Verbal Play as an Interactional Discourse Resource in Early Stage Alzheimer’s Disease

Alzheimer’s disease (AD), the most common form of dementia, is a progressive neurodegenerative disease that deleteriously impacts social communication. A growing number of researchers have taken up an interactional sociolinguistic approach to investigating the impact of AD on communication across settings, discourse practices, and partners.\textsuperscript{1,2} The current study contributes to this growing line of work by examining the use of verbal play in the communicative interactions of individuals with AD and their familiar communication partners.

*Verbal play,* or the playful manipulation of language, is an enjoyable and pervasive component of daily interaction, serving important interpersonal functions.\textsuperscript{3,4} It can be as isolated as playing with sounds and meanings of words to make puns and tease or as expansive as when a joke or playful theme is extended over a conversation or later interactions. Whether or not deemed skillful, attempts at play are recognized by communicative partners who respond to the playful episode (e.g., by laughing at the joke) and actively participate in creating, maintaining, and returning to the thread. Verbal play also appears to be a strong indicator of interpersonal health. Research suggests that verbal banter and teasing is a sign of trust and also facilitates trusting social relationships.\textsuperscript{5} Crystal argues that verbal play “is a sign that all is well with human relationship…when a couple or a family begin to be irritated by each other’s language play, or to stop using it, it is a sure sign that the relationship is breaking” (p. 53).\textsuperscript{3} Thus, disruptions in or decreasing attempts at verbal play by those with AD or their partners may emerge alongside disease progression, signaling a breakdown in their communication and social relationships.

While no previous studies have examined the use of verbal play in individuals with AD, previous work with patients with amnesia has revealed patterns of spared and impaired verbal play use.\textsuperscript{6} Individuals with hippocampal amnesia have stable yet profound impairments in
declarative memory (i.e., the ability to acquire new information and consciously recollect the events of daily life) with other forms of memory intact (e.g., procedural memory) in the context of generally preserved intelligence and cognition (e.g., language, reasoning). The use of verbal play in the communicative interactions of these individuals and their communication partners was previously examined. Results revealed that healthy comparison participants produced significantly more verbal play episodes than the amnesia participants: twice as many, on average. Also, the episodes produced by the amnesia participants were more rotely produced and these pairs seldom sustained or returned to playful themes across time. The familiar partners also often abandoned playful themes when their memory-impaired partner did not recognize the playful history or lost the thread of the episode. These findings suggested that profound memory impairments, in the context of preserved linguistic functioning, can disrupt the deployment of verbal play in social interaction and may contribute to these patients’ reports of social isolation.

The goal of this study is to document and characterize the extent and types of verbal play in the communicative interactions of individuals with very mild Alzheimer’s disease and their familiar partners as they complete a collaborative referencing task, identifying interactional forms, resources, and functions (described below) of playful episodes. Hippocampal amnesia and early stage AD have in common impairments in anterograde declarative memory caused by damage or pathology to the hippocampal system in the medial temporal lobes (MTL). Indeed, declarative memory deficits are hallmark and among the first symptoms to be reported in AD. Given the striking disruptions in the use of verbal play among participants with hippocampal amnesia and the presence of declarative memory deficits in both populations, I predict deficits in the quantity and quality of verbal play in the participants with very mild AD. Specifically, in the discourse of participants with AD and their communication partners, I expect fewer verbal play
episodes and fewer extended episodes relative to healthy comparison pairs. However, whereas individuals with hippocampal amnesia have stable and selective declarative memory deficits, individuals with AD have additional neurological, behavioral, and cognitive deficits that worsen with disease progression. Thus, a more complex pattern of disruption in verbal play use may be observed here. Irrespective of outcome, this study promises to contribute to our understanding of the impact of AD on the use of a rich and pervasive discourse practice, verbal play, and on interactional aspects of communication more broadly. Further, documenting and characterizing the availability and interactional nature of verbal play in the social interactions of individuals with very mild AD and their partners is an important first step, both clinically and for research, in tracking the progressive deterioration of interactional communication in this population.

**METHOD**

**Participants and Dataset**

Analysis was performed on data obtained as five communication pairs managing Alzheimer’s disease (individuals with AD and their familiar partners) and five comparison pairs (healthy participants and their familiar partners) completed a collaborative referencing task.

The five participants with AD were all females, were 77.0 years old, on average ($SD = 5.5$), and had 14.8 years of education, on average ($SD = 3.4$). The diagnosis of probable AD was made based on the National Institute of Neurological and Communicative Diseases and Stroke/Alzheimer’s and Related Disorders Association criteria. All AD participants were classified as having very mild AD. The time between diagnosis and study participation ranged from one to four weeks. Neuropsychological testing confirmed that all were severely impaired for both verbal and nonverbal memory disproportionate to any deficits in general cognitive or intellectual functioning. Language abilities were within normal limits. Table 1 presents their
demographic and neuropsychological information. Comparison participants were matched pairwise to the participants with AD on age ($M = 79.6$ years; $SD = 6.4$), sex, education ($M = 15.0$ years; $SD = 2.2$), and handedness. All healthy participants were screened to be free of dementia. Each of the participants selected a familiar communication partner to participate with. The familiar partners of the participants with AD and comparison participants were similar in age (62.6 years versus 79.6 years) and education (15.6 years versus 16.8 years).

Participants completed the collaborative referencing task on 12 trials, with 6 trials conducted in each of two sessions on a single day. There was a minimum of 30 minutes between each session. During each trial, participant pairs sat facing each other across a low barrier, with a board containing 12 numbered spaces and a set of 12 tangram playing-cards in front of each person (see Figure 1). The barrier allowed them to see each other’s expressions and gestures while blocking their board and cards from view by one another. Each member of the pair was assigned to be either the director (the participants with AD and healthy comparisons) or matcher (the familiar partners). The director began each trial with cards on her board and communicated to the matcher how to fill the numbered spaces so that at the end of the trial the two boards were identical. The researcher left the room during task trials, but interacted freely between trials.

**Data Analysis**

**Identifying episodes.** Episodes of verbal play were identified throughout the 20 sessions (two sessions for each of 10 pairs). A broad definition of verbal play was used to capture all instances of telling funny stories or jokes, playing with sounds or making puns, overt teasing of others or self-deprecating humor, use of marked or playful voice or registers, singing or song-like intonations, and sound effects\(^3,6\). Coders identified all such instances of play, marked where each episode began and ended, and characterized each episode (see below). Episode boundaries
were utilized to distinguish between extended single episodes of verbal play consisting of one or multiple utterances connected by the same theme and separate playful episodes, including series of unrelated episodes and exchanges on the same theme that were temporally disconnected.

**Characterizing resources, functions, and interactional form.** Three types of resources were coded. *Verbal resources* included linguistic resources, such as playing with sounds and words (e.g., *talk fasty wasdy*), playful names (e.g., *Scotty dog*), and expressions (e.g., *let the good times roll*). *Prosodic resources* included sound effects, singing (e.g., *we are the champions* [sings] *of the world*), and shifts in voicing and prosody (e.g., *oh wee* [high pitch voice]). *Gestural resources* included gestures that contributed meaningfully to the episode (e.g., *high fives*).

Four types of communicative functions were coded. *Joking/storytelling* captured jokes and funny stories with narrative structure (e.g., *A little boy in Tipton paid me a compliment and I said am I beautiful? He said no but you would be if you’d dye your hair and wear lipstick [laugh]*). *Teasing* included episodes directed towards or at the expense of others, like scolding, competitive teasing, and sarcasm (e.g., *boy you did better the first time [laugh]*), as well as episodes directed towards oneself, like bragging or self-deprecation (e.g., *I’M BLOWIN’ IT!*). *Referencing* included playing with the sounds, words, and meanings of card labels (e.g., *wedgie shoe*). The other functions documented playful episodes not captured by the above categories.

Three interactional production forms were coded. *Simple episodes* spanned one to three contiguous turns. *Simple+ episodes* contained multiple (more than three) contiguous turns, but did not contain more than three turns that significantly contributed to the episode with additional content (e.g., contained turns involving only expression of agreement such as *mhm*). *Extended episodes* consisted of multiple thematically related and contiguous turns. These included extended playful exchanges such as banter and funny stories about daily events.
RESULTS

A total of 1,098 verbal play episodes were coded. Contrary to what was predicted, there was no group difference in the number produced ($M = 108.2$; $SD = 34.8$ and $M = 111.4$; $SD = 31.2$ for AD and comparison sessions, respectively; $t(8) = -0.153$, $p = .882$). Further, all communicative participants initiated similar numbers of episodes across groups (e.g., matcher in AD vs. comparison pairs; see Figure 2). The relative contributions of the director, matcher, and examiner were also remarkably similar across groups ($t(8) = .588$, $p = .573$; $t(8) = -.566$, $p = .587$; $t(8) = -.019$, $p = .985$, for director-, matcher-, and examiner-initiated, respectively).

All pairs utilized a full range of verbal, prosodic, and gestural resources, utilizing multiple resources (a combination of two or three resources; 80.1% and 73.0% for AD and comparison pairs, respectively) to a greater extent than single resources (19.9% and 27.0%). The differences between the groups were not statistically significant ($t(8) = 1.471$, $p = .180$ for single resources used). All participant pairs also utilized verbal play for the entire range of functions and the distribution of episodes for each function was similar across groups: teasing 54.6% and 49.7%; referencing 20.9% and 25.1%; other 15.6% and 18.2%; and joking/storytelling 8.8% and 6.9%, for AD and comparison pairs, respectively. There were no significant group differences (two-tailed Mann-Whitney U Test and a Bonferroni correction for multiple comparisons (alpha of .0125): teasing $U = 16.0$, $p = .548$; referencing $U = 11.0$, $p = .841$; other $U = 11.0$, $p = .841$; and joking/storytelling $U = 16.0$, $p = .548$. The majority of all verbal play episodes in both groups were coded as simple (61.1% and 66.8% for AD and comparison pair sessions, respectively) and there was no significant difference in the number of playful episodes coded as extended in the AD (29.9%) versus comparison pairs (22.8%; $t(8) = -1.940$, $p = .088$). All else was coded as simple+ (9.0% and 10.5% for AD and comparison pair sessions, respectively).
Thematically Linked Episodes

All pairs produced thematically linked episodes where instances of play were sustained and returned to over multiple turns, trials, and sessions. One such series of episodes from an AD pair involved sustained banter over whose labels were most appropriate and the consistency of the director’s labels. After the matcher encouraged the director to use the same labels trial to trial, in referencing the next card the director teased that *it might have been a horse, but now it’s a dog* [laugh]. She later playfully scolded that [laugh] *see you’re not seein’ ’em the way I am.* The matcher continued this theme stating, *I call it a dog, I let you call it a boat before* [laugh], and later, *I don’t see no boat in that!* The director then playfully admitted that they would have finished the task *sooner than that but we was arguin’.* There were subtle differences, however, between groups. For comparison pairs, these episodes were dynamic and evolving, as when one pair sustained and built on play related to the director’s labeling of one card as *the damned urn.* When met with matcher resistance (*Watch your language!* [laugh]), the director went on to introduce *the damned horse.* When warned by the matcher that they were being videotaped, the director’s labels became *your favorite urn* and *your favorite horse.* Conversely, the responses of the AD participants were more repetitive and rote. In one example, the matcher offered the label *man praying.* When the matcher later lobbied for this perspective, *a man praying with a square on his back* [laugh], the director teased, *if you say so,* and the matcher asserted, *I say so* [laugh]. Once this theme was established, the matcher returned to it (*Don’t it look like a man kneelin’ prayin’? Very angelic; That’s my man prayin’. That’s what we decided*) and while the director recognized these playful attempts, she always responded with a rote response (*if you say so*).

The level of engagement and support exhibited by the partners in the AD pairs is also noteworthy. Although some of the extended verbal play episodes of the participants with AD
became rote and repetitive, their partners sustained these episodes in the moment and built on and extended them across trials. These partners also created playful moments by responding to ambiguous or self-critical comments of the participant with AD regarding their performance (I’m not good) as if they were playful. In doing so, the familiar partners created a playful environment where attempts at verbal play (successful or not) were encouraged and supported.

**DISCUSSION**

I examined the spontaneous use of verbal play in the communicative interactions of individuals with very mild AD and their familiar partners. Contrary to my predictions, there were no significant group differences in the frequency of verbal play episodes. There were no differences between the groups in the type or distribution of resources, functions, or interactional forms used in service of deploying play. The AD pairs also participated in similar quantities of extended episodes during these interactions. These findings provide clear evidence that verbal play is a robust interactional discourse resource that was still available to and used by all the participants with AD, despite their being in the early stages of the disease, and their partners.

These results are in stark contrast to the disrupted use of verbal play in participants with hippocampal amnesia.⁶ Given the presence of declarative memory impairment in both amnesia and AD, why are these disruptions observed in participants with hippocampal amnesia and not in individuals with very mild AD? One possibility is that patients with amnesia have a more severe declarative memory impairment not captured by available testing. Research suggests that these groups differ in terms of the extent of hippocampal pathology and that memory impairment is correlated with hippocampal volume. Reductions in hippocampal volume representing a near complete loss of neurons have been reported in patients with hippocampal amnesia⁹, with much smaller reductions observed in patients with mild AD¹⁰. While AD is associated with other
cellular pathologies, the disruption in verbal play observed in patients with amnesia may be related to greater memory impairment and hippocampal pathology. Research examining verbal play in individuals with advanced AD and more extensive pathology may provide further insight.

Onset (sudden vs. progressive) of and length of time managing the memory impairment may also contribute to differences in verbal play use. Cognitive deficits associated with brain injury or dementia can disrupt long-standing patterns of social and communicative interactions. These changes represent challenges to the psychosocial functioning of patients and their families, requiring communication partners to renegotiate social relationships and interactional practices. The participants with amnesia became memory impaired following a sudden neurological event (e.g., closed head injury) and had been managing the memory impairment, and consequences, for 3-18 years. In striking contrast, the participants with AD were all recently diagnosed and had a gradual onset of memory decline that was perhaps initially interpreted as normal aging. The preserved use of play in the AD pairs may be related to an ongoing, more gradual renegotiation of interactional practices. Whereas the partners of the individuals with amnesia often responded with clear signs of frustration or no response at all (i.e., abandoning attempts at extended play), the partners of the individuals with AD often kept these playful threads going, even working to make ambiguous and actual self-deprecating comments playful. Perhaps more marked cognitive disruptions over extended periods of time place a greater toll on partners’ communicative involvement. This has important implications for educating, counseling, and training partners.

Given the numerous empirical and clinical reports of linguistic and communication impairments and impoverished and reduced opportunities for interactional engagement in AD, particularly in the late stages, the finding here that verbal play was still available to and used by all the participants is striking. One goal in the management of Alzheimer’s disease is to identify
resources and strategies that will allow patients to remain as functional and socially integrated as possible. The successful use of verbal play in individuals with very mild AD and their partners highlights an area of preserved communicative ability that should be capitalized on in intervention and provides us with a set of clinical and research tools that can be used to track and target social communication and engagement through disease progression. Further, interactional discourse resources, like verbal play, require coordination and collaboration of all partners (e.g., caregiver, clinician). Thus, it is important to develop environments that support opportunities for the co-construction of socially complex, collaborative communication. Intervention often targets impairments of an individual. However, with respect to individuals with profound memory and learning impairments where function will not be restored – such as with dementia – interventions targeted at the communication partners and interactional environment are more appropriate. The deterioration in communication abilities in AD is both a product of their cognitive decline and attributed to their shrinking social world (reduced quantity and quality of communicative interactions). Thus, we must work with communication partners to support and collaborate with the memory impaired patient on attempts at verbal play while structuring and creating diverse opportunities for interactional engagement through meaningful communication.

In summary, verbal play is a pervasive interactional discourse resource that is available to and used by individuals with very mild AD in their social communication with familiar partners. This finding is an important first step in tracking and targeting the progressive deterioration of interactional communication in this population. By creating rich communicative environments and opportunities for social engagement, we are beginning to capture the interactional aspects of communication that are difficult to observe with traditional assessment methods and hold great therapeutic promise for maintaining and facilitating their use of functional daily communication.
Table 1. Demographic and Neuropsychological Data of Participants with Very Mild Alzheimer’s Disease

<table>
<thead>
<tr>
<th></th>
<th>001AD</th>
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<td>CDR Score(^a)</td>
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<tr>
<td>CVLT Delay(^b)</td>
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<tr>
<td>CFT Delay(^c)</td>
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<td>4.5</td>
<td>8.5</td>
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<td>3.5</td>
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<tr>
<td>COWA Test(^d)</td>
<td>35 (10)</td>
<td>32 (10)</td>
<td>35 (10)</td>
<td>30 (9)</td>
<td>33 (10)</td>
</tr>
<tr>
<td>Boston Naming Test(^d)</td>
<td>43 (5)</td>
<td>N/A</td>
<td>56 (13)</td>
<td>53 (10)</td>
<td>53 (10)</td>
</tr>
<tr>
<td>Animal Fluency Test(^e)</td>
<td>15</td>
<td>N/A</td>
<td>11</td>
<td>12</td>
<td>14</td>
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<tr>
<td>WAIS-III Digit Span Forward(^f)</td>
<td>6 (-0.10)</td>
<td>2 (0.88)</td>
<td>6 (0.09)</td>
<td>6 (-0.10)</td>
<td>5 (-0.84)</td>
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<tr>
<td>WAIS-III Digit Span Backward(^f)</td>
<td>6 (1.38)</td>
<td>5 (0.78)</td>
<td>2 (-2.18)</td>
<td>4 (-0.34)</td>
<td>3 (-1.12)</td>
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<tr>
<td>Trail Making Test Part A(^g)</td>
<td>33 (11)</td>
<td>65 (7)</td>
<td>48 (9)</td>
<td>30 (12)</td>
<td>38 (11)</td>
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<tr>
<td>Trail Making Test Part B(^g)</td>
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<td>208 (7)</td>
<td>D/C (2)</td>
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<tr>
<td>WAIS Block Design Subtest(^h)</td>
<td>15</td>
<td>10</td>
<td>16</td>
<td>10</td>
<td>8</td>
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Note. AD = Alzheimer’s disease; F = female; M = male; R = right; CDR = Clinical Dementia Rating; CVLT = California Verbal Learning Test; CFT = Complex Figure Test; COWA = The Controlled Oral Word Association Test; WAIS = Wechsler Adult Intelligence Scale. Bolded scores are severely defective and/or are at least 2 standard deviations below the mean. N/A indicates that the participant did not complete the task during testing.

\(^a\) For the CDR scores, 0.5 = very mild dementia, 1 = mild dementia, and 2 = moderate dementia;  
\(^b\) The scores for the CVLT delayed test are raw scores out of 16 possible points;  
\(^c\) The scores for the CFT delayed test are raw scores out of 36 possible points;  
\(^d\) Scores for the COWA and Boston Naming Tests are raw scores with age corrected scaled scores in parentheses;  
\(^e\) Animal Fluency Scores are raw scores;  
\(^f\) Scores for Digit Span Forward and Backward are numbers for the longest digit span the participant could repeat with Z-scores in parentheses;  
\(^g\) Trail Making Test A and B scores are in seconds with age corrected scaled scores are in parentheses;  
\(^h\) Scores for the Similarities and WAIS Block Design subtests are in age corrected scaled scores.
Note. In this image, the director is sitting on the right and the matcher is on the left. The director always begins with the tangram cards set up on his or her board.

Figure 2. Total number of verbal play episodes by group and participant

- AD Sessions:
  - Researcher: 247
  - Matcher: 188
  - Director: 106

- Comparison Sessions:
  - Researcher: 216
  - Matcher: 233
  - Director: 108
REFERENCES


