chinese were presented to the subjects to determine the version that was most familiar. All participants used the version in traditional Chinese; only Subject 2 produced one reading error during screening. The Taiwanese version of *Mini-Mental State Examination* (MMSE) (Kaosiung Chang Gung Memorial Hospital, n.d.) was administered to determine the subjects' severity of dementia. According to the population based norms (Hughes, Berg, Danziger, Coben & Martin, 1982), Subject 1 scored within the mild range (MMSE = 22), Subject 2 the severe range (MMSE = 9) and Subject 3 at the moderate stage (MMSE = 19).

Setting

All the phases of this study were conducted at a table in a therapy room at the Ohio State University Speech-Language Hearing Clinic, or at a table in their own home. Subjects were out of range of computers, televisions, noisy recreational activities, and other people throughout all sessions. Memory aids were also kept out of sight from the subjects during baseline. All sessions were audio-recorded (Besta Agogo R102 digital pen recorder). Conversational probe sessions were timed using the RadioShack Count-up/Count-down 10-Key Timer.

Stimuli

The family members/caregivers assisted the experimenter “to develop a master list of facts relating to topics of personal relevance for each subject. Family members identified topics for which the subject may have been experiencing memory failures” (Bourgeois, 1992b). Three topics were chosen; each contained 10 simple declarative factual statements in simplified/traditional Chinese that the subject would likely say were composed by the family member/caregiver and the experimenter. Corresponding photographs for the sentences were obtained from the family member/caregiver from the family album. When photographs were judged by the experimenter to be either ambiguous or impossible to obtain, pictures from Google Images were selected. Sample experimental stimuli (family photos or Google images) and topic prompts are shown in Table 2. The memory books used in this study were constructed by the experimenter, consisting of a cover labeled “My Memory Book” in traditional Chinese and three topics: *daily life*, *myself*, and *my family* per aid. Each topic contained 10 pictures with printed captions mounted on white paper. Stimulus pages of different topics were separated by tabs, placed in plastic page protectors and organized in a 3-ring binder for better physical manipulation (e.g. page turning). Based on subjects’ individual needs, all aids were 11.5 x 10 in. All the pages were in chronological arrangement that “reflected the subject’s life and daily schedule, beginning with personal identification and ending with facts about current life” (Bourgeois, 1993).

Experimental Design

A multiple baseline design across behaviors (McReynolds & Kearns, 1983) was used to assess post-treatment effects. In addition, this design was used to replicate the treatment effects and to demonstrate experimental control in the event of generalization to untrained topics (Bourgeois, 1990a).

The experiment included three phases: (a) baseline, (b) sessions with the application of the memory book, and (c) follow-up. The introduction of topics was counterbalanced across daily sessions for all subjects. The first baseline session began when the consent form was received and the MMSE and the Oral-Reading Screen were completed. All baseline sessions started after the initial prompt from the experimenter and continued until subjects exhibited a stable frequency of factual statement production.

The first treatment session began with the topic that had the lowest rate of on-topic statements of fact. The second topic was initiated after an apparent effect was shown in the prior trained topic for a minimum of three probes. The third topic was added using the same criterion. A follow-up probe was conducted at either 1 or 2 weeks post-treatment depending on subject availability.

Dependent Variables

All sessions were tape-recorded, transcribed, and scored for the following dependent variables: Trained On-Topic Statements (T), Novel Statements (N), Ambiguous Utterances (A), Unintelligible Utterances (U), Perseverative Utterances (P), Error Statements (E), Other Speech Acts (O), Partner Prompts (PP), Partner Statements (PS), and Partner Others (PO). These ten conversational codes were defined by Bourgeois

(1990, 1992a) and were used in this study to analyze all conversational utterances between the experimenter and the subjects. Definitions of these codes are included in Table 3.

Procedures

Throughout the study, the procedures were conducted in Mandarin Chinese, the first language of the experimenter, the family member/caregivers and the subjects. The initial meeting was held at the Ohio State University Speech-Language Hearing Clinic or at their home. The experimenter contacted the subjects' bilingual family members and/or caregivers by phone to explain the purpose of the study, asked for their cooperation, and scheduled an initial meeting to complete signing the consent form in English (Appendix A) and subjects' information form (Appendix B). Brief telephone interviews with the family member/caregiver were also conducted to obtain information about Subjects' visual and auditory status.

The first baseline began after the screening procedures of the *Oral Reading Screen* (Appendix C) and *MMSE* (Appendix D) were completed. Each subject participated in a 5-minute conversation per day talking about three topics with the experimenter. The experimenter sat down either across the table or side-by-side with the subject at a distance that the subject felt comfortable with. The audio recorder started when the experimenter stated, (English translation is provided in quotations in this study) "I would like to have a conversation with you today for 5 minutes. Please tell me about your life (or your family, and things you enjoy doing in daily life)." The countdown timer started after the experimenter's initiation of the conversation. During the interaction, the

experimenter sat quietly, responded with head nodding, smiles, and affirmations to exhibit her interest in the content and as an encouragement for the subject to continue; maintenance of eye contact was avoided or reduced to increase the subject's comfort level and as a way to show respect to the elder when conversing. When 90 seconds elapsed and there was a pause in the conversation, the experimenter prompted the subject to converse on the second topic stating, "That was very interesting. Now I would like to know about your family. Please tell me all about your family (or daily life). Again the experimenter responded with head nodding, smiles, and affirmations to exhibit her interest in the content. When approximately 3 min elapsed, the experimenter again thanked the subject and prompted him/her to discuss the final topic. The experimenter did not interrupt when the subject produced ambiguous (A), unintelligible (U), or perseverative (P) utterances. When 30 secs of time elapsed with no response from the subject, the experimenter provided an encouraging prompt (e.g. "Would you tell me more about (the current specific topic)?") to elicit more utterances. Baseline data was obtained within a week; sessions were terminated when a minimum of three sessions was reached and the frequency of the statements was at a stable, low level. Memory aids were not presented during any of the baseline sessions.

Treatment on Topic 1 began once a stable baseline was demonstrated. The audio-recording began as the experimenter introduced the memory aid consisting of ten pages for the first topic to the subject with instructions in Mandarin Chinese. The content was adapted and translated from Bourgeois' (1990) study,

Your family and I have made a memory book for you [the experimenter presents the aid]. Now we are going to have a conversation for 5 minutes about your life, your family and what you enjoy doing in daily life. There are pictures and sentences in it so you can look them up to help you remember what you want to say. Please open it to the first page [assist or demonstrate to the subject as needed] and let's talk about (presented topic). Please tell me about (presented topic).

The countdown timer started immediately after the initiation of the conversation. A minimum of 3 sessions conducted within a week, each with a time limit of 5-minute each. During each conversation, the experimenter gave head nods with short phrases of praise to show comprehension and/or confirmation (e.g. "Mm-hmm," "That's right.") on the subject's accurate reading on the printed captions. Short statements representing understanding (e.g. "Ah, I see," "Oh, really?") were spoken in response to the subject's appropriate elaborations on the current specific topic (e.g. talk more about a particular family member); these utterances also served as an indirect encouragement for the subject to provide further information during the conversation.

Memory book treatment sessions were continued for a minimum of three sessions or until a clear increasing trend was seen on the graph of the frequency of memory book statements. Then the experimenter added the 10 pages on the second topic; conversational sessions were continued for a minimum of three sessions or until a clear increasing trend was seen on the graph of the frequency of memory book statements. The final set of 10 pages on the third topic was then added and conversational sessions continued as above. Maintenance of memory aid efficacy was assessed one to two weeks

after the last treatment session by conducting a conversational session with pages for all three topics (30 pages in total).

Data Scoring

All conversations were audio-recorded, transcribed verbatim with every utterance numbered, and then translated to English by the experimenter. Both the transcription and the translation consisted of the utterances from the subject and the partner, “using standard punctuation and adding contextual notes” (Bourgeois, 1990). All behaviors were decoded by applying Bourgeois’ (1990, 1992a) conversational codes (Table 2), which included 7 subject behaviors (i.e. Trained On-Topic Statements (T), Novel Statements (N), Ambiguous Utterances (A), Unintelligible Utterances (U), Perseverative Utterances (P), Error Statements (E) and Other Speech Acts (O)) and 3 partner behaviors (i.e. Partner Prompts (PP), Partner Statements (PS) and Partner Others (PO)). To avoid the subjects regarding word-by-word oral reading as *the* correct answer and to appreciate the value of language flexibility, “accurate and complete variations of the written aid statements were counted as aid statements” (Bourgeois, 1992b) (i.e. Trained On-Topic Statements (T) in this study). All the decoded data were recorded and analyzed using Bourgeois’ (1990, 1992b) procedures (Bourgeois, 1992a) (Appendix E). Graphs were used as a visual demonstration of the multiple baselines and post-intervention results.

Reliability

Transcription and Translation. A bilingual graduate student with previous training in translation and whose first language is Mandarin Chinese and English as the second had agreed to be the second observer of this study. Twenty percent of the total audio files

(20% from baseline and 20% from treatment sessions for each subject) were given to the observer to transcribe, translated from Mandarin Chinese to English, and then compared with the experimenter's written version. This was to ensure that the interobserver agreement criterion would reach a minimum of 85% in both procedures. Overall reliability was calculated using Bourgeois' method (1990) by dividing the number of words in agreement by the total number of words in agreement plus in disagreement per transcript/translation script and multiplying by 100. This procedure yielded an overall agreement score of 98.9% (range: 97.2% to 99.8%) and 97.4% (range: 94.2% to 99.6%) for transcription and translation, respectively.

Dependant Variables. The calculation of point-by-point interobserver agreement was done by having the experimenter and the observer code and score 20% of the numbered statements from each phase for each subject. Prior to the study, the observer received training on the codes and attained 85% interobserver agreement on 2 samples of conversations. Training procedures were completed by giving the observer the conversational codes as indicated in Table 3, having the person learn the information independently, and then comparing her coded results with the experimenter's. Percentage of agreement was determined by dividing the number of agreements by the number of agreement plus in disagreement per session and multiplying by 100 (Bourgeois, 1990). The mean interobserver agreement for all utterances coded per probe session for each participant was 89.5% (range: 89% to 90%), 99.6% (range: 99.2% to 100%), and 95 (range: 93% to 97%), respectively.

RESULTS

Intervention Effects and Maintenance

The effects of the intervention per 5-min conversation of each participant with the researcher are shown graphically in Figures 1, 2 and 3. These graphs revealed that when the subjects did not have the access to their memory book in baseline, all subjects demonstrated a low and stable rate of performance in providing factual statements. An exception to this pattern was in Subject 1 who presented a more variable rate of performance on *daily life* (range: 0 to 6 utterances). In baseline conditions, Subject 1's statements of facts ranged from 2 to 5 statements on *myself* and 1 to 5 on *family*; Subject 2 ranged 0 to 1 on *daily life* and 0 to 2 on *myself* and *family*; Subject 3 ranged 0 to 2 on *myself*, 2 to 5 on *daily life*, and 3 to 5 on *family*.

During treatment phases, the use of the memory book resulted in all subjects' performances at least doubling or tripling in contrast to their baseline level. Subject 1's total on-topic statements increased to the range from 17 to 20 utterances on *family* (range of novel statements: 9 to 17), and 13 to 22 on both *daily life* (novel: 10 to 15) and *myself* (novel: 14 to 16). Subject 2's total factual utterances ranged from 4 to 14 (novel: 1 to 7, *daily life*), 6 to 11 (novel: 1 to 7, *myself*), and 6 to 12 (novel: 5 to 9, *family*). Subject 3's total statements of facts ranged from 10 to 18 (novel: 10 to 18, *myself*), 7 to 14 (novel: 7 to 14, *daily life*), and 11 to 13 (novel: 9 to 12, *family*).

In follow-up probes, all subjects' performance maintained above their baselines. In comparison to intervention phases, Subject 2's performance a week later dropped to the lower range of her treatment conditions across all previously trained topics, producing 7 total on-topic sentences of fact (novel: 2) on *daily life*, 6 (novel: 4) on *myself*, and 7 (novel: 4) on *family*. Subject 3's (1-week follow-up) maintained at a level approximate to those of the intervention sessions. Subject 1's (2-week follow-up) demonstrated a similar pattern with the exception on the last introduced topic on *family*, which fell below the range of her treatment performance (total: 14, novel: 12).

Subjects were observed to offer information when prompted to discuss the topics in baseline. However, Subject 1's and Subject 3's conversational content was limited to statements about particular periods of time; Subject 1 was unable to offer more information that went beyond the age of 17 on the topics *family* and *myself*, while Subject 3's statements were limited to certain siblings of his during his teenage years when talking about *family*. Subject 3 was also observed to provide tangential utterances frequently when the topic *myself* was discussed. Notable frustration and repetitions of conversational fillers were produced by Subject 2 during the conversation in comparison to Subject 1 and 3, such as "There's nothing much to talk about" or "There's no one in the family."

Upon presenting the book, subjects studied the book prior to reading the memory book statements or producing further information, particularly when a new topic was introduced in the book. Nevertheless, all subjects exhibited a somewhat different discourse pattern when using the memory book. Both Subject 1 and 2 readily read the

trained items first and then provided additional statements, whereas Subject 3 conversed about the picture and the sentence on each page but rarely read aloud the sentences on the book pages. Subject 2 generated novel statements that were almost always about family member identification (e.g. “This is me,” or “This is my daughter, (name).”) when photographic figures were displayed. Similarly, Subject 1 experienced a consistent rate of novel utterances when certain factual stimuli were read. For example, after indicating who her husband was, she always added, “He was in charge of overseas Chinese affairs.” Nonetheless, Subject 1 and 3 responded with more variations overall, such as commenting, making comparisons, and interacting with the researcher. For example, when Subject 1 read that one of her hobbies was making ceramics, she added, “I like drawing, arts and such, too!” and then she asked the researcher, “Do you like arts?” Furthermore, Subject 1 began looking around the room and intended to stand up to find previous artworks she made in the past. For Subject 3, he reflected that he “didn’t go [for a walk] today. It was cold in the morning, the weather was bad, so I didn’t go” when turning to the page with the trained fact, “I go for a walk when the weather is nice.” Overall, with the exception of Subject 1 and Subject 2, whose total on-topic facts slightly diminished overtime on *daily life* and *myself*, respectively, treatment effects were immediate and stable across the phases for all subjects.

Nontargeted Communicative Behaviors

Subjects’ mean frequency of ambiguous, unintelligible, perseverative, error, and other statements are shown in Figure 4. All subjects reduced their ambiguous (ranging from 19.8 to 9.4, 2.7 to 0.5, 7.8 to 7.1 for Subject 1, 2, and 3, respectively), unintelligible

(Subject 1: 3.8 to 3.1; Subject 2: 0.7 to 0.2, Subject 3: 4.7 to 3.2), and perseverative utterances (Subject 1: 5.6 to 4.4; Subject 2: 3.2 to 1.0, Subject 3: 5.7 to 5.2) in treatment sessions. The frequency of error statements in baseline and interventions remained unchanged for Subject 3. A slight increase in Other Utterances (O) was recorded for Subject 1 (range: 13.8 to 15.0). Subject 2's fidgeting behaviors disappeared when the memory book was in use, which was in contrast to the fact that, during baseline sessions, she either looked down or looked around the room after prompts and repeatedly demanded to know where her daughter was.

Changes in Partner Utterances

Figure 5 demonstrates the mean of frequency of partner utterances, including Partner Prompts (PP), Partner Statements (PS), and Other statements (PO). The graph showed a decline in the mean number of all Partner Prompts (PP) in the post-treatment sessions to approximately 3 prompts per session (Subject 1: from 3.8 to 3.1; Subject 2: from 5.6 to 3.0; Subject 3: from 3.3 to 3.0). Partner statements (PS) and Other statements (PO) exhibited at a higher rate of frequency during intervention than in baseline for all 3 subjects. Ranges of Partner Statements (PS) with Subject 1, 2, and 3 were 3.3 to 5.4, 7.7 to 8.4, and 4.4 to 6.9, respectively. Other statements (PO) were from 13.8 to 16.8 (Subject 1), 6.4 to 13.5 (Subject 2), and 14.9 to 15.9 (Subject 3).

DISCUSSION

Effects of Memory Aid

The purpose of this study was to evaluate the effects of memory books on the conversations of 3 Chinese elders with dementia. Results revealed that memory books improved the quantity and quality of all 3 subjects' conversations with the researcher. The researcher found that subjects increased their total on-topic statements of facts (book + novel) while ambiguous, unintelligible, and perseverative utterances declined across the three appointed topics. These treatment results are the same as in Bourgeois' (1990, 1992b) studies in the United States and show that the on-topic statements "can also be seen in the concomitant effects on nontargeted conversational behaviors," suggesting that Chinese individuals with dementia of different severity level may benefit from memory books during conversations.

A closer examination of the content of nontargeted conversational behaviors on Subject 1's Other Utterances (O) explained the increase. The analysis showed that the increased mean is an outcome of utterances from social interactions and memory confirmations. During baseline sessions, Subject 1 often went off on tangents, asked for clarifications on the given topic, and self-questioned (e.g. "Oh, why did I go to Taiwan?" "Um... What happened then?..."). The content changed upon the introduction of the memory book. Tangential statements were reduced and the latter two types of statements

rarely appeared. Instead, Subject 1 commented and requested information about the memory book *itself* (e.g. quality and source of the pictures for one to two sessions when a new topic was added to the book), asked questions that sought the researcher's response (e.g. "Xiamen is in, it's not in Taiwan, right? Isn't it in this area [point at the map]?") "They (i.e. names of her children) are pretty easy to read, don't you think?"), and gave acknowledgement of the trained stimuli (e.g. "Mm-hmm, this is correct."). Similarly, Subject 3 demonstrated confirmation and even corrections (regardless that a few statements were later determined as errors by his spouse) on the printed stimuli. Such ability of differentiation revealed by Subject 1 and 3 suggests that successful memory book use can achieve memory retrieval and judgment reinforcement.

It should be noted that, based on the need of Subject 1 and her unpredictable daily schedule, 6 out of 10 trained stimuli in Subject 1's memory book on *daily life* were more like reminders (e.g. "I need to wear gloves and the black wool cap when I go outdoors in winter") rather than descriptions of daily routine (e.g. "I eat breakfast around 8am to 9:30am"). Subject 1 read most of the trained captions during the first through the third sessions. Beginning from the fourth session, she started reading fewer of these reminding stimuli and went through these pages faster. Consequently, her novel elaborations decreased and resulted in a decreasing trend in her total on-topic sentences. The caregiver and the researcher considered that the subject might receive greater benefit if these pages were posted in the areas associated with the content (e.g. post "I need to drink five glasses of water everyday" in the kitchen). These pages were then decided to be taken out and posted in designated home areas at the end of the study. It would be interesting to

examine the effects of different types of memory book sentences on individuals with dementia in everyday situations.

Subjects and their caregivers seemed to recognize the value of the memory book, a collection of personal information and pictures. The researcher observed that when talking to the caregiver after the 5-min treatment session was over, Subject 1 and 2 opened and studied the book multiple times by themselves. Subject 1 also demonstrated her remembrance of the existence of her memory book upon greeting the researcher, “I remember you have something for me today? A book about me?” Additionally, both Subject 1 and her caregiver further indicated that it would be best to have the book with the subject when visiting other family members so that she could use the book independently. Subject 3’s spouse also reported similar behavior by Subject 3 after the study was completed; he kept the memory book in his room for safekeeping and would go over the pages by himself. Subject 2’s daughter even scheduled going over the memory book with Subject 2 as part of the daily routine. The reciprocity between the caregiver and the person with dementia on the quality and quantity of conversation when using a memory book in the Chinese society is yet to be determined.

All subjects immediately engaged in the prompted conversations using their own memory book upon the introduction of this visual aid. The researcher noticed that all subjects smiled as they looked at the pictures. An anecdotal observation from the researcher was that Subject 2 exhibited more responses to pages containing actual pictures of the targets—particularly when those are persons she is familiar with (i.e. faces of family)—than the Google images in cartoon style. Despite the fact that Subject 2

generated the majority of novel statements when identifying family members, she stayed on the current page and studied the picture longer with the use of actual images. It is possible that the subject's lingering behavior serves as an unconscious visual reinforcement. This contrasts to her reading the caption and then turning to the next page, as she did to pages with Google images. These reactions were not prominent for Subject 1 and 3. Both subjects maintained higher and stable novel elaborations of greater variety regardless of the styles of pictures throughout intervention and follow-up phases. This contrast, therefore, demonstrated the possibility that memory books with realistic pictures may be more effective for people with dementia at a greater severity level. Additionally, Subject 2's lower performance during the follow-up phase compared to treatment sessions suggests that people with severe dementia may require higher frequency in memory book usage to maintain the aid's effectiveness.

Effects on Partner Utterances

According to Figure 5, memory books are useful in decreasing Partner Prompts (PP). In baseline after the initial prompt was given, the partner experienced consistent requests either for topic clarification (e.g., "What should I say?", "What do you want to know?") or for specific information (e.g., "Why do you want to know [about me]?") from Subject 1 and 3 particularly during the first 4 to 5 sessions. Subject 2 frequently terminated conversations (e.g. "I have nothing to say.") and then forgot about her participation in the study after seconds of silence. As a result, the partner was required to repeat the prompt with encouragements for all subjects. These agitated statements reduced notably during

the application of memory books, allowing the frequency of Partner Prompts (PP) to decline to nearly 1 prompt per topic across all subjects' performance.

An increased mean number of Partner Statements (PS) and Partner Other (PO) when memory books were in use was observed. However, the rising number of Partner Other (PO) should not be regarded as a failure in memory book application. Rather, it represents the response to subjects' increased utterances. Nearly all Partner Other (PO) were speech acts serving the purposes of understanding, acknowledging subjects' conversational content, and encouraging further information during the conversation. The Partner Other (PO) were natural reactions to regulate and to facilitate the conversation in this study.

Data analyses of data showed that a portion of Partner Statements (PS) with Subject 1 and 3 were the result of responding to their initiation of interactions. Another portion observed in all subjects came from prompts to turn the pages. Interestingly, these prompts were absent when memory book study protocols were implemented with Subject 1 and 3. However, prompts became necessary once in a while for these two subjects during the memory aid condition. This is somewhat contrary to Bourgeois' (1993) findings with patients in the mild to moderate stages of dementia that were observed to turn pages spontaneously while reading. Nevertheless, the inference is that different conditions between protocol reading and memory book usage might be the cause of this divergence. Both Subject 1 and 3 were able to concentrate on the task of reading the sentence on each page. They had been verbal throughout baselines and treatment probes. At times, their emotion fluctuated with the conversational content, resulting in subjects setting the book

aside while expressing. This behavior, along with the combination of increased utterances and emotional interference may have distracted the participants from remembering to turn the page. Consequently, relevant prompts to facilitate conversations were needed.

Limitations and Future Research

Several limitations of this study require discussion. First and foremost is the number of participants. This study was only conducted with three participants, with one at each different impairment level. Although all three subjects demonstrated strong positive effects of memory book in total on-topic statements, Subject 3 seemed to experience limited effects on nontargeted conversational behavior reductions, particularly in ambiguous and perseverative utterances that are two of the most salient language deficits engendered by dementia. Bourgeois (1992) suggested that successful memory aid use may be related to extent of cognitive impairment as measured by the MMSE score. Interestingly, the results of this study showed that the decline of nontargeted conversational behaviors is not in accordance with the subjects' cognitive level. For example, the subject with the lowest MMSE score (i.e. Subject 2, severe level, MMSE = 9) exhibited somewhat similar changes in unintelligible and error productions as Subject 1 (mild level, MMSE = 22). Subject 2 also performed slightly better than Subject 1 and Subject 3 (moderate level, MMSE = 19) in perseverative utterances. To ascertain the generalizability of the treatment effects, further studies should investigate the association between the MMSE score or "measurable cognitive deficits" (Bourgeois & Mason, 1996) and the negative verbal responses in a larger number of participants.

A second limitation is the environmental setting of this intervention. The current study was conducted here the participants felt the most familiar and comfortable (i.e. their own home), a highly familiar site with specific cues and prompts. There might have been different results in a less familiar setting, such as an adult day care center or nursing home. It is encouraged for future research to explore and determine maximum usefulness of memory books in communication utterances in a variety of facilities, such as in day-car settings, nursing homes and clinics.

To generate the practicality of this prosthetic device with promise of success in conversations with a variety of partners, future studies should also concentrate on implementing it with Chinese residents with dementia conversing with different conversational partners, such as interacting one-on-one with their caregiver, a familiar partner, or with an individual with dementia of the same or different cognitive impairment level. Inasmuch as the researcher is the only conversational partner in this study, the question regarding the necessity of conversational skills trainings for conversational interactants of this ethnicity also remains unanswered. Previous studies (e.g. Andrews-Slavia, Roy & Cameron, 2003; Bourgeois, 1990, 1992b, 1993; Bourgeois & Mason, 1996) have recorded evidence of success using memory aids in various settings with different partners. Replicating these conditions with a different ethnic group (in this case, the Chinese) to determine treatment efficacy may offer an opportunity “to maximize participation in daily life at a level that is meaningful and satisfying to the clients, their families, and others in their social environment” (Bourgeois & Hickey, 2009). Finally, to reflect the level of communicative improvements from a more objective perspective,

future interactants or caregivers should participate in measuring the effectiveness of memory books. Changes in conversational content and behaviors in baseline and post-treatment for both persons with dementia and their partners (i.e. partner utterances) should also be further evaluated by naïve judges.

CONCLUSION

In summary, memory books, containing photos, pictures, and simple sentences in Mandarin Chinese seem to be effective in memory retrieval and improving the quality and quantity of conversations of Chinese persons with dementia of all severity stages. Further studies of this intervention are needed to generalize to various settings with different interactants of the same ethnicity to ensure the potential benefits memory aids to memory-impaired patients of various ethnicities.

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Table 1. Subject Characteristics

Subjects	Diagnosis	Sex	Age	MMSE	Reading	Education	Country	Residence	Caregiver
1	Dementia	F	82	22	1	University of Education	United States	Home w/daughter	Daughter
2	Dementia	F	88	9	0	High school	Taiwan	Home w/daughter	Daughter
3	Dementia	M	87	19	0	University of Military	Taiwan	Home w/wife	Wife

Note. MMSE: Mini-Mental State Exam score, 30 total. Reading: oral reading score indicates number of errors out of 30 possible.

Table 2. Sample Memory Book Stimuli and Topics

<u>Topic:</u>	Daily Life (日常生活)
<u>Prompt:</u>	Please tell me about your daily life. (請您跟我聊一下您的日常生活)
<u>Samples</u>	<div data-bbox="407 344 662 730"> <p data-bbox="435 394 623 457"><u>Photograph</u></p> <p data-bbox="435 394 623 457">早餐後，我會看個報紙。</p> </div> <div data-bbox="696 371 885 457"> <p data-bbox="696 371 885 399"><u>English translation</u></p> <p data-bbox="696 405 873 457">I read newspapers after breakfast.</p> </div> <div data-bbox="946 344 1206 730"> <p data-bbox="946 344 1084 371"><u>Google Image</u></p> <p data-bbox="984 405 1161 432">我大概 10 點睡覺。</p> </div> <div data-bbox="1240 371 1419 516"> <p data-bbox="1240 371 1347 424"><u>English translation</u></p> <p data-bbox="1240 430 1419 516">I go to bed around 10 o'clock at night.</p> </div>
<u>Topic:</u>	Myself (我自己)
<u>Prompt:</u>	Please tell me about yourself. (請您跟我聊一下有關您自己的事)
<u>Samples</u>	<div data-bbox="407 865 662 1251"> <p data-bbox="435 915 623 978"><u>Photograph</u></p> <p data-bbox="435 915 623 978">我喜歡看書，尤其是傳記。</p> </div> <div data-bbox="696 892 885 1008"> <p data-bbox="696 892 885 919"><u>English translation</u></p> <p data-bbox="696 926 828 1008">I like to read, especially biographies.</p> </div> <div data-bbox="946 865 1206 1251"> <p data-bbox="946 865 1084 892"><u>Google Image</u></p> <p data-bbox="984 926 1161 978">我喜歡寫毛筆字和做麵食。</p> </div> <div data-bbox="1240 892 1419 1062"> <p data-bbox="1240 892 1347 945"><u>English translation</u></p> <p data-bbox="1240 951 1419 1062">I like to write calligraphy and make Chinese pastries.</p> </div>
<u>Topic:</u>	My Family (我的家人)
<u>Prompt:</u>	Please tell me about your family. (請您跟我聊一下有關您家人的事情)
<u>Samples</u>	<div data-bbox="407 1365 662 1766"> <p data-bbox="435 1415 623 1442"><u>Photograph</u></p> <p data-bbox="435 1446 623 1474">我的太太是葉碧香。</p> <p data-bbox="558 1734 600 1751">葉碧香</p> </div> <div data-bbox="696 1415 885 1503"> <p data-bbox="696 1415 885 1442"><u>English translation</u></p> <p data-bbox="696 1449 837 1503">My wife is Ye Bixiang.</p> </div> <div data-bbox="946 1365 1206 1766"> <p data-bbox="946 1365 1084 1392"><u>Google Image</u></p> <p data-bbox="984 1446 1187 1503">我的家在俄亥俄州，我的家在加州。</p> </div> <div data-bbox="1240 1415 1419 1585"> <p data-bbox="1240 1415 1347 1470"><u>English translation</u></p> <p data-bbox="1240 1476 1419 1585">(Name) lives in Ohio, and (name) lives in California.</p> </div>

Table 3. Definition of Conversational Codes

Code	Definition
<u>Subject</u>	
Trained (T)	Memory book statement: one of the 30 trained statements produces unambiguously and intelligibility.
Novel (N)	Intelligible, unambiguous statements contributing additional correct information related to one of the book stimuli (e.g. response to a question, elaboration on a prior statement).
Ambiguous (A)	Intelligible utterance but ambiguous in content due to one or more of the following: a) Empty phrase: a phrase or idiom contributing no content to the discourse. b) Indefinite term: utterances containing highly nonspecific nouns (e.g. stuff, thing, something). c) Deictic term: terms with no referents to the precise meaning (e.g. this, that, here, there). d) Pronouns without antecedents: pronouns used without specific referents.
Unintelligible (U)	Sentence fragments, grammatically incomplete phrases, non English phrases, multiple joined sentence fragments, and any utterances containing neologisms, literal, verbal, semantic, or phonological paraphasias.
Perseverative (P)	Repetitions of previously stated information (i.e. single words, phrases, or complete sentences).
Error Statements (E)	Intelligible and unambiguous statements related to the trained topics and expressing a fact that is false, as determined by the caregiver and noted in the contextual remarks.
Other (O)	a) Any intelligible and unambiguous speech, such as questions, requests, responses to questions unrelated to any of the trained topics, commands, acknowledgements (including repetition of a statement for acknowledgement purpose), organizational devices which serve to regulate the conversation, and social conventions. b) Any intelligible and unambiguous that expresses a fact unrelated to the three trained topics.
<u>Experimenter</u>	
Prompt (PP)	Any of the three prompts (Tell me about your family/ yourself/ your day) and requests for content.
Statement (PS)	Any other statement that is not one of the specific partner prompts.
Other (PO)	Any other speech act that serves to regulate the conversation without providing content, particularly acknowledgements (e.g. okay, I see, alright).

Figure 1. Subject 1's Number of On-Topic Statements

Number of total on-topic and novel statements of Subject 1 made during 5-minute conversations across all topics during baseline and treatment phase in each session. Line graphs represent the number of total on-topic statements (trained (T) + novel (N) statements). Bar graphs represent the number of novel (N) statements.

Figure 2. Subject 2's Number of On-Topic Statements

Number of total on-topic and novel statements of Subject 2 made during 5-minute conversations across all topics during baseline and treatment phase in each session. Line graphs represent the number of total on-topic statements (trained (T) + novel (N) statements). Bar graphs represent the number of novel (N) statements.

Figure 3. Subject 3's Number of On-Topic Statements

Number of total on-topic and novel statements of Subject 3 made during 5-minute conversations across all topics during baseline and treatment phase in each session. Line graphs represent the number of total on-topic statements (trained (T) + novel (N) statements). Bar graphs represent the number of novel (N) statements.

Figure 4. Mean Frequency of Nontargeted Communicative Behaviors

Mean frequency of nontargeted communicative behaviors (ambiguous, unintelligible, error, perseverative, and other utterances) of Subject 1, 2, and 3 during 5-minute conversations in baseline and treatment sessions. The hatched bars represent the mean of particular nontargeted communicative behaviors across all three topics during baseline sessions. The dark-colored bars represent the mean of particular nontargeted communicative behaviors across all three topics during treatment sessions.

Figure 5. Mean Frequency of Partner Utterances

Mean frequency of partner utterances (partner prompts, partner statements, and other statements) with Subject 1, 2, and 3 during 5-minute conversations in baseline and treatment sessions. The hatched bars represent the mean of particular partner utterances across all three topics during baseline sessions. The dark-colored bars represent the mean of particular partner utterances across all three topics during baseline sessions.

Appendix A: Consent Form

The Ohio State University Consent to Participate in Research

Study Title: Effects of Memory Aids on the Conversations of Elderly Chinese Persons

Researcher: Michelle S. Bourgeois, PhD

Sponsor: None

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.

Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose:

The purpose of this research is to determine the effects of memory aids (pictures and sentences) on the conversational content of elderly Chinese persons with dementia.

Procedures/Tasks:

Two Chinese subjects (male and female; 65-90 years) with dementia will be identified at various locations (e.g. Ohio State University Memory Disorder Clinic) by staff at those facilities. Proxy consent for participation in the study will be solicited from a family member and the person with dementia will be asked to assent to the study. After consent and assent are obtained, the investigators will meet with the individual to administer two measures: 1) the Taiwanese version of *Mini Mental Status Examination* used by Kaosiung Chang Gung Memorial Hospital and 2) the *Bourgeois Oral Reading Screen* (Bourgeois, 1992); family members will be asked to provide pictures for 30 statements related to the participant, his or her family and daily life. The investigators will then create one memory book for each participant with both pictures and text. A total of 7 to 15 sessions will be conducted on a daily basis. During each session, the participants will be asked to have 5-min conversations about themselves, their life and family; only the first 3 to 4 sessions will be conducted without the use of a memory aid. A follow-up study will be conducted a week after the previous session. The initial screening protocol should take no longer than 60 minutes to administer. At any time if the participant expresses fatigue or disinterest in the procedures, the session will be discontinued. All sessions will be audio-taped for analysis.

Duration:

You may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled. Your decision will not affect your future relationship with The Ohio State University.

Risks and Benefits:

The purpose of this study is to determine if memory aids supporting conversation of the participants about their life, living conditions, family members, and other personal topics, many of which could be sensitive or embarrassing. Therefore, some participants could consider the questions posed in the protocol as an invasion of their privacy. If a participant expresses, either verbally or nonverbally, that they are confused, suspicious, reluctant, or unwilling to engage in conversation with the PI, the session will be terminated immediately. It is the experience of the PI that these expressions of discomfort are rare and easily resolved by terminating the session. The PI will notify the staff or family member immediately after terminating a session, in order that the appropriate support measures are implemented to resolve any negative ramifications of the session.

The direct benefit to participants is that they will receive individualized attention, including opportunities to converse with the investigator, and that may be pleasurable for them. The benefit to others includes providing health care professionals with insight into the nature of decline of cognitive function in dementia

Confidentiality:

Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices;
- The sponsor, if any, or agency (including the Food and Drug Administration for FDA-regulated research) supporting the study.

Incentives:

You will be given with a small gift for your participation in this study.

Participant Rights:

You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled. If you are a student or employee at Ohio State, your decision will not affect your grades or employment status.

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

CONSENT
Behavioral/Social Science

IRB Protocol Number: 2009B0197
IRB Approval date: November
18, 2010
Version: 01/13/09

82 An Institutional Review Board responsible for human subjects research at The Ohio State
83 University reviewed this research project and found it to be acceptable, according to
84 applicable state and federal regulations and University policies designed to protect the rights
85 and welfare of participants in research.

86

87 **Contacts and Questions:**

88 For questions, concerns, or complaints about the study you may contact:

89 **Michelle S. Bourgeois, Ph.D., CCC-SLP, (614) 292-1742.**

90

91 For questions about your rights as a participant in this study or to discuss other study-related
92 concerns or complaints with someone who is not part of the research team, you may contact
93 Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

94

95 If you are injured as a result of participating in this study or for questions about a study-
96 related injury, you may contact: **Michelle Bourgeois, PhD., (614) 292-1742.**

97

98

CONSENT
Behavioral/Social Science

IRB Protocol Number: 2009B0197
IRB Approval date: November
18, 2010
Version: 01/13/09

Signing the consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

Printed name of subject

Signature of subject

Date and time

AM/PM

Printed name of person authorized to consent for subject
(when applicable)

Signature of person authorized to consent for subject
(when applicable)

Relationship to the subject

Date and time

AM/PM

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining consent

Signature of person obtaining consent

Date and time

AM/PM

Appendix B: Memory Book Study Protocol

Memory Book Study Protocol (adapted from Bourgeois, 1992)

Subject Name: _____
Address: _____
Caregiver Name: _____
Relationship: _____
Caregiver Address: _____
Caregiver Phone: _____

Subject Demographic Information:

Date of Birth: _____
Race: _____
Gender: _____
Education: _____

I. Screening Measures:

- a) Functional vision, hearing, and communication screening measures
(Bourgeois et al., 2001)

VISION (from Minimal Data Set 2.0)

(Ability to see in adequate light and with glasses if used)

0. ADEQUATE – sees fine detail, including regular print in newspapers/books.
1. IMPAIRED - sees large print, but not regular print in newspapers/ books.
2. MODERATELY IMPAIRED- limited vision; not able to see newspaper headlines, but can identify objects.
3. HIGHLY IMPAIRED – object identification in question, but eyes appear to follow objects.
4. SEVERELY IMPAIRED - no vision or sees only light, colors, or shapes; eyes do not appear to follow objects.

VISUAL LIMITATION/ DIFFICULTIES

- a. Side vision problems – decreased peripheral vision(e.g., leaves food on side of tray, difficulty traveling, bumps into people and objects, misjudges placement of chair when seating self).
- b. Experiences any of following: sees halos or rings around lights; sees flashes of light; sees curtain over eyes.
- c. NONE OF ABOVE

VISUAL APPLIANCES

Glasses; contact lenses; magnifying glass

0. No
1. Yes

HEARING

(With hearing appliance, if used)

0. Hears adequately – normal talk, TV, phone
1. Minimal difficulty – when not in quiet setting
2. Hears in special situations only- speaker has to adjust tonal quality and speak distinctly
3. Highly impaired – absence of useful hearing

COMMUNICATION DEVICES/ TECHNIQUES

(Check all that apply during last 7 days)

- a. Hearing aid present and used
- b. Hearing aid, present and not used regularly
- c. Other receptive communication techniques used (e.g., lip reading)

COMMUNICATION

5 MINUTE CONVERSATION

Set stopwatch for 5 minutes. Prompt at 3.5 and 2.0 minutes approximately. If necessary, use other general prompts (“tell me more” or “what else can you tell me about your life, family, etc.”).

1. Tell me about your family. _____
2. Tell me about your life. _____
3. Tell me about your day. _____

Rating of Responses

- 1 No verbal or vocal response to interviewer.
- 2 Unintelligible verbal responses, or vocalizing only.
- 3 Single word responses, includes yes/no responses.
- 4 Phrases, multiword only.
- 5 Single sentences only.
- 6 Elaborated conversation; multiple sentence responses; appropriate, normal conversation.

II. Oral Reading and Comprehension (Bourgeois, 1994)

(Total Score Possible: 30)

(Circle words that are spoken intelligibly; 1 point for each word read correctly and 1 point for each concept understood.)

(If patient says he cannot see the words, start with Large print stimuli)

(If patient says he cannot read, ask him to talk about the picture.)

Instructions: Please read this page and tell me about it.

請您唸這一頁並告訴我內容在講什麼。

Small Print:

Oral Reading

Comprehension

The dog's name is Rover. (6 possible)

這隻狗叫來福。 / 这只狗叫来福。

I live in Swissvale. (5 possible) _____
我住在美國。 / 我住在美国。 _____

I enjoy baseball games. (6 possible) _____
我喜歡打棒球。 / 我喜欢打棒球。 _____

My sister is 75 years old. (7 possible) _____
我妹妹今年 75 歲。 / 我妹妹今年 75 岁。 _____

His wife's name is Mary. (6 possible) _____
他太太叫怡君。 / 他太太叫怡君。 _____

(Add points above): Oral Total _____ Comprehension Total: _____

(If 5 or more words are in error, repeat test with large print stimuli; 1 point for each word.)

Comment about other reading behaviors (e.g., needed prompts to turn pages; put booklet up to face to read; needed prompts to read out loud; claimed inability to read/see, etc.)

Large Print:	Oral Reading	Comprehension
--------------	--------------	---------------

The dog's name is Rover. (<u>6</u> possible) 這隻狗叫來福。 / 这只狗叫来福。	_____	_____
--	-------	-------

I live in Swissvale. (<u>5</u> possible) 我住在美國。 / 我住在美国。	_____	_____
--	-------	-------

I enjoy baseball games. (<u>6</u> possible) 我喜歡打棒球。 / 我喜欢打棒球。	_____	_____
---	-------	-------

My sister is 75 years old. (<u>7</u> possible) 我妹妹今年 75 歲。 / 我妹妹今年 75 岁。	_____	_____
--	-------	-------

His wife's name is Mary. (<u>6</u> possible) 他太太叫怡君。 / 他太太叫怡君。	_____	_____
--	-------	-------

(Add points above): Oral Total _____ Comprehension Total: _____

(If 5 or more words are in error, repeat test with large print stimuli; 1 point for each word.)

Comment about other reading behaviors (e.g., needed prompts to turn pages; put booklet up to face to read; needed prompts to read out loud; claimed inability to read/see, etc.)

Appendix C: Oral-Reading Screening

Oral-Reading Screening (left: traditional Chinese; right: simplified Chinese)

這隻狗叫來福。

我住在美國。

这只狗叫来福。

我住在美國。

我喜欢打棒球。

我喜歡打棒球。

我妹妹今年 75 歲。

我妹妹今年 75 岁。

他太太叫怡君。

怡君

他太太叫怡君。

怡君

Appendix D: Mini-Mental State Examination

簡式智能量表

Mini Mental State Examination

(高雄長庚醫院神經科高階智能測驗)

(MMSE < 23, <15)

姓名_____ 病歷號_____ 床號_____

年齡: _____ 出生日期: _____ 年 _____ 月 _____ 日 職業_____

教育程度: ☐不識字 ☐識字 ☐國小 ☐國中 ☐高中 ☐大專 ☐碩士 ☐博士

測驗日期: _____ 年 _____ 月 _____ 日 年齡 _____ 歲 施測者 _____

Orientation:

- ___ 1. 今天是 _____ 年 _____ 月 _____ 日 星期 _____ 季節為 _____ 季。(5)
- ___ 2. 這裡是 _____ 醫院 _____ 樓 _____ 科， 在 _____ 縣市。(4)
- ___ 3. 這棟樓房/建築是做什麼用的?用途是什麼?

Registration:

- ___ 3. 說出三件東西的名字，叫病人馬上覆誦(3) ☐樹木 ☐剪刀 ☐火車

Attention and Calculation:

- ___ 4. 減七測驗，從 100 到 65 (5) 93, 86, 79, 72, 65

Recall: ↵

- ___ 5. 回想三件東西的名字 (3) (次序無關) ☐樹木 ☐剪刀 ☐火車 練習次數__

Language:

- ___ 6. 出示手錶和筆，要病人說出東西的名字 (2) ☐手錶 ☐筆
- ___ 7. 覆誦：沒如且或但 或 知足天地寬 或 心安樂根香 (1)
- ___ 8. 服從命令
- ___ : ☐用你的右手拿起這張紙，☐將它對摺，☐然後置於大腿上面 (3)
- ___ 9. 讀並且執行下列動作：(1) 請閉上眼睛
- ___ 10. 寫出一個句子 (造句：含主詞、動詞、受詞) 或寫出一句話 (1)

Spatial:

- ___ 11. 畫出圖形 (兩個重疊的五角形) (1)

總分： _____ /30

Appendix E: Sample Data Coding Sheet

Sample Data Coding Sheet (adapted from Bourgeois, 1992a)

Sample Data Coding Sheet (adapted from Bourgeois, 1992a)

Subject (S): _____ Partner (P): _____
 Session #: _____ Date: _____ Topic: _____

Total	T: _____	N: _____	A: _____	U: _____	P: _____
	E: _____	O: _____	PP: _____	PS: _____	PO: _____

	S	P	S	P	S	P	S	P
1			29		57		85	
2			30		58		86	
3			31		59		87	
4			32		60		88	
5			33		61		89	
6			34		62		90	
7			35		63		91	
8			36		64		92	
9			37		65		93	
10			38		66		94	
11			39		67		95	
12			40		68		96	
13			41		69		97	
14			42		70		98	
15			43		71		99	
16			44		72		100	
17			45		73		101	
18			46		74		102	
19			47		75		103	
20			48		76		104	
21			49		77		105	
22			50		78		106	
23			51		79		107	
24			52		80		108	
25			53		81		109	
26			54		82		110	
27			55		83		111	
28			56		84		112	