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AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION **DIVISION 2**

## In This Issue

# *Coordinator's Column*

Julie L. Wambaugh

## *Perspectives*

Welcome to the last 2009 issue of *Perspectives on Neurophysiology and Neurogenic Speech and Language Disorders*. We offer our thanks to Nidhi Mahendra, Issue Editor, for organizing this fine set of articles addressing dementia. In this issue, Nidhi and Nisha Engineer provide a detailed longitudinal case study of vascular dementia. In the following article, Raksha Anand, John Hart, Jr., Patricia Moore, and Sandra Chapman present an overview of frontotemporal lobar degeneration (FTLD) and three variants of FTLD. They utilize a case study approach to characterize language abilities in the FTLD subtypes. In the third article, Megan Petryk and Tammy Hopper provide the findings of an investigation designed to examine the effects of question type on the conversational discourse of individuals with Alzheimer's disease (AD). In the final article, Jane Pimentel describes contextual thematic group treatment, a theme-based approach for targeting activity and participation. We extend our gratitude to these authors for providing this excellent continuing education opportunity for our affiliates.

We also wish to thank our Editor, Katie Ross, for her continuing efforts in coordinating all of the issues of *Perspectives on Neurophysiology and Neurogenic Speech and Language Disorders*. Additionally, we are extremely grateful to our Continuing Education Administrator (CEA), Lisa Modell. Lisa is completing her third and final year of service as the Division's CEA, and her work for the Division has been invaluable. Thanks Lisa!

*Perspectives* will continue in 2010 with issues being published in April, June, October, and December. The planned topics include Cognitive/Linguistic-Based Progressive Disorders, Motor-Based Progressive Disorders, Acquired Apraxia of Speech, and Group Therapies. Thanks in advance to our upcoming issue editors and authors for your time and efforts.

### Announcements

Several of our Division affiliates were honored at the ASHA Convention in New Orleans. We are very proud to report that the following individuals were awarded Fellowship of the Association: Caryn Easterling, Robert Goldfarb, Evelyn Klein, Kathryn Kohnert, Luis Riquelme, Linda Shuster, McKay Moore Sohlberg, and Julie Stierwalt. In addition, Kathryn Kohnert received the Certificate of Recognition for Special Contributions in Higher Education.

The Steering Committee (SC) is pleased to report that the Division will renew its support of the efforts of the Academy of Neurologic Communication Disorders and Sciences (ANCDS) in their Practice Guidelines project. The Division will contribute $2,000 per year for the next five years to assist in the continuing development, updating, and dissemination of the guidelines. Current information concerning the guidelines, including links to numerous reports can be found at www.ancds.org.

ASHA now offers several social networking opportunities through Facebook, Twitter, and LinkedIn. To find out more, visit www.asha.org/members/connecting/socialnetworks.htm.

Our Division e-mail list continues to be very active and informative. Thanks to all of our list subscribers for being so responsive to others with questions and for utilizing the list in a professional manner. This is a reminder that the list functions in a “self-policing” manner and that information provided is not verified by the Division or ASHA.

On behalf of the SC, I thank you for your continued affiliation and support of the Division. I look forward to an exciting and productive new year in 2010 and welcome your suggestions concerning Division activities.

# CE Introduction

Nidhi Mahendra

Rapid, unprecedented global aging is one of the most significant demographic changes of this century. It has dramatically impacted the incidence and prevalence of dementia resulting from Alzheimer's disease (AD) and other dementias. Indeed, ASHA has identified persons with dementia as the fastest growing clinical population on caseloads of speech language pathologists (ASHA, 2005). This issue of *Perspectives* focuses on two important themes in assessment and management of dementia. The authors of the first two articles focus on adding to the literature on the clinical significance of evaluating linguistic communication in non-Alzheimer dementias. The authors of the next two articles expand our understanding of variables that impact communicative interactions with persons who have dementia, in individual and group intervention contexts.

First, Nidhi Mahendra and Nisha Engineer provide a longitudinal description of a single client with vascular dementia. They focus on presenting symptoms, evolution and progression, and documenting the effects of vascular dementia on multiple measures of cognition and linguistic communication. In the second article, Raksha Anand, John Hart, Patricia Moore, and Sandra Bond Chapman provide a brief overview of frontotemporal lobar degeneration (FTLD) and its three distinct types. These include frontotemporal dementia (behavioral variant), progressive nonfluent aphasia, and semantic dementia. The authors detail the effects of these three types of FTLD on tasks of semantic binding and abstracted meaning. Their results reveal the importance of using specific cognitive-linguistic tasks in enhancing the differential diagnosis of distinct FTLD types.

In the third article, Megan Petryk and Tammy Hopper use a single subject experimental design to demonstrate the effects of manipulating question type (those emphasizing concepts or semantic knowledge versus those emphasizing facts or episodic knowledge) on the conversational responses of four individuals with AD. Their findings suggest that conversational performance in persons with dementia is facilitated by using multiple types of questions and cues and restricting use of open-ended questions that emphasize episodic recall. Finally, Jane Pimentel discusses group interventions for persons with dementia as a means to enhance quality of life, social participation, and to facilitate meaningful communication. She provides a systematic description of specific clinical techniques and rationale for their use in designing and implementing efficacious thematic group interventions for dementia patients.

It is ASHA's position (2005) that speech language pathologists play a primary role in the screening, assessment, diagnosis, treatment, and research of cognitive-communication disorders associated with dementia. Hopefully, these articles provide readers with evidence-based assessment and management strategies to better serve persons with dementia.

## Reference

American Speech-Language-Hearing Association. (2005). *The Roles of Speech-Language Pathologists Working With Individuals with Dementia-Based Communication Disorders: Position Statement* [Position Statement]. Available from www.asha.org/policy.

# Effects of Vascular Dementia on Cognition and Linguistic Communication: A Case Study

*Nidhi Mahendra*

*Nisha Engineer*

Department of Communicative Sciences & Disorders, California State University East Bay Hayward, CA

## *Abstract*

*Purpose: Vascular dementia is the second most common cause of dementia after Alzheimer's's disease. The purpose of this case report is to describe the evolution and progression of vascular dementia over two years and detail its effects on multiple measures of cognition and linguistic communication.*

*Methods: Data from multiple sources (e.g., medical records, direct testing, staff reports, and client observations) has been integrated to provide a detailed report of the effects of vascular dementia on global cognitive status and on specific domains of attention, episodic and semantic memory, executive function, visuospatial ability, linguistic comprehension, and linguistic expression.*

*Results and Conclusions: Vascular dementia affects multiple cognitive domains including language and communicative function. Clinical implications are presented for choice of tests and language tasks for evaluating the effects of vascular dementia on linguistic communication.*

Dementia is an acquired, progressive, neurodegenerative syndrome that manifests as impairments in cognitive functioning affecting at least two domains, social and occupational functioning, and performance on activities of daily living (Eastley & Wilcock, 2000). The most common cause of dementia is Alzheimer's's disease (AD), followed by vascular dementia (VaD), which accounts for 17% of persons diagnosed with dementia in the United States (Plassman et al., 2007). However, prevalence estimates of VaD vary widely given that it is difficult to diagnose definitively and is a heterogeneous disorder that can result from varied lesion types.

## *Definition of Vascular Dementia*

Vascular dementia (VaD) has been defined as impairment of cognitive functions and activities of daily living (ADLs) resulting from ischemic or hemorrhagic cerebrovascular disease, cardiovascular disease, or circulatory disturbances that injure brain regions critical for memory, cognition, and behavior (Román, 2005). According to the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; APA, 2000), the following criteria are required for diagnosing VaD (Code: 290.4x, formerly multi-infarct dementia):

1. Evidence of cerebrovascular disease (e.g., focal neurological signs/symptoms or laboratory evidence) etiologically related to onset of dementia. Examples of focal

neurological signs and symptoms include pseudobulbar palsy, gait abnormalities, exaggerated deep tendon reflexes, and/or weakness of an extremity. Further, vascular lesions in white matter and grey matter regions, subcortical white matter, or the basal ganglia (Randolph, 1997) are visible on computerized tomography or magnetic resonance imaging (MRI) scans.

2. Objective evidence of cardiac and other systemic vascular conditions (e.g., electrocardiogram abnormalities, chronic ischemic heart disease, long-standing arterial hypertension)

3. Symptoms of VaD do not occur exclusively during states of delirium

Vascular dementia may occur along with delirium, depression, delusions, or without any of these concomitant problems.

#### Course

The course of VaD differs significantly from AD (which is characterized by gradual onset and slow progression). Vascular dementia may be marked by acute onset due to a sudden event, or more chronic onset in response to long-term, ongoing ischemic changes in the brain. A stepwise deterioration of cognitive function is typical, with patients remaining stable between consecutive ischemic events and experiencing significant loss of function with recurrent vascular events. The pattern of deficits in VaD is described as patchy (McPherson & Cummings, 1996), with certain cognitive functions affected severely and early in the disease process and others remaining relatively unimpaired. Finally, there is disagreement among researchers about post-diagnosis survival duration in persons with VaD. Some researchers characterize VaD as having a worse prognosis and shorter median survival duration post-diagnosis than in AD (Fitzpatrick, Kuller, Lopez, Kawas, & Jagust, 2005; Knopman, Boeve, & Petersen, 2003) whereas others report similar life expectancy post-diagnosis in both VaD and AD (Bruandet et al., 2009; Wolfson et al., 2001).

#### Risk Factors

The age of onset of VaD is variable. However, older adults are at greatest risk for VaD given the increased late-life risk for cerebrovascular disease. Notably, VaD and AD share risk factors such as hypertension, smoking, diabetes mellitus, and hypercholesterolemia (Iadecola & Gorelick, 2003; Stewart & Liolitsa, 1999). Some other risk factors documented as being important in raising the risk of developing VaD include high alcohol consumption, psychological stress in early life, and lower level of formal education (Skoog, 1998). Also, VaD more frequently affects males than females (Ruitenberg, Ott, Van Swieten, Hofman, & Breteler, 2001).

## *Differential diagnosis of VaD From AD*

Differentiating VaD from AD is challenging (Knopman et al., 2003; Sherer, 2007) because of shared cognitive and behavioral symptoms. In both dementias, patients have similar mean ages of onset (Bruandet et al, 2009) and present with impaired overall cognitive status, ADLs, and episodic memory (Levinoff, 2007). Evidence has been published both supporting different profiles of cognitive impairment in AD and VaD (Fink, McCrea, & Randolph, 1998; Golden et al., 2005; Randolph, 1997) and refuting significant differences in the cognitive impairments associated with AD and VaD. A review of published evidence on differences between VaD and AD based on neuropsychological performance reveals that:

1. Persons with VaD outperform those with AD on immediate and delayed verbal episodic memory (Fink et al., 1998; Golden et al., 2005; Levinoff, 2007; Looi & Sachdev, 1999; Randolph, 1997), category fluency tasks (Poore, Rapport, Fuerst, & Keenan, 2006), and other language tasks specifically tapping into semantic memory (Fink et al., Golden et al., Randolph).

2. Persons with VaD perform worse than those with AD on tasks of attention (Fink et al., 1998; Levy & Chelune, 2007; Randolph, 1997), executive function (Levinoff, 2007; Levy & Chelune), visuospatial and constructional ability (Fink et al., Randolph), and letter fluency tasks (Poore et al., 2006).
3. Persons with AD and VaD do not differ significantly in performance on working memory (e.g., digit span tasks; Golden et al., 2005), complex abstract spatial skills (e.g., WAIS-R Block Design subtest; Golden et al.), constructional praxis (Levy & Chelune, 2007), vocabulary (e.g., WAIS-R Vocabulary subtest; Golden et al.), language (e.g., Boston Diagnostic Aphasia Examination; Vuorinen, Laine, & Rinne, 2000), and processing speed (e.g., on the WAIS-R Digit Symbol test; Golden et al.).

Several clinical features prove useful in differentiating VaD from AD. First, the DSM-IV-TR guidelines for diagnosing probable or possible AD specify that cognitive decline must not be explained by any other medical or neurological condition (e.g., stroke). This is contrasted with VaD, in which the presence of cerebrovascular and cardiac/systemic vascular factors is required for diagnosis. Next, clinicians may rely on brain imaging findings to differentially diagnose AD from VaD, where the latter is distinguished by evidence of multiple ischemic lesions, hemorrhagic events, and white matter lesions (Erkinjuntti, 2000). Third, clinicians may use the Hachinski Ischemia Scale (HIS; Hachinski et al., 1975) which consists of 13 clinical features that are determined to be present or absent based on the case history and medical examination of a person with dementia. Each feature is assigned a score (zero for absence, 1 or 2 for presence). A score of 7 or greater is considered supportive of a diagnosis of VaD, whereas a score of 4 or less is considered typical of AD (Moroney et al., 1997; Levinoff, 2007). Finally, some researchers have confirmed that persons with VaD more often experience gait alterations and personality changes than those with AD (Román, 2004).

However, despite the clinical utility of these aforementioned features, even when clinical exam findings, neuroimaging evidence, and neuropsychological data support a diagnosis of VaD, co-existing AD pathology cannot be positively ruled out. Indeed, autopsy studies reveal that many persons with dementia, regardless of AD or VaD diagnosis, present with pathologic features of both AD and VaD concomitantly.

## *Profile of an Individual With VaD on Cognition and Language Measures*

### Background and Referral History

MH was an 84-year-old, biracial (Caucasian/Latino), right-handed male with a medical history of chronic ischemic heart disease, myocardial infarction, and diverticulosis of the colon. He had lived in the assisted living wing of a continuum-of-care facility for four years when he experienced his first transient ischemic attack (TIA). He recovered quickly from this TIA although staff members reported noting word finding difficulty and subtle memory impairments shortly after. He had a second TIA two years later and was briefly hospitalized before being discharged back to the facility where he lived. Over the next six months, after this second TIA, MH experienced gait unsteadiness, repeated falls, increasing forgetfulness, and frequent conversational breakdowns resulting from anomia and rambling, tangential discourse. He began using a walker following multiple mechanical falls and observed gait unsteadiness. The facility social worker administered the Mini Mental State Exam (Folstein, Folstein, & McHugh, 1975), and MH scored 12/30, indicating moderate cognitive impairment, marking a significant decline from a score of 28/30 three months before the second TIA. His performance on the figure copying and sentence generation items from the second MMSE administration is shown in Figure 1. On the figure copying task, examinees earn one point for correctly copying two pentagons that intersect to form a quadrilateral. On the sentence generation task, participants are asked to write any complete sentence of their choice with one point earned if a

comprehensible sentence is generated, containing a subject and a verb. MH's performance on these two items is strongly suggestive of a cognitive impairment.

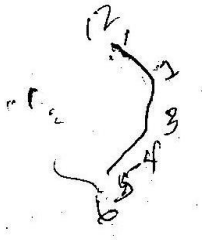
*Figure 1. Figure copying and written sentence generation on the MMSE*

MH was referred to a neuropsychologist for a comprehensive evaluation which included interviewing MH and administering the Dementia Rating Scales (DRS-2; Mattis, Jurica, & Leitten, 1982), Controlled Oral Word Association Test (COWAT; Spreen & Benton, 1969), Wisconsin Card Sorting Test (WCST-64), Trail Making Tests A and B, Draw-a-clock test, and the Rotter Incomplete Sentences Blank test (RISB-2; Rotter, Lah, & Rafferty, 1992). The DRS-2 is a widely used standardized test that provides age- and education-corrected scores across five domains—Attention, Initiation/Perseveration, Construction, Conceptualization, and Memory. MH obtained a raw score of 104, indicating overall cognitive performance below the first percentile for his age and education level. Table 1 shows his scores on the DRS-2 across domains; Figure 2 shows his performance on clock drawing during this evaluation.

*Table 1. MH's performance on the DRS-2*

| Domains | Attention | Initiation/ Perseveration | Construction | Concept | Memory | Total |
|---|---|---|---|---|---|---|
| Raw score | 33 | 19 | 6 | 36 | 10 | 104 |
| Percentile | $19^{th}$-$28^{th}$ | Below $1^{st}$ | $41^{st}$-$59^{th}$ | $41^{st}$-$59^{th}$ | Below $1^{st}$ | Below $1^{st}$ |
| Interpretation | Mild impairment | Severe impairment | Below average, intact | Below average, intact | Severe impairment | Severe impairment |

*Figure 2. Clock drawing performance*



An MRI scan revealed three focal areas of signal hyperintensity in the basal ganglia, thalamus, and in the subcortical white matter. Based on the combined results of neuroimaging and neuropsychological testing, MH was diagnosed with VaD per DSM-IV-TR criteria (APA, 2000) approximately 8 months after his second TIA. He was referred to the authors' clinical research team 7 months after being diagnosed with VaD (15 months after his second TIA) for a follow-up assessment of cognition and linguistic communication.

### Screening

After obtaining signed consent from MH's family caregiver and verbal assent from him, brief screenings for hearing, vision, and depression and the HIS were completed. MH had a score of 11 on the HIS, supporting a diagnosis of VaD. He had a history of bilateral moderate hearing loss and had hearing aids which he did not use regularly. Hearing screening comprised otoscopy, pure tone audiometric screening, and a brief assessment of face-to-face word recognition in a quiet room. MH did not pass a hearing screening in either ear at 35 dB HL at 500 Hz, 1,000 Hz, and 2,000 Hz nor at 45dB HL at 4,000 Hz and 6,000 Hz. His unaided speech discrimination score was 70% at conversational loudness levels and an assistive listening device was used during all testing. Computerized versions of three vision screening tests from the Arizona Battery for Communication Disorders of Dementia (ABCD; Bayles & Tomoeda, 1993) were administered, and MH passed a literacy screen (reading aloud sentences), agnosia screen (naming four objects), and letter cancellation task. To screen for depression, MH was administered the Geriatric Depression Scale-Short Form (Sheikh & Yesavage, 1983), consisting of 15 yes-no questions. Scores of 5 or greater out of a maximum possible score of 15 require referral to a physician; MH scored 0/15 and passed this screening. Review of his medical records revealed that he was taking the following medications daily: Prilosec (antacid), Tenormin (beta-blocker for hypertension), Norvasc (for angina), and Ecotrin (safety-coated enteric aspirin).

### Comprehensive Assessment

MH was administered standardized measures of global cognitive status and linguistic communication and a nonstandardized discourse battery. At the time of this assessment, eight months had lapsed since his initial neuropsychological evaluation. Therefore, we first re-administered the DRS-2 to determine if overall cognitive performance had deteriorated further. MH's total DRS-2 score fell 15 points from 104 to 89 (Table 2), with worse performance on three out of five domains tested. His performance had declined steeply on the Conceptualization domain, a measure of semantic memory. For example, when asked to explain how a car and a boat are alike, MH responded "They both float." When asked which of three items did not belong together and being presented with the three-word string of boy-door-man, MH responded "boy."

*Table 2. MH's performance on second administration of the DRS-2*

| Domains | Attention | Initiation/ Perseveration | Construction | Concept | Memory | Total |
|---|---|---|---|---|---|---|
| Raw score | 34 | 15 | 6 | 26 | 8 | 89 |
| Percentile | 41st-59th | Below 1st | 41st-59th | 3rd – 5th | Below 1st | Below 1st |
| Interpretation | Below average, intact | Severe impairment | Below average, intact | Moderate impairment | Severe impairment | Severe impairment |

Additionally, we administered the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS; Randolph, 1998), a standardized test that provides index scores on attention, visuospatial/constructional ability, immediate memory, delayed memory, and language. The RBANS was administered to compare MH's results with scores reported for persons with AD, VaD, and mixed dementia (AD and VaD) provided in the RBANS. Such data are not available in the DRS-2 norms or other tests used with persons who have dementia. Interestingly, MH's total scale score and overall performance on the RBANS (Table 3) was most similar to the small sample of persons with mixed AD/VaD etiology, described in the RBANS manual (Randolph, p. 53). This is noteworthy given that short of post-mortem brain autopsy, there is currently no method to rule out the co-existence of AD and VaD, in persons diagnosed with either type of dementia.

*Table 3. MH's performance on the RBANS*

| Domain | Attention | Visuospatial/ Construction | Language | Immediate Memory | Delayed Memory | Total Scale Score |
|---|---|---|---|---|---|---|
| Index score | 72 | 72 | 60 | 53 | 56 | 54 |
| Percentile | 3rd | 3rd | 0.4 | 0.1 | 0.2 | 0.1 |
| Interpretation | Borderline | Borderline | Extremely low | Extremely low | Extremely low | Extremely low |

**Measures of Linguistic Communication and Discourse**

Following RBANS testing and 18 months after MH's second TIA, we documented MH's performance on linguistic communication. We administered Part 1 of the Western Aphasia Battery-Revised (WAB-R; Kertesz, 2006), the ABCD (Bayles & Tomoeda, 1993), and a nonstandardized assessment of discourse production, previously published by Arkin and Mahendra (2001).

MH obtained an aphasia quotient of 81.2 on the WAB-R, presenting with a profile of mild anomic aphasia. His scores were 16/20 on spontaneous speech, 7.3/10 on repetition, 9.7/10 on auditory verbal comprehension, and 7.6/10 on naming and word finding. He performed poorest on picture description, repetition, object naming, and category fluency tasks on the WAB-R.

The ABCD is one of very few standardized tests specifically designed for assessing linguistic communication in dementia, and is a valid test for screening undiagnosed individuals for possible dementia. Scores on the ABCD demonstrate high correlations with three widely accepted measures of dementia severity: the MMSE, the Global Deterioration Scale, and the Block Design subtest of the Wechsler Adult Intelligence Scale. The ABCD has fourteen subtests that assess five constructs: mental status, episodic memory, linguistic expression, linguistic comprehension, and visuospatial construction. MH had a total ABCD score of 15.2 as compared to a mean of 18.2 (SD=2) reported for persons with mild AD and a mean of 10.15 (SD=3.1) reported for those with moderate AD. Analyzing performance across ABCD tasks, MH performed worst on subtests of mental status, immediate and delayed story recall, word learning, phrase repetition, category fluency, object naming, concept definition, and generative drawing. It is relevant that MH was older than the average age of persons with mild AD (mean age = 76.7, SD = 8.5) and moderate AD (mean age = 75, SD =18.6) reported in the ABCD standardization sample. Further, the ABCD sample did not include any persons obtaining HIS scores greater than 4 (ABCD; Bayles & Tomoeda, 1993).

MH performed worse on letter fluency (generating two exemplars on letter F fluency) compared to category fluency tasks (consistently generating five to six exemplars across tests) and his performance on letter F exemplars was worse than that reported for persons with AD and healthy older controls. These results support published findings of worse performance on letter fluency tasks in VaD than in AD (Canning, Leach, Stuss, Ngo, & Black, 2004; Poore et al., 2006).

Abnormalities in discourse have been clinically validated as one of the earliest signs of AD, measurable well before more noticeable memory deficits (Snowdon et al., 1996) and have also been documented in MCI—a prodromal state for dementia (Chapman et al., 2002). Therefore, discourse tasks also may be sensitive to cognitive-communicative changes in VaD. Based on the first author's earlier work (Arkin & Mahendra, 2001; Mahendra & Arkin, 2003), three discourse tasks were administered chosen to elicit five distinct discourse types described by Shadden (1995). The first comprised asking eight open-ended questions to elicit discourse tapping into autobiographical memory (e.g., What childhood memories does the word 'play'

remind you of?), episodic memory (e.g., Tell me about your daily activities, the things you do every day), procedural memory (e.g., How would you go about planning a picnic for your family or some friends?), and problem solving (e.g., Supposing the 13-year-old daughter of a neighbor told you she was pregnant but afraid to tell her mother. What would you do?). The second was a 5-item proverb interpretation task adapted from the unpublished California Proverb Test (Delis, Kramer, & Kaplan, 1984) in which MH had to explain the meanings of proverbs (e.g., Too many cooks spoil the broth). His responses were scored along a 7-point concreteness-abstractness continuum (Chapman et al., 1997) with 0 being an incorrect or absent response, and 6 being a complete abstract response and the highest possible score on this task being 30 points. Third, MH was asked to describe the Cookie Theft Picture from the Boston Diagnostic Aphasia Examination (BDAE-3; Goodglass, Kaplan, & Barresi, 2000). Examples of MH's responses on these tasks are included in Table 4.

*Table 4. Sample client responses to discourse tasks.*

| **Sample response to discourse question** |
|---|
| **Question:** Tell me about your daily activities, the things you do every day. |
| **Response:** *Nada, nada. I don't remember everything I do. I get up in the morning. I do all my necessary duties, check my beds, check my linens, check everything in my present position. I don't have to do anything but I know almost everything there is to do and I can't keep telling you…. (*Does not finish sentence). |
| **Sample responses on Proverb Interpretation task** |
| **Question:** What does it mean when someone says "Too many cooks spoil the broth"? |
| **Response:** *It means that too many people butt into things that don't include them*. |
| **Question:** What does it mean when someone says "Rome wasn't built in a day?" |
| **Response:** *Well it depends on what…you aren't…you aren't made president in a day. You aren't anything else. Whatever it is, it just was not done overnight.* |
| **Description of Cookie Theft picture (BDAE-3)** |
| *I see some cookies they're robbing in the jar. Some kids robbing the cookie jar. Some children gonna hurt themselves standing on a chair. The boy has...is that a boy or is that a girl? Ohh...whatever…playing with danger standing on a chair reaching for...mama's doing the dishes…they should be doing the dishes. And they have a spill...a dirty spill there* (points to water flowing over the sink)*…it looks like she's gonna get her feet wet. I can't make out what this is* (points outside the kitchen window in the picture) *but it looks like a garden and …outside hedge. As I said, she's doing her dishes.* |

On the discourse questions, MH presented a consistent pattern of fluent but empty speech marked by few topic-relevant and factually correct statements, multiple sentence fragments, repetitious statements, and tangential comments. On the proverb interpretation task, he obtained a total score of 18/30 and provided partial abstract responses for 3 out of 5 proverbs. On the Cookie Theft picture description task, he produced 104 total words and 48 content words, yielding 46.15 correct information units (CIUs). We also scored MH's picture description to determine if eight central themes were described (Hier, Hagenlocker, & Shindler, 1985): mother, washing dishes, the boy or the kids, falling down, the girl or the sister, stealing or taking cookies, water coming to the floor, and the mother being inattentive. MH omitted two of these themes (girl/sister and inattentive mother); omission of the mother's inattentiveness in this picture is consistent with findings from AD and VaD patients reported by other researchers (Vuorinen et al., 2000).

Based on the results of neuropsychological and communicative function testing, MH's physician prescribed a 5 mg daily dose of Aricept (an acetylcholinesterease inhibitor) 21 months following the second TIA and subsequently increased his dosage to 10 mg daily a few months later. Per behavioral observations, staff report, and chart review data conducted 2 years after this second TIA, MH had responded well to Aricept and appeared to be maintaining his cognitive and communicative functioning with no further reported decline. Whereas the focus of this article is on assessment, readers will find it relevant that MH also participated in clinical research and responded successfully to both spaced retrieval training (for learning faces/names of his caregivers) and to semantic feature analysis (for successfully naming multiple everyday items he frequently used and could not produce at baseline).

## Conclusions

Speech language pathologists do not diagnose dementia independently. However, SLPs have unique skills for conducting valid evaluations of cognitive-communicative function in dementia and can provide invaluable data to support differential diagnosis and early identification of VaD, guide its pharmacological management and monitor its effects on cognition, and provide meaningful data on spared and impaired abilities for the purpose of designing individualized intervention plans. Our experience with using and comparing multiple measures for evaluation of VaD provide preliminary data that the RBANS has more clinical utility in assisting with differential diagnosis because it provides comparative data for persons with vascular and mixed dementia types. Further, when evaluating linguistic communication in persons with VaD, we recommend using tests standardized for use with dementia patients (e.g., the ABCD as compared to the WAB-R) and using discourse tasks that tap into semantic and episodic memory systems. Finally, additional research is needed to better understand the effects of VaD on linguistic communication and to collect group data on persons with VaD to include in standardization samples of new and existing tests for assessing cognitive-communicative function.

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*Nidhi Mahendra is a certified bilingual speech-language pathologist and assistant professor in the department of Communicative Sciences and Disorders at California State University East Bay (CSUEB). She directs the Aging and Cognition Research Clinic at CSUEB, and her expertise is in screening, assessing, and treating persons with cognitive communicative disorders associated with Alzheimer's's disease and other dementias.*

*Nisha Engineer is a recent graduate of the Department of Communicative Sciences & Disorders at CSUEB. She has been a research assistant at the CSUEB Aging and Cognition Research Clinic for 2 years.*

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# Frontotemporal Lobar Degeneration: Characterizing Semantic Binding and Abstracted Meaning Abilities

*Raksha Anand*

*John Hart, Jr.*

*Patricia S. Moore*

*Sandra B. Chapman*

Center for BrainHealth®, The University of Texas at Dallas
Dallas, TX

## *Abstract*

*Purpose: Frontotemporal lobar degeneration (FTLD) encompasses a group of neurodegenerative disorders characterized by gradual and progressive decline in behavior and/or language. Identifying the subtypes of FTLD can be challenging with traditional assessment tools. Growing empirical evidence suggests that language measures might be useful in differentiating FTLD subtypes.*

*Method: In this paper, we examined the performance of five individuals with FTLD (two with frontotemporal dementia, two with semantic dementia, and one with progressive nonfluent aphasia) and 10 cognitively normal older adults on measures of semantic binding (Semantic Object Retrieval Test and semantic problem solving) and abstracted meaning (generation of interpretive statement and proverb interpretation).*

*Results and Conclusion: A differential profile of impairment was observed in the three FTLD subtypes on these four measures. Further examination of these measures in larger groups will establish their clinical utility in differentiating the FTLD subtypes.*

Frontotemporal lobar degeneration (FTLD) is an umbrella term that is applied to a group of neurodegenerative disorders characterized by gradual and progressive changes in behavior and/or language (Grossman, 2002). Of all the dementia subtypes, FTLD is the second most common form of dementia in the United States in individuals under the age of 65 years (Johnson et al., 2005). The first documented case of what is now referred to as FTLD was described by Arnold Pick in 1892, the case of a 71 year old who had progressive mental decline and severe language impairment. Over the last decade, several clinical variants of FTLD have been described with little consensus among experts in the field (Hillis, 2008; Neary, Snowden, & Mann, 2005). Given that language impairment is a predominant feature of certain clinical variants of FTLD, it is important for speech-language pathologists (SLPs) who provide services to older adults with cognitive communication disorders to broaden their knowledge of FTLD. Most SLPs working with adults are likely to be familiar with the FTLD subtype referred to as primary progressive aphasia, which encompasses primary nonfluent aphasia (PNFA) and semantic dementia (SD). In this paper, we provide basic information about three clinical

variants of FTLD specified by Neary et al. (1998) including frontotemporal dementia (FTD), PNFA, and SD. We characterize language abilities in these three FTLD subtypes on measures of semantic binding and abstracted meaning using a case report approach.

## *Frontotemporal Dementia*

According to the Neary et al. (1998) clinical consensus criteria, individuals with FTD present impairment in social and personal conduct, emotional blunting, and loss of insight, among other features. Supporting features for diagnosis include lack of inhibition, mental inflexibility, distractibility, hyperorality, perseveration, aspontaneity or economy of speech, incessant speech, echolalia, stereotypic output, and perseveration. Although speech and language impairments are not the defining characteristics of FTD in the early stages of the disease, noticeable decline in language skills may occur in the middle and later stages. Some of the most obvious language changes in FTD are noticed in discourse (Ash, Moore, Antani, McCawley, Work, & Grossman, 2006; Chapman et al., 2005). Ash and colleagues found individuals with FTD have difficulty assembling events into a story and in maintaining the theme of a story on a narrative task. Chapman and colleagues found that individuals with FTD were impaired in stringing ideas together and in conveying abstracted meaning on narrative and procedural discourse tasks. Unlike these discourse-based impairments, individuals with FTD are less impaired on traditional measures of semantics such as confrontation naming and category fluency (Hodges et al., 1999; Libon et al., 2007). However, they exhibit deficits relative to healthy controls in learning thematic properties of new words (Murray, Koenig, Antani, McClawley, & Grossman, 2007) and comprehending sentences with center-embedded grammatical phrases (Grossman et al., 1996). Most of these language impairments are attributed to underlying deficits in executive functioning (Grossman et al., 2004; Murray et al., 2007).

## *Progressive Nonfluent Aphasia*

Progressive Nonfluent Aphasia (PNFA) is primarily a language disorder. The core diagnostic features of PNFA include reduced verbal output, agrammatism, phonemic paraphasias, and anomia (Neary et al., 1998). Supporting diagnostic features include stuttering, oral apraxia, impaired repetition, alexia, and agraphia. Language changes in PNFA may occur in isolation for years before noticeable changes appear in behavior, memory, and other cognitive functions (Kertesz, 2003; Mesulam, 2001). A predominant deficit in grammatical processing of sentences has been observed in individuals with PNFA in both online and offline tasks (Grossman et al., 1996; Grossman, Rhee, & Antiquena, 2005). Additionally, grammatical impairment in sentence construction has been documented (Ash et al., 2006; Chapman et al., 2005; Grossman et al.). Phonemic paraphasias have been observed on naming, reading aloud, and single-word repetition tasks characterized by insertion and deletion of targets, incorrect vowel targets, and metatheses (Ash et al.; Croot, Patterson, & Hodges, 1998). Although semantic knowledge is relatively well preserved in the early stages of PNFA on confrontation naming, word-to-picture matching, and on the Pyramids and Palm Trees Test (Howard & Patterson, 1992), difficulty with rule-based categorization of words has been observed (Gorno-Tempini et al., 2004; Grossman et al., 2004; Hodges & Patterson, 1996). Overall, individuals with PNFA organize their narratives and describe the content of a story appropriately, but their speech is slow and halting in nature (Ash et al.; Chapman et al., 2005).

## *Semantic Dementia*

Semantic dementia (SD) is characterized by fluent, empty speech output, loss of word meaning, and semantic paraphasias. Supporting features for diagnosis include incessant speech, idiosyncratic word usage, surface dyslexia, and dysgraphia (Neary et al., 1998). Individuals with SD present with pronounced semantic deficits and impoverished knowledge

about features associated with word meaning and deficit in naming to description (Bozeat, Lambon Ralph, Patterson, Garrard, & Hodges, 2000; Hodges & Patterson, 1996; Hodges, Patterson, Oxbury, & Funnell, 1992). Usage of both nouns and verbs is impaired in SD (Bird, Lambon Ralph, Patterson, & Hodges, 2000; Wong, Anand, Chapman, Rackley, & Zientz, 2009) with an observed tendency to circumlocute and substitute non specific words or superordinates for target items (Gorno-Tempini et al., 2004). Although their narratives are fluent, they are often impoverished in content (Grossman et al., 2004; Hodges et al.). Some researchers have documented relatively preserved knowledge of syntax (Garrard, Carroll, Vinson, & Vigliocco, 2004; Hodges et al.), while others have reported deficits (Grossman et al., 2005).

## Diagnosis and Classification of FTLD

Diagnosing and classifying FTLD remains challenging. Currently a combination of medical history, detailed neurological examination, neuropsychological examination, and neuroimaging is used in diagnosis and classification of FTLD. Clinical assessment particularly is critical since several patients formally diagnosed with FTLD have normal structural imaging findings in the earliest stages of the disease (Davies et al., 2006). However, most traditional assessment tools available to clinicians are not specifically designed to differentiate various subtypes of FTLD. Thus, overlapping cognitive profiles are observed often across subtypes in the earliest stages of the disease (Gregory, Orrell, Sahakian, & Hodges, 1997). More recently, the need to identify additional measures for accurate and early diagnosis of FTLD subtypes has been recognized. Because language impairment is a cardinal feature in two of the three FTLD subtypes—namely SD and PNFA—researchers have been interested in detailing language profiles to identify clinically sensitive markers to differentiate the subtypes (Chapman et al., 2005; Murray et al., 2007). Consistent with this clinical motivation, we examined performance of individuals with FTLD on two tasks of semantic binding (Semantic Object Retrieval Test and semantic problem solving) and two tasks of abstracted meaning or gist processing (generation of interpretive statement and proverb interpretation), following existing evidence of conceptual deficits in certain FTLD subtypes. Additionally, compelling evidence exists supporting these measures of semantic binding and abstracted meaning as being sensitive to cognitive changes observed in individuals with mild cognitive impairment, Alzheimer's's disease, and, to some extent, in FTLD (Chapman et al.; Kraut et al., 2006). What remains unexplored is whether these measures, used in combination, will yield a differential profile in FTLD subtypes in the very early stages.

## Participants

We tested 5 individuals with a diagnosis of FTLD and 10 cognitively normal older adults. Of the 5 individuals with FTLD, 2 had a diagnosis of FTD, 2 had a diagnosis of SD, and 1 had a diagnosis of PNFA. Patients were diagnosed based on the Neary et al. (1998) criteria following detailed medical history, neurological and neuropsychological assessment, and neuroimaging. Demographic data, Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) scores, Clinical Dementia Rating (CDR; Morris, 1993) scores, and chief complaints for each participant with FTLD are presented in Table 1. The cognitively normal older adults had a mean age of 62.1 (SD = ±7.06) years and a mean education of 17.4 (SD = ±1.5) years.

*Table 1: Details of Participants with Frontotemporal Lobar Degeneration*

| Participant ID | Age (yrs) | Gender | Education (yrs) | MMSE | CDR | Chief Complaints | Diagnosis |
|---|---|---|---|---|---|---|---|
| CM | 73 | M | 17 | 26 | .5 | Complaints of emotional lability, increase in aggressive behavior, distractibility, and speech problems under stress over a period of one and half years | FTD |
| LB | 60 | F | 13 | 28 | .5 | Complaints of progressive changes in attention and initiation. Reports of lack of interest, lack of initiative, and inability to make decisions over a period of two years | FTD |
| LG | 57 | M | 16 | 28 | .5 | Progressive difficulty with speech and language, specifically, halting and hesitant speech and word finding difficulty over a period of one and half years. | PNFA |
| SS | 72 | F | 16 | 24 | .5 | Progressive difficulty in word finding, following conversation in distracting situations and reading comprehension over a period of two years. | SD |
| CB | 62 | M | 19 | 28 | .5 | Progressive difficulty in word recall, learning names of people and understanding conversation, and focusing/concentrating over a period of two years. | SD |

*MMSE-Mini-Mental State Examination; CDR-Clinical Dementia Rating; FTD- frontotemporal dementia; PNFA- primary nonfluent aphasia; SD-semantic dementia*

## Measures

### Semantic Object Retrieval Test

The Semantic Object Retrieval Test (SORT; Kraut et al., 2006) requires participants to evaluate two words that are features of objects to determine if the features combine to make them think of a particular object (e.g., “desert” and “humps” would retrieve the object “camel”).

Overall, the task consists of 32 word pairs, 16 pairs that combine correctly to elicit an object, and 16 pairs that do not combine to elicit an object. Participants were instructed to judge if the two presented words combine to elicit an object by providing a yes/no response on each trial. Further, they were asked to name the object for word pairs that combined resulting in object retrieval.

Total correct response was scored out of a maximum of 32. Number of correctly retrieved names was scored out of a maximum of 16. Past studies have revealed that cognitively normal individuals obtain a score of 26 or higher on yes/no judgment and 12 or higher on correctly retrieved names (Kraut et al., 2006).

#### Semantic Problem Solving

In this task, participants are asked to guess a word based on cues that are provided. On each trial, up to four cues are presented one at a time for the participants to narrow the possibilities of the target word. The first three cues are feature cues, and the final cue is a missing word in a familiar saying. Participants are asked to keep all the clues in mind as they make their guesses. This task is illustrated in the example below.

Target word: “Money”

A. It is of high value

B. It can be made out of paper or metal

C. It is a means of obtaining material items

D. Love of _____is the root of all evil.

Overall, this task consists of five target words. A percentage score of the total number of appropriate responses divided by the total number of cues provided across five target words is computed. According to unpublished normative data, cognitively normal individuals obtain a score of 80% or higher.

#### Generation of Interpretive Statement

The ability to generate an interpretive statement was examined using a 578-word narrative about a man’s life and the eight jobs he attempted throughout his life in an effort to make life better for others. The narrative was read aloud to the participants while they followed along with a printed copy of the passage. As a measure of abstracted meaning, participants were asked to provide an interpretive statement that could be learned from the narrative. Additionally, to test for recognition memory for details, participants were asked to recognize the jobs held by the man from a list of 16 different jobs (8 correct and 8 incorrect).

The interpretive statement was scored on a scale of 0-6 with 0 being an incorrect response and 6 being a correct abstract generalized response. This scoring system was adapted from the Chapman and colleagues (2002) study. Higher scores indicate greater ability to transform information and abstract a generalized meaning. The number of correctly recognized jobs was scored out of a maximum of 8. Cognitively normal controls score a minimum of 4 out of 6 on the interpretive statement (Chapman et al.) and 7 out of 8 on the recognition task.

#### Spontaneous Proverb Interpretation

Participants were asked to provide an interpretation of four proverbs (two familiar and two unfamiliar) taken from the California Proverb Test (Delis, Kramer, & Kaplan, 1984). Participants' responses were transcribed and rated on a scale of 0-6 with 0 being incorrect and 6 being correct abstract response consistent with the earlier work of Chapman and colleagues (1997). Participants could receive a maximum score of 24. According to unpublished normative data, cognitively normal individuals obtain a score of 18 or higher.

## *Procedure*

Participants were tested individually on each of the four experimental measures in random order. Data from each of these four measures were rated individually by two experienced researchers who were not involved in testing these participants. Differences in ratings were resolved by consensus. Scores of each participant with FTLD, mean scores of cognitively normal older adults, and normative scores obtained from previous studies are presented in Table 2.

*Table 2: Performance of FTLD Participants and Normal Controls on Measures of Semantic Binding and Abstracted Meaning*

| | | **Semantic Binding Tasks** | | | **Abstracted Meaning Tasks** | | |
|---|---|---|---|---|---|---|---|
| ID | Diagnosis | SORT Total Correct | SORT Correct Name | Semantic Problem Solving | Interpretive Statement | Recognition Memory | Proverb Interpretation |
| CM | FTD | 28 | 14 | 66 | 4 | 7 | 18 |
| LB | FTD | 31 | 16 | 33 | 5 | 7 | 20 |
| LG | PNFA | 32 | 16 | 91 | 4 | 8 | 15 |
| SS | SD | 19 | 8 | 50 | 2 | 7 | 4 |
| CB | SD | 24 | 2 | 47 | 2 | 8 | 16 |
| Cognitively Normal Older Adults | | 30.7 (±1.33) | 15.6 (±.52) | 94.1 (±4.28) | 4.6 (±1.1) | 7.6 (±.7) | 22.3 (±1.83) |
| Normative | | 26 | 12 | 80% | 4 | 7 | 18 |

*SORT: Semantic Object Retrieval Test; FTD- frontotemporal dementia; PNFA- primary nonfluent aphasia; SD-semantic dementia*

## *Results and Discussion*

Overall, participants with FTLD were impaired on one or more measure of semantic binding and abstracted meaning relative to normative scores obtained from previous studies. In comparison, cognitively normal older adults performed on par or above the normative scores on all the measures. In the FTLD group, both participants with FTD were impaired on semantic problem solving but not on SORT. This could be because semantic problem solving is more open-ended and requires more extensive search and processing of multiple relations than does SORT. Past research has demonstrated that individuals with FTD have difficulty in processing such multiple relations (Waltz et al., 1999). Both participants with FTD performed normally on measures of abstracted meaning, which is in contrast to a previous study by Chapman and colleagues (2005). A possible explanation for this difference in findings is that the two FTD participants in this report were in the very early stages of the disease with a CDR of 0.5, whereas participants in the Chapman and colleagues study had a CDR of 1 or greater. Perhaps as the disease progresses, individuals with FTD develop difficulty in conveying abstracted meaning.

The performance of the participant with PNFA on SORT and semantic problem solving was within normal limits, suggesting preserved semantic abilities. On the abstracted meaning tasks, she showed impairment on spontaneous proverb interpretation, but on generation of interpretive statement her response was relatively normal. Her interpretive statement: “Umm, don’t give up” was automatic and concrete, but conveyed the message portrayed in the narrative correctly. On proverb interpretation, she stayed on topic, but her output was simplified, automatic, and halting. Her interpretations were incomplete. Given that spontaneous proverb interpretation places greater demand on language formulation, deficits observed on this measure might be related to impairment in linguistic fluency as observed in past studies (Ash et al., 2006; Chapman et al., 2005).

Compared to individuals with FTD, both participants with SD were impaired on measures of semantic binding and abstracted meaning. Their responses on SORT and semantic problem solving were marked by circumlocutions. For instance, in response to word pair “burns-wick,” CB’s response was “my wife burns to make the house smell good.” Impaired knowledge about features associated with word meaning might explain these deficits (Bozeat et al., 2000; Hodges at al., 1992; Hodges & Patterson, 1996). Both participants with SD were able to stay on topic when generating an interpretive statement and during proverb interpretation consistent with past studies (Ash et al., 2006; Chapman et al., 2005). However, their responses on the abstracted meaning tasks were nonspecific and vague. For instance, SS interpreted the proverb "Don’t judge a book by its cover" as “Just go ahead and take a look at it and read it and you’ll be complete.” Underlying deficits in conceptual knowledge might have contributed to impairment in generation of abstracted meaning given that their recognition memory scores were within normal limits.

In summary, a differential profile of impairment was observed in the three FTLD subtypes on measures of binding and abstracted meaning. Specifically, the two participants with FTD were impaired on semantic problem solving, the individual with PNFA was impaired on proverb interpretation, and both individuals with SD were impaired on measures of semantic binding as well as on measures of abstracted meaning. Although no generalizations can be drawn from these preliminary data, it appears that measures of abstracted meaning and semantic binding hold promise in differentiating FTLD subtypes in the earliest stages of the disease. In the future, examining performance on these measures in larger group studies could validate their clinical potential.

*Raksha Anand, PhD, CCC-SLP is a post-doctoral research fellow at the Center for BrainHealth®, at the University of Texas at Dallas (UTD). Her research examines cognitive and neural biomarkers of normal cognitive aging and dementia.*

*John Hart, Jr., MD is the Medical Science Director of the Center for BrainHealth®, Jane and Bud Smith Distinguished Chair, Cecil Green Distinguished Chair, and Professor of Behavioral and Brain Sciences at UTD. His research examines the neural basis of semantic memory.*

*Patricia S. Moore is a research coordinator at the Center for BrainHealth® at UTD. She works on multi-modal neuroimaging studies with foci in dementia and pediatric depression.*

*Sandra B. Chapman, PhD, is the Chief Director of the Center for BrainHealth®, and Dee Wyly Distinguished Professor in Brain Health at UTD. Her research explores relationships among cognitive abilities*, discourse functions, neurological profiles and interventions using brain imaging.

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# The Effects of Question Type on Conversational Discourse in Alzheimer's Disease

*Megan Petryk**

*Tammy Hopper*

Department of Speech Pathology and Audiology, University of Alberta

Edmonton, Alberta, Canada

*Currently at the Glenrose Rehabilitation Hospital, Alberta Health Services,

Edmonton, Alberta, Canada

## *Abstract*

*Purpose: The purpose of this study was to investigate the effects of asking open-ended episodic memory questions versus open-ended semantic memory questions on the conversational discourse of individuals with Alzheimer's disease (AD).*

*Methods: Four females diagnosed with probable AD participated in the study. A within-subjects experimental design was employed to assess the effects of the different question types on participants' spoken language. Transcripts were analyzed using specific discourse measures used in previous research involving individuals with AD.*

*Results: Participants in this study produced more meaningful and relevant statements, as measured by ratios of on-topic utterances, when responding to the semantic memory questions as compared to episodic memory questions. Participants made few negative comments overall; however, more negative self-evaluative statements were made in the episodic memory condition. When considered in conjunction with previous research, the results support the use of multiple question types in conversation with individuals with mild and moderate AD. However, communication partners should limit their use of open-ended questions that primarily tax episodic memory.*

Multiple aspects of communication are affected in Alzheimer's disease (AD), including the ability to produce and comprehend spoken discourse. Indeed, discourse production impairments have been well documented among individuals with AD across a variety of tasks and different discourse types (Bucks, Singh, Cuerden, & Wilcock, 2000; Garcia & Joanette, 1997; Mentis, Brigg-Whittaker, & Graminga, 1995; Tomoeda & Bayles, 1993; Tomoeda, Bayles, Trosset, Azuma, & McGeagh, 1996). Conversational discourse may pose a particular challenge for individuals with AD because typical conversations place demands on episodic and working memory systems, both of which are impaired early on in AD. As a result of these impairments, individuals with AD often are tangential and repetitious, with language that is vague, anomic, and marked by reduced semantic complexity (Bucks et al.; Ripich & Terrell, 1988; Tomoeda & Bayles).

To compensate for such deficits, clinicians often recommend several communication strategies; among them is limiting open-ended questions that require the person with dementia

to recall information freely or generate a series of ideas. This recommendation is theoretically-motivated; however, the research evidence to support the exclusion of open-ended questions in conversations with individuals with dementia is mixed.

Ripich, Ziol, Fritsch, and Durand (1999) investigated the effects of using open-ended versus multiple choice and yes/no questions on the accuracy of responses produced by individuals with early- to middle-stage AD in conversation. They found that yes/no and choice questions resulted in more successful communication exchanges. In contrast, Tappen, Williams-Burgess, Edelstein, Touhy, and Fishman (1997) examined 35 transcribed conversations between nurses and patients with AD and found that individuals in the middle to later stages of AD provided meaningful spoken responses to some open-ended questions asked by nurses, particularly those dealing with feelings and emotions.

Small and Perry (2005) used a descriptive, naturalistic approach to document the effect of question type on the occurrence of communication breakdowns during conversations between 18 caregivers and their spouses with mild to moderate AD. The researchers observed the partners interacting, transcribed their conversations and coded utterances of caregivers according to type of question (yes-no, choice, open-ended), and type of memory necessary to answer the question (semantic or episodic). Semantic questions were defined as questions that required the person with AD to "generate factual information, including general knowledge, ongoing events, and states of being" (p.129). Examples of caregiver semantic questions included "What would you like for dinner?" and "What do you call this thing?" Episodic questions required the individual with AD to retrieve autobiographical information related to a particular time and place from episodic memory. Examples of these types of questions included "Where did we live after I changed jobs?" and "What did we eat for dinner yesterday?" The authors reported that open-ended episodic questions were used approximately twice as often as semantic questions and resulted in significantly more communication breakdowns than did open-ended semantic memory questions. Overall findings supported the conclusion that communication was more successful when caregivers used yes–no questions instead of open-ended questions and when questions invoked semantic rather than episodic memory.

## *Purpose*

The purpose of the current study was to expand on the observational study of Small and Perry (2005) by conducting an experiment in which we systematically manipulated the use of episodic and semantic questions to determine the effects of question type on the discourse of individuals with AD. We hypothesized that open-ended semantic memory questions would result in more positive and fewer negative utterances than open-ended episodic memory questions.

## *Research Question*

What are the effects of asking open-ended semantic memory questions versus open-ended episodic memory questions on the language of individuals with mild to moderate AD?

## *Method*

### Participants

Four women with a diagnosis of probable AD participated in the study (see Table 1). Participants ranged in age from 65 to 81 years old. All participants were married, lived at home with a spouse, and spoke English as a first language. All participants passed vision and hearing screenings. Severity of cognitive impairment, as estimated by Mini-Mental State Examination scores (Folstein, Folstein & McHugh, 1975) and based on Tomoeda (2001), ranged from mild to moderate. All participants took acetylcholinesterase inhibitors to treat the AD, as

well as other medications for co-morbid health conditions. The study was approved by the Health Research Ethics Board at the University of Alberta. Researchers gained consent from participants' authorized representatives (family members) and secured assent from the participants with dementia (Slaughter, Cole, Jennings, & Reimer, 2007).

*Table 1. Participant demographic characteristics.*

| Initials | Age | MMSE | Cognitive Impairment[a] | Education (in years) | Attends Social Outings | Medications (per day) |
|---|---|---|---|---|---|---|
| MM | 65 | 23 | Mild | 14 | Twice weekly | Ebixa 10 mg<br>Reminyl 12mg<br>Clonazepan .5mg<br>Citalopram 40mg<br>Risperdal .5mg |
| RH | 69 | 19 | Mild | 11 | Twice monthly | Exelon 3 mg<br>Effexor 75mg |
| EC | 81 | 16 | Moderate | 14 | Daily | Exelon 6 mg |
| AH | 68 | 12 | Moderate | 11 | Twice weekly | Exelon 6 mg<br>Ebixa 50 mg |

**Procedures**

A within-subjects experimental design was employed to assess the effects of question type on the discourse of individuals with AD. Each participant engaged in two sessions, each approximately five minutes long. In one session, the participant was asked to answer three episodic memory questions (the episodic memory condition). In the other session, the participant answered three semantic memory questions (the semantic memory condition). A comparison was made of the discourse produced as a function of question type.

At the beginning of each session, the clinician introduced the first topic of conversation and made a general statement about it. The topic for each condition was the same for all participants in the study. For the episodic memory condition the topic was 'Vacation' and in the semantic condition the topic was "Drinking and Driving." The order of presentation of the conditions was counterbalanced across participants. While introducing the topic, a picture depicting the topic was simultaneously presented, with the title of the conversation topic printed underneath the picture.

Next, the researcher used either a script of three episodic memory questions or three semantic memory questions. As the researcher asked each question she also presented the printed question on a cue card, putting it beside the topic picture for the participant to see. Participants were given 10 seconds to begin a response. The researcher acknowledged all responses in a neutral manner, usually verbally by saying "Uhum" or nonverbally by head nodding and smiling. In closing, the researcher asked a yes/no question meant to terminate

the topic and allow the participant to make any final comments before transitioning to the next question condition. The second question condition was presented within 5 minutes after completion of the first using the same procedures.

Episodic memory questions were operationally defined as questions that required the individual with AD to recall autobiographical information related to a particular salient event occurring in the last 10 years. Semantic memory questions were operationally defined as questions that required the respondent to access conceptual knowledge about the world based on life experience. The semantic memory questions required participants to respond by sharing their perspectives, feelings, and opinions on the topic of "Drinking and Driving" rather than recalling information about a past event. Questions selected for use in the semantic condition were based on work by Arkin (1995) and Arkin and Smith (2005). All sessions were conducted at the participants' homes and were video and audiotaped for later analysis.

### Discourse Analysis Procedures

Utterances were demarcated and coded based on guidelines by Holland et al. (1985) and Arkin and Mahendra (2001). The researcher demarcated discourse into utterances and coded each as positive, neutral, or negative according to its content and conversational context. Ratios of positive, neutral, and negative utterances to total utterances were obtained in addition to frequency counts for each utterance type. Each utterance was considered as a response to the most recently asked prompt question and coded accordingly. Definitions and examples of codes were extracted directly from Arkin and Mahendra and included three positive utterance codes (on-topic comment, topic-related digression, and topic comment question; Hopper, Cleary, Baumback, & Fragomeni, 2007); seven neutral codes (e.g., "don't know" or "don't remember" statements, unelaborated yes or no answers to questions); and nine negative codes (e.g., incomplete thoughts, off topic statements).

Agreement for demarcation and coding of utterances was established over two trials between the two authors and a third individual (graduate research assistant). Interscorer agreement for utterance demarcation was established with the thesis supervisor and researcher independently coding three randomly selected conversations (one from each participant). Then, inter-scorer reliability for utterance codes was conducted.

Initially, the researcher, thesis supervisor, and a graduate research assistant independently coded the episodic and semantic conditions in one participant's transcript (EC) in which the researcher already had demarcated the utterances. After coding independently, the three met to discuss the rationale for utterance codes until consensus was achieved. Subsequently, the three scorers independently coded the three randomly selected conversations in which the utterances were demarcated. Reliability quotients were calculated by counting the number of point-to-point agreements divided by the total number of possible agreements between the primary researcher and the graduate research assistant.

*Table 2. Inter-scorer agreement for utterance coding of three randomly selected conversations*

| Transcript | No. of Agreements | No. of Possible Agreements | Inter-scorer Agreement |
|---|---|---|---|
| AH – Semantic | 23 | 26 | 0.88 |
| MM – Episodic | 28 | 31 | 0.90 |
| RH – Semantic | 53 | 71 | 0.75 |
| Total utterances | 104 | 128 | 0.84 |

The reliability quotient was relatively low for RH's transcript. This was primarily a function of differences in interpretation of humorous interjections that characterized RH's conversational style and one particular section in her conversation in which she digressed from the topic question, but not the main topic.

Overall, there were 24 instances of utterance coding disagreements (128 – 104 = 24) across the three transcripts. Twenty of the 24 disagreements were resolved using the third scorer's data, yielding a reliability quotient of .97 (124/128) for all three transcripts.

### Intrascorer Agreement

To ascertain intra-scorer agreement, the primary investigator recoded the conversations that had not been selected for inter-scorer reliability six weeks following the time of original coding. Intra-scorer reliability was calculated by counting the number of point-to-point agreements divided by the total number of possible agreements.

*Table 3. Intra-scorer agreement for utterance coding.*

| Transcript | No. of Agreements | No. of Possible Agreements | Inter-scorer Agreement |
|---|---|---|---|
| AH – Episodic | 24 | 25 | 0.96 |
| MM – Semantic | 46 | 47 | 0.98 |
| RH – Episodic | 55 | 63 | 0.87 |
| Total utterances | 125 | 135 | 0.93 |

### Data Analysis

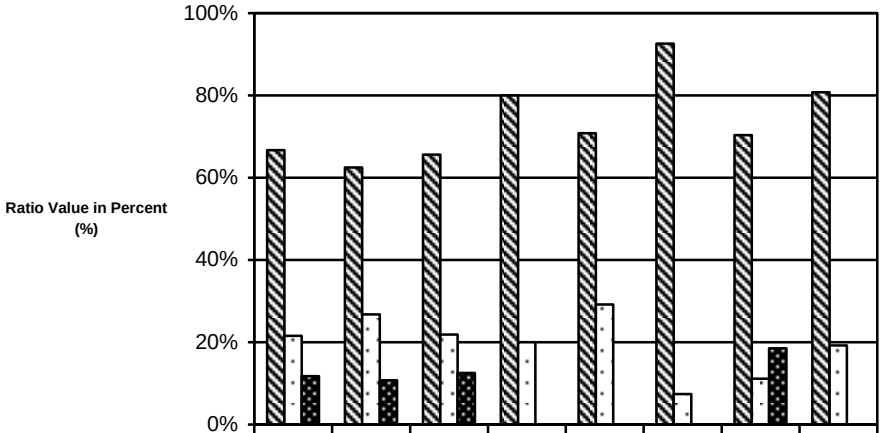
The researchers made frequency counts of each utterance type produced by participants. Then, a ratio of positive, neutral, and negative utterances to total utterances was calculated for each transcript. Visual inspection of the data for increases in on-topic utterances and decreases in irrelevant statements by treatment condition was a supplementary method of data analysis.

## *Results*

### Individual Participant Results

Three of the 4 individuals with AD had more positive utterances in the semantic memory question condition than in the episodic question condition. EC and AH produced more positive and no negative utterances in the semantic condition as compared to the episodic condition. MM also showed a pattern of more positive utterances in the semantic condition, as compared to the episodic condition, and had no negative utterances in either condition. In contrast, for RH, similar patterns of utterance classifications were observed in both question conditions.

*Figure 1. Individual ratios for positive, neutral, and negative utterances to total utterances according to condition.*




| | RH Episodic | RH Semantic | EC Episodic | EC Semantic | MM Episodic | MM Semantic | AH Episodic | AH Semantic |
|---|---|---|---|---|---|---|---|---|
| Positive utterances | 67% | 63% | 66% | 80% | 71% | 93% | 70% | 81% |
| Neutral utterances | 22% | 27% | 22% | 20% | 29% | 7% | 11% | 19% |
| Negative utterances | 12% | 11% | 13% | 0% | 0% | 0% | 19% | 0% |

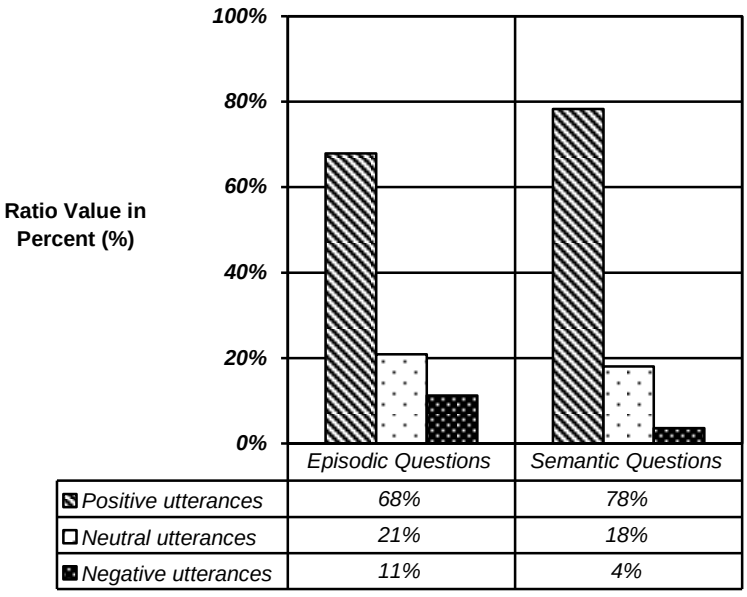
**Group Results**

In total, researchers coded and analyzed 344 utterances across the four participants (12 unintelligible utterances were excluded). Participants produced 159 utterances in the episodic memory condition and 185 in the semantic condition. For the analysis conducted in this study, researchers excluded utterances coded as topic comment digressions, yielding a total of 134 utterances produced in the episodic memory condition (range = 24-51 utterances per participant) and 166 utterances (range = 26-56 utterances per participant) produced in the semantic memory condition. These values were used to calculate outcome ratios.

The average ratio of positive to total utterances across the four participants was 10% greater in the semantic memory condition (78% versus 68%) than in the episodic memory condition. Participants made more on-topic utterances in the semantic memory condition as measured by the mean group ratios of positive to total utterances.

The average ratio for negative to total utterances was 7% greater in the episodic memory condition (11% versus 4%) than in the semantic memory condition. That is, a greater proportion of negative utterances was produced in response to the episodic memory questions. Furthermore, participants only produced “negative self-evaluations,” “don’t know” and “don’t remember” statements, and “topic comment repetitions” in the episodic memory condition.

*Figure 2. Mean group ratios for positive, neutral, and negative utterances to total utterances according to question type.*




| | Episodic Questions | Semantic Questions |
|---|---|---|
| Positive utterances | 68% | 78% |
| Neutral utterances | 21% | 18% |
| Negative utterances | 11% | 4% |

## Discussion

The pattern of a greater proportion of positive utterances in the semantic condition than in the episodic condition was apparent in the spoken discourse of three of the four participants. Group mean data also supported the hypothesis that participants with AD would produce more positive and fewer negative utterances when answering questions that required recall of semantic versus episodic memories. Yet, one participant (RH) did not show this pattern of performance.

RH had a higher ratio of positive to total utterances in the episodic memory condition. One reason for this result may be that the topic episode for RH (her vacation) occurred relatively recently (one month prior to the study), whereas the vacations that were the topics of the episodic memory conditions for the other three participants occurred from three months to two years prior to the study. Interestingly, in the semantic memory condition, it seemed as though the semantic memory questions related to drinking and driving actually evoked personal episodic memories for RH. Thus, RH tried to recall aspects of these events, while also discussing her opinion and perspectives on drinking and driving.

The performance of MM also deserves discussion as she had the largest difference in the ratio of positive utterances/total utterances between treatment conditions. Notably, MM was the participant in the earliest stages of the disease process with an MMSE score of 23/30. This finding is similar to that noted by Small and Perry (2005), who found a more pronounced effect of question type for individuals with mild AD as compared to those with moderate AD.

In general, the results of this study are consistent with previous research findings from Small and Perry (2005) and Tappen and colleagues (1997), who recommend the use of some types of open-ended questions with individuals who have mild-moderate AD. For example,

asking individuals with AD questions about specific dates or events (e.g., 'When did you go to Australia?') is likely to result in more communication breakdowns compared to asking questions that allow sharing information about a positive, personally meaningful event (e.g., 'What was the favorite part of your trip to Australia?'). Surprisingly, even in the episodic memory condition, the participants in this study produced some on-topic responses to questions about salient, positive past experiences (vacations). However, the use of episodic memory questions resulted in discourse embedded with "negative self-evaluations" (e.g. "My memory is so bad") and "Don't know" and "Don't remember" statements as well as "topic comment repetitions." These types of utterances reflect negative feelings and recall failures. As such, communication partners should limit their use of episodic memory questions.

Pairing questions with written and graphic cues also appeared to promote successful interactions. All participants were observed to make use of the cue cards and picture during the conversation, and made comments to indicate that they used the visual support to remind themselves of the conversational topic. This finding validates reports by other researchers (Bourgeois, 1992; 2006) that many individuals with AD are able to read and use multiple modalities of cues to facilitate memory during conversation.

## Future Directions

Devising questions that could be classified as solely 'episodic' or 'semantic' was problematic. Despite the intention to solicit specific types of information from participants via question type, it was evident that responses to semantic memory questions sometimes reflected recall of autobiographical memories associated with the topic under discussion, such as opinions on drinking and driving.

Taken together with currently published research findings, this study provides support for the use of multiple question types (open-ended, choice, and yes/no) and multiple modalities (written and graphic cues as well as speech) to improve conversations with individuals who have mild to moderate AD. However, in general, episodic memory questions should be used sparingly and with careful attention to effects on language and affect of individuals with AD.

*Megan Petryk is a speech-language pathologist at the Glenrose Rehabilitation Hospital in Edmonton Alberta and works primarily with adults who have neurologically-based communication and swallowing disorders. The research presented in this paper was conducted while she was a Master's student at the University of Alberta.*

*Tammy Hopper is a speech-language pathologist and associate professor in the Department of Speech Pathology and Audiology at the University of Alberta. She teaches and conducts research in the area of communication disorders of Alzheimer's disease and related dementias.*

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# Contextual Thematic Group Treatment for Individuals With Dementia

*Jane Pimentel*

Department of Communication Disorders, Eastern Washington University
Spokane, WA

## *Abstract*

*Purpose: Group treatment for individuals with dementia is an option to target activity and participation for residents in long-term care facilities to engage them in meaningful conversation and potentially improve their quality of life. The purpose of this article is to describe a theme-based group treatment approach that capitalizes on the use of the environment through context.*

*Method: Rationale for this group treatment approach is presented, including a brief description and evidence supporting clinical techniques utilized. These include reminiscence therapy, multisensory stimulation, and use of environmental aids. In addition, background is provided regarding capitalizing on memory and linguistic strengths and compensating for weaknesses. Modifications of clinician behaviors are presented to best facilitate successful group interactions.*

*Results and Conclusions: The article culminates in a detailed description of contextual thematic group treatment. This description includes an example lesson plan with corresponding rationale for activities. Data supporting the individual clinical techniques utilized in this group treatment approach are adequate; however, the evidence supporting the combination of these techniques in this format is meager and requires further investigation.*

The use of groups as a treatment option in the long term care (LTC) setting allows clinicians to draw from a variety of best practices in dementia management. Group treatment also provides a means to address language in an efficient manner while focusing on the social aspect of communication. Alternative group interventions to the one that will be described here include the Montessori approach (Camp, 1999) and the Breakfast Club (Santo Pietro & Boczko, 1997).

The impact of multiple types of dementia on language and communication is well documented. The complex interplay between declining cognitive abilities, especially in the areas of memory, executive function, and language abilities significantly impacts the capacity of an individual with dementia to use communication for social purposes. Language often is marked by anomia with verbalizations that are tangential, repetitious, and ambiguous. Overall, there is a reduction in the quantity and complexity of language along with decreased auditory comprehension resulting in a lack of social connectedness (Hopper, 2007).

The goal/intent of the group treatment model presented here is to provide a supportive milieu for communication to elicit functional conversation and engagement for leisure and

entertainment. The purpose of this article is to describe a contextual and thematic approach to group treatment for persons with dementia, with supportive rationale. This approach has been utilized in LTC settings to target an enriched quality of life (QoL) for residents with moderate to severe dementia.

## *Rationale*

### Assessment

This group treatment approach addresses both the activity/participation component and the contextual factors of the International Classification of Disability, Functioning, and Health (ICF) developed by the World Health Organization (2001) and described by Threats (2008) for clinical use in speech-language pathology. This focus is consistent with the American Speech-Language-Hearing Association's directive for Speech-Language Pathologists (SLPs) to "work to improve QoL by reducing impairments of body functions and structures, activity limitations, participation restrictions, and barriers created by contextual factors" (ASHA, 2007, p. 4).

Knowing a resident's communication strengths guides the SLP's suggestions to modify an activity for increased engagement and appropriate interaction. Testing and observation assist the SLP in this task. Administration of the Functional Linguistic Communication Inventory (FLCI; Bayles & Tomoeda, 1994) provides information regarding language strengths and weaknesses at the communication activity level, and guided observation provides insight into the resident's participation in their physical environment while noting barriers and facilitators. Observations can be made efficiently for the following modalities: visual—attention and receptivity to pictures, colors, signs and other written stimuli in the environment; auditory—attention to talking, noise, and music with the clinician alert to sounds that are auditorily toxic in LTC environments; and tactile—attention to physical characteristics such as touching and a resident's response to touch. In addition, noting the resident's frequency of interaction with other residents, staff, family and friends, or volunteers can assist in planning and implementing strategies to maximize meaningful participation in group treatment. Much of this observation can be accomplished simply by walking with a resident from room to room with various stimuli and noting what they can attend to visually or auditorily while looking for positive (facilitating) and negative (barriers) reactions to the environment.

### Clinical Techniques

The contextual thematic group treatment approach draws upon clinical practices such as multisensory stimulation (MSS), reminiscence therapy (RT), and external memory aids, that have evidence to support positive outcomes. Kim et al. (2006) found Class II evidence to support group RT for individuals with Alzheimer's's type dementia. Class II evidence refers to one or more well-designed observational studies with concurrent controls, such as a control group or control conditions. In general, RT focuses on remembering life experiences for the simple pleasure of re-experiencing happy or satisfying occasions and sharing heartfelt experiences with others (Moss, Polignano, White, Minichiello, & Sunderland, 2002). RT has low structure but uses multiple sensory input and props to support memories.

MSS utilizes a controlled environment with visual, auditory, tactile, and olfactory stimulation provided using a variety of lights, music, aromas, and objects. Stimuli are chosen by residents, with staff gently encouraging interaction. Little order and few attentional or intellectual demands are imposed (Baker et al., 2001). Researchers using MSS alone (Baker et. al.) or paired with cognitive stimulation (Spector et al., 2003) for participants with moderate to severe dementia have demonstrated immediate effects (directly after the MSS sessions) for more spontaneous speech, increased attention, increased initiative, and increased activity and alertness (Baker et al.; Spector et al.). Outcome measurements for these studies included the Mini Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) and a number of

rating scales, some author generated. For example, Spector and colleagues used the clinician administered Alzheimer's's Disease Assessment Scale—Cognition (ADAS-Cog; Rosen, Mohs, & Davis, 1984) and the brief Quality of Life-Alzheimer's's Disease Scale (QoL-AD; Logsdon, Gibbons, McCurry, & Teri, 1999) based on self-report. The Baker and colleagues and Spector and colleagues studies were randomized controlled trials; thus, evidence for MSS, at least as applied in their treatment approaches, is Class I.

External aids take many forms and focus on modifying the environment and providing supports to enhance recognition and recall by "providing a multitude of cues thought to stimulate multiple memory systems" (p. 141; Bourgeois & Hickey, 2009; Bourgeois, 2007). These aids include memory wallets/books, calendars, written schedules, visual cues, signs/labels, and cue cards. It is important to highlight the preserved oral reading at the word, phrase, and short sentence level in many individuals with dementia, which has been demonstrated by Bourgeois and is important for the use of some external aids (Bourgeois, 2001). A number of studies have been conducted to look at the treatment outcomes of external memory aids, especially memory books/wallets, on behavior and communication. For example, there is strong evidence (Class I) to support the use of memory books when paired with caregiver training (Burgio et al., 2000) and Class II evidence for external aids when used with cueing hierarchies or spaced retrieval (Bourgeois et al., 2003).

### Capitalizing and Compensating

In addition to building upon the aforementioned clinical procedures, the described group treatment approach is grounded in capitalizing on more intact memory systems and language skills while compensating for those more impaired. Santo Pietro and Ostuni (2003) highlight six skills that are preserved in individuals with Alzheimer's's type dementia. These include the ability to: (a) maintain procedural memories; (b) access early life memories; (c) recite, read along, sing; (d) engage in social ritual; (e) desire interpersonal communication; and (f) desire interpersonal respect. These skills capitalize on the more intact, nondeclarative linguistic procedural memories (e.g., saying the Pledge of Allegiance) and motor procedural memories (e.g., hand over the heart when saying the Pledge of Allegiance) in addition to targeting declarative semantic memories and prompting reminiscence which may be autobiographical in nature. Alternatively, the more impaired working memory and declarative episodic memory require those strategies developed by Bourgeois (2007) to compensate, such as using context, using repetition and providing verbal and written choices, as well as utilizing different types of sensory stimulation such as auditory (e.g., verbal and music), tactile (e.g., handling props), and visual stimulation (e.g., pictures, photographs, books, props). This sensory stimulation should be provided to evoke positive memories, actions, and emotions (Bayles et al., 1998). The meaningfulness of sensory stimulation is enhanced when considering the impact of culture (e.g., foods, music, traditions) and adhering to premorbid routines and interests of the individual (e.g., Did they wear and enjoy fragrances? Were they cooks? Did they work with tools?).

### Clinician Behaviors

The success of resident interaction in the group treatment setting is dependent on the facilitators'/clinicians' modification of their social and communicative behaviors. A number of clinician modifications in language and speech patterns can enhance communication with residents with dementia. Clinicians should adjust their verbalizations by simplifying syntax, slowing speech rate by adding pauses, being redundant, summarizing, being topic focused, selecting appropriate vocabulary, avoiding vague referents (e.g., this, it, they), staying as concrete as possible, and limiting the amount of new information. Nonverbal behaviors also should be adjusted including use of pleasant vocal tone, adequate speech intensity, eye contact, facial expression, and gentle touch as appropriate. Comprehension can be augmented by pairing key words and props with auditory input along with communicative gestures. Working memory is aided when the clinician is redundant and provides visual stimuli in the

form of external aids and props. Episodic memory is compensated for by avoiding "when" questions (see Petryk & Hopper in this issue) and providing choices or opportunity for yes/no responses. Semantic memories are capitalized on by the sharing of short anecdotes paired with external aids that may prompt recall. In addition, it is important to attend to the physical environment and ensure that it is as conducive as possible by decreasing distractions such as noise, having adequate lighting, comfortable temperature, optimal seating, providing privacy, and having ample time (Brush, Calkins, & Bruce, 2007).

*Table 1. Clinician/Facilitator modifications for successful interactions in group therapy*

| |
|---|
| • Establish eye contact |
| • Give residents pre-warning of activity |
| • Be redundant |
| • Be direct |
| • Modify question asking |
| • Use graphic and written cues |
| • Pair gestures with speech |
| • Modify speech |
| • Ensure comfortable environment |
| • Provide transition for new activity |

## *Contextual Thematic Group Treatment*

The contextual thematic dementia group treatment approach capitalizes on stronger memory systems and linguistic strengths and compensates for weaknesses while using the communication modifications reviewed above. The group format focuses on resident participation and has a particular theme chosen based on residents' interests and/or the season; for example, patriotism as the theme based on Veteran's Day. This format includes a warm-up, context-building, a language task, a discourse task, and a conclusion. This format is loosely based on and inspired by Garrett and Ellis' work with aphasia groups (1999). The warm-up may be as simple as a social gathering time with a patriotic song playing in the background and a gentle orientation to the theme. Context building forms the core of the group. Here, context refers to the use of the environment through the addition of relevant props and external memory aids based on the theme (e.g., an American flag, a WWII book, cue cards, a calendar). Providing context to increase communication is grounded in studies by Bourgeois and colleagues (2003) with their external memory aid work; Hopper, Bayles, and Tomoeda's (1998) successful use of toy stimuli; use of preferred music (Brotons & Koger, 2000; Mahendra, 2001); and Downing's (2001) promising effects of personally relevant stimuli on verbal discourse behaviors. The props are used throughout the group to facilitate participation and to augment comprehension. Specific activities are chosen based on the type of dementia, the severity of group members, and group member abilities based on assessment.

*Table 2. Contextual thematic group example with transportation theme and supportive rationale for activities*

| **Activities** | **Rationale** |
|---|---|
| Warm-Up:<br>• Name-tags read and passed out<br>• Props available: vintage models, airline tickets, RV advertisements, airline logos<br>• Recitation/song: "Bicycle built for Two" with written lyrics in large font and bold print | • Social ritual, oral reading<br>• Visual and tactile stimulation, semantic memories<br>• Silent reading of lyrics, music, linguistic procedural memory |
| Context-building:<br>• Sounds of transportation with written word matching<br>• Categorization of type of vehicle based on description (Henry Ford invented this)<br>• Matching mode of transportation to decade of invention on timeline (airplane – 1900) | • Auditory nonverbal stimulation<br>• Visual, auditory, and written stimuli used with picture and short descriptor phrase, semantic memories<br>• Opportunity for reminiscence, episodic, autobiographical memories |
| Language task:<br>• Written text scaffolded based on individual ability: Charles Lindbergh's flight across Pacific | • Silent reading following by oral reading, recognition memory via written choice questions |
| Discourse:<br>• Discussion of personal experiences related to previous activities through anecdotes and sharing: e.g., "I remember my first plane ride, I was 17 and flew on a plane from Florida to Minnesota." | • Priming, opportunity for reminiscence, episodic, autobiographical memories |
| Conclusion:<br>• Reminder of theme: transportation<br>• Recitation/sing: "Bicycle built for Two"<br>• Collect name tags<br>• Thank residents for participating | • Episodic memory compensation<br>• Procedural memories<br>• Social ritual and respect |

It is important for the clinician/facilitator to be an active participant by reflecting back what the residents say, matching emotions and validating, using a calm voice complemented by gesture and touch, redirecting as necessary, and following the lead of the residents for spontaneous conversation. The language task also is related to the theme and is often a paper and pencil worksheet that can be scaffolded based on resident skill (e.g., matching U.S. presidents to past wars). The discourse activity focuses on facilitating cross-talk among residents and the group concludes by restating the theme and ends with the same recitation or song playing as they leave the group.

Multiple considerations are important when determining activities and composition of the group. A group size of 4 to 5 residents of similar dementia type and severity is optimal; however, sizes of up to 8 residents with varying type and severity have been successful given assistance from activity staff, volunteers, or students. Selection of activities should be based on encouraging active engagement while considering attention demands, memory and language comprehension requirements, and visual and auditory abilities. SLPs need to couple their expertise with the knowledge of recreation therapists and activities staff to determine best activities or modification of activities for a particular resident based on past interests and on language and cognitive function necessary to benefit from the group.

The evidence to support this group approach comes from multiple studies cited earlier that demonstrate positive outcomes associated with the techniques employed and one study of the effects of context on the verbal discourse behaviors of residents with probable Alzheimer's's dementia (Pimentel, 2002). Pimentel found an increase in number of total words and correct information units resulting in increased concise language when context was provided during thematic group treatment for 8 individuals with moderate to severe dementia. In addition inadequate responses, dozing/sleeping, and agitation decreased in the contextual condition; whereas ambiguous responses slightly increased but so did the positive behavior of laughing/smiling when context was present. This small study requires replication with further investigation of relevant variables and the best outcome measures.

*Jane Pimentel, PhD, CCC-SLP, BC-NCD, is an associate professor in Communication Disorders at Eastern Washington University specializing in neurologic communication disorders. She has presented at ASHA and state association meetings in outcome measurements, dementia management and group treatment for individuals with neurologic communication disorders. She currently serves on the Board for the Academy of Neurologic Communication Disorders and Sciences and is a member of ASHA Division 2's Steering Committee.*

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