Effectiveness of Communication Strategies Used by Caregivers of Persons With Alzheimer's Disease During Activities of Daily Living

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Communication difficulties between individuals with Alzheimer's disease (AD) and their caregivers are commonly reported. Caregivers carry the burden of managing breakdowns in communication because people with AD are often unable to modify their communicative behavior. To assist caregivers in this endeavor, clinicians and caregiving professionals have offered a variety of strategies aimed at accommodating the individual's declining abilities. Many of these strategies are intuitively appealing, but they lack empirical support. This study investigated the effectiveness of 10 frequently recommended communication strategies when employed by family caregivers of persons with AD. In particular, we assessed (a) which strategies family caregivers report using and with what degree of success, (b) which of these strategies are used by caregivers in actual interactions with their spouses, and (c) which strategies contribute to improved communication. The study included a self-report questionnaire and wireless audio-recorded interactions between 18 persons with AD and their spousal caregivers during activities of daily living. The findings validate the effectiveness of certain communication strategies (e.g., simple sentences) but not others (e.g., slow speech). The results should be of interest to both family members and professionals who want to enhance communication and the quality of their interactions with persons with Alzheimer's disease.

KEY WORDS: Alzheimer's disease, communication, strategies, activities of daily living, caregiving

Caring for a person with Alzheimer's disease (AD) in the home presents many challenges related to the progressive decline in the individual's cognition and social interaction behavior. These declines influence the individual's ability to independently perform many activities of daily living. For example, impaired memory and attention can affect a person's capacity to take medication, use the telephone, or manage finances, and disorientation may lead to difficulty in dressing, finding the bathroom, or shopping. As functional abilities decline over the course of the disease, caregivers are called upon to provide more and more assistance to the person with AD (Ostbye, Tyas, McDowell, & Koval, 1997). The constant demands and stress placed on caregivers limit their own personal freedom and can lead to burnout and health problems (Dillehay & Sandys, 1990; Haley, Levine, Lane Brown, & Bartolucci, 1987; Williamson & Schulz, 1993; Zarit & Zarit, 1982). The care receiver's

inability to perform activities in the home is also a strong predictor of the caregiver's decision to move him/her from home to a long-term care facility (Steeman, Abraham, & Godderis, 1997).

A major factor contributing to caregiver burden is communication breakdown between the caregiver and the person with AD (Clark, 1991; Orange, 1991; Richter, Bottenberg, & Roberto, 1993; Richter, Roberto, & Bottenberg, 1995; Williamson & Schulz, 1993). Lack of communication often leads to conflict in their relationship, social isolation, and depression in one or both individuals (Orange & Colton-Hudson, 1998; Small, Geldart, Gutman, & Clarke Scott, 1998; Small, Montoro, & Kemper, 1996; Williamson & Schulz, 1993). Previous research has reported that caregivers perceive communication to be problematic at each stage of the disease and that these problems adversely affect the quality of their relationship with the person with AD (Clark, 1991; Hendryx-Bedalov, 1999, 2000; Orange, 1991; Orange, Lubinski, & Higginbotham, 1996; Orange, Van Gennep, Miller, & Johnson, 1998; Richter et al., 1993; Richter et al., 1995; Small, Geldart, & Gutman, 2000). These self-reports have been corroborated by subsequent observation research documenting increased communication breakdown (Orange et al., 1996) and less successful resolution (Orange et al., 1998) as the dementia progressed.

The relationship between functioning in daily activities and communication problems in AD was recently examined by Small et al. (2000). Small et al. asked family caregivers of persons with dementia to identify and discuss activities of daily living in which they find communication to be most problematic. Caregivers reported that communication was a problem in a number of everyday activities, including general conversation, using the telephone and bathroom, planning an agenda, locating an item, and meal preparation.

The fact that functional abilities decline in AD and that communication problems are often associated with these functional declines provides compelling evidence that communication is a vital dimension of caring for an individual with AD (Alzheimer's Association, 1990, 2000; Alzheimer Society of Canada, 1991, 1996). One might ask, then, what can be done to improve communication between persons with AD and their caregivers. Some researchers have focused on trying to rehabilitate the individual with AD, for example, by implementing mnemonic training (Arkin, 1992; Arkin & Bayles, 1996; Camp, Foss, O'Hanlon, & Stevens, 1995; Quayhagen, Quayhagen, Corbeil, Roth, & Rodgers, 1995). Although these efforts have been shown to help maintain certain functional and/or cognitive abilities, the benefits appear to endure for only a short while before further decline is observed. Other researchers and practitioners feel that because the person with AD experiences progressive declines in cognitive and communication abilities, it is more appropriate to emphasize the role of the caregiver in accommodating the person's changing capacities (Clark, 1995; Ripich, Wykle, & Niles, 1995). Health care professionals have offered caregivers a variety of strategies aimed at compensating for dementia-related communication deficits (e.g., Clark, 1995; Clark & Witte, 1991; Dippel & Hutton, 1988; Gwyther, 1985; Orange, 2001; Ostuni & Santo-Pietro, 1991; Rau, 1993; Ripich et al., 1995). Each strategy is an attempt to compensate for the perceived underlying cause of the person's communication problem. For example, it has been observed that persons with AD typically take more time to process information. To compensate for this, clinicians suggest that caregivers speak slowly so as to provide more time for the person to understand. Another recommended strategy is simplifying one's sentences. The motivation for this relates to the individual's reduced memory and attentional capacities—people with AD are more likely to forget or have more difficulty processing complex than simple sentences. Similarly, clinicians have advised caregivers to repeat what they say using the same wording so as to compensate for the individual's forgetfulness. It is thought that paraphrasing will confuse persons with AD because they may not see the similarity between two versions of an utterance.

Each of these strategies has intuitive appeal and addresses specific communication needs. However, what is often not taken into account is the fact that each deficit and strategy does not occur in isolation. One may influence the others in a complex manner. For instance, speaking more slowly to persons with AD may compensate for their processing deficits, but it could increase the demands placed on their impoverished memory capacity. That is, slower speech requires that the listener maintain information over a longer period of time. The person with AD may thus forget earlier parts of an utterance by the time they hear the end of it. Similarly, one might expect comprehension to improve following either verbatim or paraphrased repetitions, but for different reasons. If the caregiver's original sentence is understood but quickly forgotten, a verbatim repetition should lead to improved comprehension by reinforcing the memory traces of the original utterance. On the other hand, if a person with AD has difficulty understanding some aspect of the initial utterance due to linguistic deficits, changing the content or structure of the utterance (i.e., paraphrasing) should facilitate his/her comprehension. It is important, then, to consider how the multiple cognitive impairments in AD may affect the outcome of each strategy.

In contrast to the abundant literature supplying caregivers with communication strategies, there is little empirical research addressing the implementation of

strategies by family caregivers (Clark & Witte, 1991). Orange (1991) conducted structured interviews with AD caregivers eliciting their perceptions of their use of and the effectiveness of communication strategies. Caregivers reported using many of the strategies recommended in the literature, and most were perceived to be effective. Orange suggested that future research combine caregivers' self reports with objective measures of communication between caregivers and persons with AD. Other studies have examined caregivers' perceptions of communication difficulties but only as a global indicator of caregiver burden or stress (e.g., Rabins, Mace, & Lucas, 1982). Much of the evidence for the use and effectiveness of certain communication strategies comes from clinicians' practical experience (e.g., Clark, 1995; Mace & Rabins, 1991; Rau, 1993) or from formal caregivers' retrospective self-evaluation following communication training. For example, Ripich et al. (1995) reported that nursing assistants had increased knowledge and positive attitudes about using communication strategies with persons with dementia following communication training.

The experimental research to date, although limited, has failed to consistently support the effectiveness and/or necessity of several communication strategies. For example, Tomoeda, Bayles, Boone, Kaszniak, and Slauson (1990) investigated the influence of sentence complexity and speech rate on sentence comprehension by persons with AD. Using the Revised Token Test, they found that participants showed better comprehension of simple than complex sentences, but they had no better comprehension at the slower, rather than normal, speech rate. Small, Kemper, and Lyons (1997) examined the influence of sentence complexity, speech rate, and sentence repetition on sentence comprehension by a group of persons with mild to moderate AD. The participants in this study listened to a series of sentences that varied in thematic and structural content. For each sentence, they were asked to identify a picture that conveyed the meaning of that sentence. When a participant made an error in comprehension, the sentence was repeated in either verbatim or paraphrased form. The findings indicated no improvement in the comprehension of sentences presented at a slow, compared to normal, speech rate (replicating the findings from Tomoeda et al., 1990). Second, although the comprehension of participants with AD was better for simple than complex sentences, their comprehension of the latter improved when the sentences were repeated, indicating they are still capable of understanding complex language. Third, comprehension improved equally after hearing sentences again either in verbatim or paraphrased form.

In addition to the experimental research, there is a growing body of research examining conversational discourse between persons with dementia and their caregivers. Some studies have reported that certain communication strategies do not appear to facilitate communication (Hendryx-Bedalov, 1999; Tappen, Williams-Burgess, Edelstein, Touhy, & Fishman, 1997). For example, Tappen et al. (1997) examined the use of communication strategies by advanced practice nurses during interviews with residents with dementia in nursing homes. The nurses were instructed to make the conversations as meaningful as possible but were not instructed to use any particular set of strategies. Tappen and colleagues' analysis of the conversations focused on the nurses' use of three strategies: asking closed-ended ("yes/no") questions versus open-ended questions, respecting the personhood of the residents, and maintaining the topic of conversation. The findings from a qualitative analysis of the data indicate that when the nurses respected the "self" or "face" of the residents, the residents more readily expressed their feelings and concerns (for similar results, see Small et al., 1998). Maintaining the topic of conversation appeared to be supported by the nurses' use of verbal and nonverbal encouragers, reflection, paraphrasing, and summarizing. The quantitative results indicate that nurse interviewers used closed-ended questions twice as often as open-ended questions; however, the authors also report that the residents made positive, relevant, and meaningful responses to open-ended questions. The latter finding suggests that the recommendation to use only closed-ended questions is unnecessary. The authors comment that either open- or closed-ended questions may be helpful, but for different conversational goals. For example, closed-ended questions may facilitate completing activities of daily living, whereas open-ended questions may encourage conversation about relationships and feelings. Support for this distinction comes from a recent study by Ripich, Ziol, Fritsch, and Durand (1999), which found that communication around planning a meal was more successful when yes/no rather than open-ended questions were employed by caregivers.

Findings from previous studies are limited to the extent that they investigated a small number of strategies and/or used methods and contexts of assessment that may not be representative of communication during activities of daily living. The present study fills the need for empirical research that systematically investigates caregivers' use and the effectiveness of a wide range of communication strategies during activities in the home. The range of strategies includes several that have been investigated in previous research: sentence complexity, speech rate, yes/no questions, and verbatim and paraphrased repetitions.

The goals of this research were (a) to identify which of 10 frequently recommended communication strategies family caregivers report using, and with what degree of success, when interacting with their spouses with

AD; (b) to assess the caregivers' spontaneous implementation of these strategies in activities of daily living; (c) to determine the degree of agreement between caregivers' perceived and actual strategy use; and (d) to evaluate, using both subjective and objective assessments, which strategies result in improved communication between caregivers and their spouses with AD. By addressing these objectives, this study will further our understanding of the relationships between clinical recommendations and caregivers' perceived and actual communication behavior, and between caregivers' communication behavior and the success of communication with persons with AD.

The application of the findings in behavioral interventions should lead to enhanced communication and psychosocial well-being for both caregivers and persons with AD. Although a number of communication intervention programs for AD caregivers have appeared in recent literature (Bourgeois, 1993; Burgio et al., 2001; Clark, 1995; McCallion, Toseland, Lacey, & Banks, 1999; Orange & Colton-Hudson, 1998; Ripich et al., 1999), these programs have typically included both general behavioral and domain-specific strategies for improving communication (e.g., behavioral—keeping calm; domain specific—simplifying vocabulary). When training includes a wide range of behavioral and cognitive strategies, it is not clear whether the use of the entire range of strategies is important or whether it is the use of some subset. By identifying strategies associated with positive communication outcomes, this study will provide a stronger empirical base upon which to maximize training efficiency and effectiveness for caregivers of individuals with AD.

Method

Study Design: Variables and Their Measurement

The study included three variables and methods of assessing communication strategies used by family caregivers when interacting with their spouses with AD: (1) caregivers' self-reported use of communication strategies, measured by a questionnaire eliciting the caregivers' perception of how they communicate with their spouses; (2) caregivers' actual use of communication strategies with their spouses, obtained through audio-recorded observations of caregiver–spouse interactions in their home; and (3) the outcome of using each strategy, assessed by (a) ratings from the caregivers, their spouses, and the researcher following each activity in the home and (b) coding and conversation analysis by the researcher of the transcribed interactions. The data from these measures were collected on one visit to each participant dyad's home.

Participants

Eighteen persons diagnosed with AD and their spouses were recruited through the Clinic for Alzheimer Disease and Related Disorders in the Vancouver Hospital and Health Sciences Centre at the University of British Columbia. The restriction of recruiting only spousal dyads was followed to avoid the possible confound of differences in communication patterns between the person with AD and children or other caregivers (Stone, Cafferata, & Sangl, 1987). All participants were native English speakers and had self-reported normal or corrected-to-normal vision and hearing. All caregivers and persons with AD were given a consent form to read and sign with the understanding that their responses would be kept strictly confidential and that they could withdraw from the study at any point, without penalty, should they so desire. In the event that participants with AD could not fully understand the consent form on their own, their caregiver and/or the researcher assisted.

The participants with AD met NINCDS-ADRDA criteria for possible or probable Alzheimer's disease (McKhann et al., 1984) and did not have a history of stroke, ischemia, focal neurological deficit or lesions, depression, psychosis, alcoholism, or drug abuse. The severity of their dementia was screened by the Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) and ranged from mild to low-moderate: M = 20.3, SD = 4.8, range = 12–27. We recruited participants from the mild to moderate stages of the disease because communication strategies are most commonly targeted to caregivers of individuals at these stages (Ostuni & Santo-Pietro, 1991; Rau, 1993). The sex of the caregivers was nearly balanced: 8 men, 10 women. The mean age of the caregivers and their spouses with AD was 70 (SD = 9.4, range = 54–83) and 72 (SD = 9.0, range = 59–87), respectively. The mean years of education of caregivers and their spouses with AD was 13.2 (SD = 3.5, range = 7–22) and 13.0 (SD = 2.8, range = 8–18).

Materials and Procedure

Caregivers' Reported Use of Communication Strategies

The first objective of our study was to identify the use and effectiveness of communication strategies as perceived by the caregivers. This was accomplished by administering a questionnaire to the caregivers. The questionnaire elicited caregiver responses regarding the frequency and success with which they use 10 recommended communication strategies. The 10 strategies were selected based on their recurrent appearance in the literature for AD caregivers (e.g., Alzheimer's Association, 1990, 2000; Alzheimer Society of Canada, 1991, 1996; Gwyther, 1985; Mace & Rabins, 1991; Ostuni &

Santo-Pietro, 1991; Rau, 1993; Ripich et al., 1995; for a review, see Small & Gutman, 2002). Table 1 lists the strategies included in the questionnaire.

Caregivers were asked to indicate how often they use each strategy (always, frequently, occasionally, rarely, never) and to what degree they feel it improves communication with their spouses (very much, quite a bit, somewhat, not at all). The questionnaire was administered after the audio-recorded observations (see below) so that the caregiver's behavior during the observations would not be biased by the questionnaire.

For data analysis, the caregiver's reported frequency of using each communication strategy was assigned a numerical value (always = 5, frequently = 4, occasionally = 3, rarely = 2, never = 1) as was the degree to which caregivers felt it improved communication with their spouses (very much = 4, quite a bit = 3, somewhat = 2, not at all = 1).

Caregivers' Actual Use of Communication Strategies

The second objective of this study was to empirically assess the caregivers' spontaneous use of the 10 recommended strategies when interacting with their spouses with AD. Caregiver–spouse dyads were audio-recorded in their homes as they engaged in four activities of daily living. The four activities were selected based on a focus group study of 22 caregivers of persons with dementia (Small et al., 2000). The focus group participants were asked in what activities of daily living they found communication to be most problematic. Four of the most frequently mentioned activities were chosen for the caregiver–spouse interactions in the present study: (1) conversation, (2) setting the table, (3) getting something upon request, and (4) using the telephone. During the home visit, caregivers and their spouses were instructed to carry out each activity together while the researcher observed in the background. For the conversation, the dyads were asked to talk for 5–10 minutes about topics of their choosing (e.g., plans for the day, family). Following this, the dyads were instructed to work together in setting the table. In the next activity, caregivers asked their spouses to get three items, one at a time, from different locations in the home (e.g., reading glasses from the bedroom). Finally, the caregivers were supplied with a cellular phone and instructed to call their spouses at their home phone number and ask them to take a message (write down three grocery items, and ask the researcher how much longer the session would take). All interactions were audio-recorded via wireless microphones worn by the caregivers and their spouses.

Table 1. Ten communication strategies frequently mentioned in the AD caregiving literature.

1. Eliminate distractions (e.g., TV, radio).
2. Approach the person slowly and from the front; establish and maintain eye contact.
3. Use short, simple sentences.
4. Speak slowly.
5. Ask one question or give one instruction at a time.
6. Use "yes/no" rather than "open-ended" questions.
7. Repeat messages using the same wording.
8. Paraphrase repeated messages.
9. Avoid interrupting the person; allow plenty of time to respond.
10. Encourage the person to "talk around" or describe the word he is searching for.

During the interactions, the researcher documented the caregivers' use of 2 (of the 10) strategies that were not observable on the audio recordings: (1) eliminating distractions and (2) approaching the patient slowly and from the front and maintaining eye contact. The remaining 8 strategies were all verbal and were identified directly from the audio-recorded data. The recorded interactions were transcribed and coded for use and outcomes of the 10 communication strategies. The caregivers' use of Strategies 3 (short, simple sentences) and 4 (slow speech) was determined by comparing their sentence structure and speech rate with a baseline get-acquainted conversation between the caregiver and the researcher, recorded at the beginning of the home visit. The purpose of the baseline conversation was to provide an estimate of the caregiver's speech behavior when interacting with a person without dementia. Sentence complexity was measured as the mean number of verbs/clauses per utterance, as number of clauses, but not sentence length, has been shown to be a significant predictor of comprehension by persons with AD (Kemper, Anagnopoulos, Lyons, & Heberlein, 1994). Speech rate was calculated as the average number of words per minute across a sampling of 10% of each caregiver's utterances. The remaining six strategies (5–10) were identified from the linguistic content of the caregivers' speech.

Reliability was determined by having a second trained research assistant independently code 20% of the dyads' interactions. Percent agreement for each strategy was as follows: short, simple sentences = 94%; ask one question or give one instruction at a time = 92% and 85%, respectively; yes/no and open-ended questions = 91% and 80%, respectively; verbatim repetition = 86%; paraphrased repetition = 90%; avoid interrupting = 100%. Reliability analyses were not carried out for speech rate because it involved an objective calculation using computer speech analysis software, or for Strategy 10 (encourage circumlocution), as there was only one instance of this strategy (out of eight total spouse word-finding episodes) across all dyads.

Means for strategy use were calculated in the following manner: for Strategies 1 and 2, the proportion of activities in which each strategy was used; for Strategy 3, the proportion of utterances with one verb; for Strategy 4, the mean speech rate (words per minute); for Strategy 5, the proportion of questions and instructions in which only one question or one instruction was used; for Strategy 6, the proportion of yes/no questions (out of total yes/no and open-ended questions); for Strategies 7 and 8, the proportion of verbatim or paraphrased repetitions (out of all repetitions); and for Strategy 9, the proportion of interruptions out of total utterances. Because there was only one instance of Strategy 10, this strategy was not included in the analyses (except for comparison with caregivers' reported strategy use, Table 4).

Outcomes of Using Each Strategy

The final objective of our study was to evaluate which communication strategies lead to improved communication between the caregivers and their spouses. The effectiveness of each communication strategy was determined from subjective ratings of the caregivers, their spouses, and the researcher, as well as a more objective assessment based on the number of breakdowns in communication identified through conversation analysis of the transcripts.

Immediately following each activity, the caregiver, the spouse with AD, and the researcher independently rated (on a form) the degree to which communication was successful during that activity (not at all, partially, mostly, entirely). This rating was completed separately for two dimensions: (1) how "smooth" the communication was during the activity and (2) whether the activity was completed successfully. In addition to these ratings, a research assistant analyzed the content of the audio recordings to identify linguistic markers indicating a breakdown in communication (e.g., disagreements, misunderstandings, repair attempts). The coding of breakdowns was checked for reliability by a second coder (agreement = 96%). The number of breakdowns in an activity indicated the degree of communication success for that activity. Based on the mean number of breakdowns from the baseline caregiver–researcher conversation (0.39), the following scale was constructed: 3 or more breakdowns = not at all successful, 2 = partially successful, 1 = mostly successful, 0 = entirely successful.

For the purpose of data analysis, the ratings for smoothness and success were combined because of their strong intercorrelations (caregivers: $r_s = .878$, $p = .000$; spouses with AD: $r_s = .712$, $p = .002$; researcher: $r_s = .702$, $p = .001$). Also, the ratings of caregivers, spouses with AD, and the researcher were averaged as they did not significantly differ ($H = .437$, $p = .804$).

To determine strategy effectiveness, *t* tests and Mann–Whitney *U* tests were conducted to assess the differences in outcomes between caregivers who used or did not use each strategy. For each activity and strategy, caregivers were classified as a strategy user or nonuser depending on whether they did or did not eliminate distractions (Strategy 1); approach slowly and maintain eye contact (Strategy 2); simplify speech (compared to baseline conversation, Strategy 3); speak more slowly (compared to baseline conversation, Strategy 4); at least 75% of the time, use one question or one instruction when questions or instructions occurred (Strategy 5); use yes/no rather than open-ended questions when questions occurred (Strategy 6); use verbatim repetitions when repetitions occurred (Strategy 7); use paraphrased repetitions when repetitions occurred (Strategy 8); avoid interrupting their spouses (compared to baseline conversation, Strategy 9).

Results

Caregivers' Reported Use of Communication Strategies

The Friedman test of caregivers' reported frequency of using the 10 strategies indicated significant differences across strategies, $\chi^2(9, N = 15) = 32.43$, $p = .000$ (see Table 2). Results from a Wilcoxon signed ranks test indicated greater reported frequency of Strategies 3, 5, 7, 9, and 10 than all other strategies (all ps $< .05$), except Strategy 4, which was only significantly different from Strategy 5. There were no significant differences in reported effectiveness across strategies, $\chi^2(9, N = 11) = 13.49$, $p = .142$ (see Table 2).

The correlation between mean strategy use and effectiveness (collapsing across strategies) was significant, $r_s = .630$, $N = 18$, $p = .005$. Significant correlations, $p < .01$, were observed between use and effectiveness for Strategies 2 (approach slowly, $r_s = .693$), 3 (simple sentences, $r_s = .720$), 6 (yes/no question, $r_s = .881$), and 7 (verbatim repetition, $r_s = .739$).

Disease severity significantly correlated with mean strategy use (i.e., collapsing across strategies), $r_s = -.491$, $p = .038$, such that with disease progression (lower MMSE scores) the perceived overall use of strategies increased. However, with regard to specific strategies, severity correlated significantly only with the use of Strategy 4 (speak slowly, $r_s = -.612$, $p = .009$). The latter finding was confirmed when mild and moderate groups were compared (MMSE 22–27 = mild, 12–20 = moderate). No significant relationships were observed between severity of disease (as a continuous or dichotomous variable) and strategy effectiveness.

Table 2. Mean rank order and rating of caregivers' reported frequency and the effectiveness of using strategies.

Frequency of strategies				Effectiveness of strategies			
		Rating[a]				Rating[b]	
Strategy[c]	Mean rank	*M*	*SD*	Strategy	Mean Rank	*M*	*SD*
5	7	4.20	0.68	5	7	3.36	0.67
10	7	4.00	1.07	3	7	3.27	0.65
9	7	4.00	0.93	8	6	3.09	0.70
7	6	3.93	0.80	4	6	3.09	0.70
3	6	3.93	0.80	1	6	3.09	0.70
4	5	3.67	0.72	10	6	3.00	0.77
6	5	3.40	1.12	9	5	2.91	0.83
8	4	3.13	1.13	7	5	2.73	0.90
1	4	3.13	0.74	6	5	2.73	0.90
2	4	3.07	1.03	2	4	2.55	0.93

[a] 5 = always, 4 = frequently, 3 = occasionally, 2 = rarely, 1 = never.
[b] Improves communication: 4 = very much, 3 = quite a bit, 2 = somewhat, 1 = not at all.
[c] 1 = eliminate distractions; 2 = approach slowly, eye contact; 3 = simple sentences; 4 = slow speech rate; 5 = one question/instruction; 6 = yes/no question; 7 = verbatim; 8 = paraphrase; 9 = don't interrupt; 10 = encourage circumlocution.

Table 3. Comparison of the means of caregivers' use of strategies in baseline conversation and caregiver–spouse interactions.

		Means				
	Strategy	Baseline activity	Caregiver–spouse activities	Difference	*t*	*p*
1	% eliminate distractions	NA	.88	—	—	—
2	% approach slowly, eye contact	NA	.84	—	—	—
3	% simple sentences	.58	.64	–.06	2.89	.01
4	Speech rate (words per min.)	202	236	–34	3.76	.002
5.1	% one question	.97	.91	.06	–1.94	.08
5.2	% one instruction	[a]	.88	—	—	—
6	% yes/no question	.68	.66	.02	–.24	.82
7	% verbatim	.08	.20	–.12	1.46	.18
8	% paraphrase	.92	.80	.12	–1.46	.18
9	% interruptions	.06	.05	.01	.86	.40

[a] Caregivers made no use of instructions in the baseline activity, and thus no statistical comparisons could be made with the use of instructions in the caregiver–spouse activities.

Caregivers' Actual Use of Communication Strategies

Caregivers frequently employed Strategies 1 (eliminate distractions) and 2 (approach slowly) in the caregiver–spouse activities, and Strategies 5 (one question/instruction), 8 (paraphrase), and 9 (don't interrupt) in both the baseline activity and the caregiver–spouse activities (see Table 3). Strategies 4 (slow speech) and 7 (verbatim repetition) were used very infrequently in all of the activities, as was Strategy 10 (encourage circumlocution), which occurred only once. Caregivers increased their use of Strategy 3 (simple sentences) but did not decrease their speech rate (Strategy 4) when interacting with their spouses compared to the baseline activity.

The correlation between the severity of the spouses' dementia (MMSE scores) and the caregivers' mean frequency of strategy use (i.e., collapsing across strategies) was not significant ($r = -.08$, $p = .728$). Only the use of Strategy 3 (simple sentences) correlated significantly with dementia severity ($r = -.476$, $p = .046$).

We also compared the degree of congruency between the caregiver's reported use of each strategy and its actual frequency of occurrence during the activities (see Table 4). Strategies that were observed in all four activities were coded as "always" occurring, three activities = "frequently," two activities = "occasionally," one activity = "rarely," and none of the activities = "never." Coding the observed frequencies in this manner enabled us to compare the reported and observed variables using the following coding scale (always = 5, frequently = 4, occasionally = 3, rarely = 2, never = 1). The results from a Wilcoxon Signed Ranks Test indicate that caregivers underestimated their use of Strategies 1, 2, and 5 but overestimated use of Strategies 4, 7, and 10.

Outcomes of Using Communication Strategies

Overall, fewer breakdowns in communication occurred when caregivers used the strategies than when they did not (means of 2.03 vs. 2.46 breakdowns per activity, respectively); however, this difference was only marginally significant, $t(16) = -1.61$, $p = .06$, one-tailed. Correlation analyses revealed no significant overall relationship between caregivers' mean frequency of using the strategies and either the mean number of breakdowns ($r_s = -.091$, $p = .719$) or the aggregate ratings from caregiver, spouse, and researcher ($r_s = -.335$, $p = .174$).

Examination of the occurrence of breakdowns by strategy and activity showed variability across strategies (see Table 5). Use of Strategies 1, 3, and 6 was associated with fewer breakdowns across two or more activities, whereas use of Strategy 4 showed the opposite pattern, fewer breakdowns when the strategy was not used. For the remaining strategies (2, 5, 7, 8, 9), the frequency of breakdowns did not clearly differentiate strategy users from nonusers. These results were confirmed to some extent by correlation analyses that indicated moderate associations between strategy use and number of observed breakdowns for Strategy 1 (eliminate distractions), $r_s = -.42$, $p = .05$; Strategy 3 (simple sentences), $r_s = -.29$, $p = .12$; Strategy 4 (slow speech), $r_s = .43$, $p = .04$; and Strategy 6 (yes/no questions), $r_s = -.30$, $p = .11$. The overall number of breakdowns (as a proportion of total utterances per activity) did not significantly vary between the four activities, $F(1.5, 25.8) = 2.27$, $MSE = .035$, $p = .134$.

The mean caregiver, spouse, and researcher ratings for communication success did not differ between strategy users and nonusers (mean communication success of 3.33 vs. 3.21, respectively, where higher ratings indicate greater success; $t(16) = 1.22$, $p = .12$). Much less variability was observed in the subjective ratings than in the breakdown of communication coded by the researcher. In general, all raters perceived the communication outcomes to be from "mostly" to "entirely" successful. Although ratings were generally higher for users than nonusers across several strategies (2, 4, 5, 6, 7), the differences between users and nonusers were negligible. Similarly, for the other strategies (1, 3, 8, 9), ratings were lower for users than nonusers, but again these differences were very small. The lack of association between ratings of communication success and observed strategy use was confirmed by correlation analyses that indicated only one significant correlation, between use of Strategy 8 (paraphrase) and rated success, indicating that greater use of this strategy was associated with less success ($r_s = -.60$, $p = .004$). The weak relationship between ratings and strategy use was further elucidated by another correlation analysis that revealed no relationship between mean subjective ratings (caregiver,

Table 4. Comparison of caregivers' mean reported use of each strategy and its mean frequency of occurrence during interactions with their spouses (always = 5, frequently = 4, occasionally = 3, rarely = 2, never = 1).

		Means				
	Strategy	Caregivers' self-report	Caregivers' actual use	Difference	*T*	*p*
1	eliminate distractions	3.12	4.75	–1.63	–3.46	.001
2	approach slowly, eye contact	2.94	4.53	–1.59	–3.09	.002
3	simple sentences	3.94	3.61	0.33	–0.83	.404
4	slow speech rate	3.65	2.06	1.59	–3.06	.002
5	one question/instruction	4.12	4.67	–0.55	–2.07	.038
6	yes/no question	3.22	3.28	–0.06	–0.32	.749
7	verbatim	3.94	1.33	2.61	–3.79	.000
8	paraphrase	3.12	3.39	–0.27	–0.82	.414
9	don't interrupt	4.00	3.89	0.11	–0.61	.539
10	encourage circumlocution	3.94	1.06	2.88	–3.76	.000

Table 5. Mean number of breakdowns for strategy users and nonusers in each activity.

	Activity 2 (conversation)		Activity 3 (setting table)		Activity 4 (getting items)		Activity 5 (telephone)	
Strategy use	***N***	***M***	***N***	***M***	***N***	***M***	***N***	***M***
S1 NoDistract								
User	17	2.82	15	1.53	13	2.0		
Nonuser	0	—	1	4.0**	3	3.67**	[a]	
S2 Approach								
User	16	2.88	13	1.54	14	2.43		
Nonuser	0	—	3	2.33	2	1.50	[a]	
S3 Simplify								
User	12	2.83	15	1.67	12	1.58	8	1.25
Nonuser	6	2.67	3	3.0*	6	3.67**	10	1.0
S4 SlowSpeech								
User	6	3.0	1	4.00	5	3.40	7	1.14
Nonuser	12	2.67	17	1.76*	13	1.85**	11	1.09
S5 One Ques								
User	17	2.82	14	2.14	18	2.28	17	1.06
Nonuser	1	2.0	3	1.33	0	—	1	2.0
S6 YesNoQues								
User	7	1.29	9	1.89	13	2.08	12	.83
Nonuser	11	3.73**	7	2.14	4	3.50**	6	1.67*
S7 Verbatim								
User	0	—	3	1.67	1	2.0	2	1.0
Nonuser	14	3.21	11	2.00	16	2.13	12	1.42
S8 Paraphrase								
User	13	2.92	8	2.25	13	2.15	9	1.22
Nonuser	1	7.00*	6	1.50	4	2.0	5	1.60
S9 NoInterrupt								
User	9	2.33	14	1.79	13	2.31	16	1.13
Nonuser	9	3.22	4	2.25	5	2.20	2	1.0

[a]Strategy was not coded for this activity.

*$p < .10$ (one-tailed). **$p < .05$ (one-tailed).

spouse, researcher) and mean objective (researcher coded) breakdowns ($r_s = -.12$, $p = .624$).

We compared the caregivers' self-reported success of a strategy (from the questionnaire) and its success in the interactions as indicated by number of coded breakdowns. Strategies 1 (eliminate distractions) and 3 (simple sentences) were found to be effective in both caregivers' self-reports (Table 2) and in the coding of breakdowns (Table 5). On the other hand, although caregivers reported that Strategies 4 (slow speech) and 5 (one question/instruction) help "quite a bit," the researcher's coding indicated that the use of these two strategies was associated with a greater number of communication breakdowns.

Correlation analyses revealed no significant relationships between dementia severity and either the number of communication breakdowns ($r = .12$, $p = .64$); or the ratings by caregiver, spouse, and researcher ($r_s = .06$, $p = .83$).

Discussion

This study addressed four objectives concerning the use and effectiveness of communication strategies in AD caregiving: (1) to identify which of 10 frequently recommended communication strategies family caregivers report using, and with what degree of success, when interacting with their spouses with AD; (2) to assess the caregivers' spontaneous implementation of these strategies in activities of daily living; (3) to determine the degree of agreement between caregivers' perceived and actual strategy use; and (4) to evaluate,

using both subjective and objective assessments, which strategies result in improved communication between caregivers and their spouses with AD. The findings will be discussed in relation to each of these objectives.

Objective 1

The findings from a questionnaire completed by the caregivers indicate that strategies they perceive themselves as frequently using are: asking one question or giving one instruction at a time (Strategy 5), encouraging circumlocution (Strategy 10), avoiding interrupting (Strategy 9), repeating messages verbatim (Strategy 7), and using short, simple sentences (Strategy 3). Strategies reported to be used only occasionally included eliminating distractions (Strategy 1), approaching the person slowly (Strategy 2), and paraphrasing repeated messages (Strategy 8). This pattern of strategy use suggests that caregivers consider it important to simplify their language (Strategies 3, 5) and to respect their spouse's communicative competence by not interrupting them but instead encouraging them to come up with the words they are searching for (Strategies 9, 10). Caregivers also perceive themselves using verbatim more than paraphrased repetition, which parallels the relative prevalence of each strategy in the literature for caregivers (Small et al., 2002). Strategies that serve to facilitate getting and maintaining another person's attention (Strategies 1, 2) were perceived to be used less frequently by caregivers. Correlations among strategies indicated that when caregivers slow their speech (Strategy 4), they also perceive themselves as simplifying it (Strategies 3, 5), suggesting that caregivers view the use of these two strategies as complementary.

The reported effectiveness of each strategy did not significantly vary across the ten strategies. However, there was a significant correlation between overall strategy use and effectiveness, indicating that caregivers who perceived themselves to use strategies more frequently tended to also view them as being more effective. Correlations between specific strategy use and effectiveness were significant only for certain strategies (Strategies 2, 3, 6, 7), suggesting that caregivers were not employing a response bias whereby frequency of use was always associated with a comparable degree of effectiveness.

Finally, the correlation between severity of the spouses' dementia and the mean use (but not effectiveness) of all strategies was significant, indicating that, overall, caregivers with more severely impaired spouses perceived themselves as using strategies more often. However, the correlation between severity and the individual strategies was only significant for the use of Strategy 4 (speaking slowly). The overall correlation seems to reflect the declines in communication abilities that accompany disease progression and caregivers' perceived attempts to accommodate to these declines by increasing their use of strategies.

In summary, the results from the questionnaire provide evidence that caregivers perceive themselves as using certain strategies more than others and that the pattern of their reported strategy use primarily reflects a goal of reducing the complexity of speech to accommodate their spouse's communication needs. An important question addressed below is to what extent the caregivers' self-reported and actual strategy use align.

Objective 2

The results from the recorded observations of caregivers interacting both with the researcher (baseline) and with his/her spouse indicate that caregivers frequently employed strategies involving simplification of their speech (Strategies 3, 5), paraphrasing what they say (Strategy 8), and not interrupting their spouses (Strategy 9). They also consistently used the nonverbal strategies of controlling environmental distractions (Strategy 1) and engaging and maintaining their spouses' attention (Strategy 2). On the other hand, caregivers virtually never encouraged circumlocution (Strategy 10) and rarely repeated messages verbatim (Strategy 7). In addition, they simplified their sentences (Strategy 3) and increased rather than decreased their speech rate (Strategy 4) when speaking to their spouses compared to when conversing with the researcher. The correlation between strategy use and dementia severity was only significant for Strategy 3 (use short, simple sentences). Our interpretation of these findings will be discussed below in relation to Objectives 3 and 4.

Objective 3

The third objective of the study was to determine the relationship between caregivers' perceived and actual use of the 10 communication strategies. Strategies that caregivers perceived themselves using frequently and that they employed frequently in interactions with their spouses include using simple sentences (Strategy 3), asking one question or giving one instruction at a time (Strategy 5), and avoiding interrupting (Strategy 9). Strategies that caregivers reported using frequently but were rarely observed using are slow speech rate (Strategy 4), repeating messages verbatim (Strategy 7), and encouraging circumlocution (Strategy 10). Strategies that caregivers reported using only occasionally but were in fact frequently employed include paraphrased repetitions (Strategy 8), eliminating distractions (Strategy 1), and approaching the person slowly (Strategy 2).

The result showing that when caregivers repeated themselves they predominantly did so by paraphrasing rather than using the same words conflicts with their reported preference for repeating utterances verbatim. Similarly, although caregivers reported frequent use of Strategy 10, only one instance of encouraging circumlocution occurred in which the person with AD was encouraged to talk around the word they were trying to generate. In fact, a total of just eight word-finding episodes occurred across all dyads, most in the conversation between the caregiver and spouse. These results indicate not only that circumlocution was rarely encouraged but also that word-finding difficulties were not pronounced for the participants (or at least not in the observed activities). Finally, caregivers did not perceive themselves to use the two nonverbal strategies (1 and 2), whereas in the activities these strategies were usually observed.

Objective 4

The fourth objective of this study was to evaluate the effectiveness of the 10 communication strategies through conversation analysis of communication breakdown as well as through ratings of communication success from the caregivers, spouses with AD, and the researcher. Differences in the effectiveness of strategies were apparent when measured in terms of number of communication breakdowns but not when rated by caregivers, their spouses, and the researcher. The discrepancy in the relationship between strategy use and subjective versus objective measures of strategy effectiveness may reflect the lack of sensitivity of the subjective ratings to success of communication, at least as measured by two item responses. The ratings by caregiver, spouse, and researcher indicated that they generally viewed communication to be mostly or entirely successful (mean of 3.3, on a scale where 4 = entirely successful), whereas the actual breakdowns observed in the activities suggests that communication was only partially successful (mean of 2.0, on a scale where 3 = not at all successful). This discrepancy was also evident in the weak correlation observed between ratings and breakdowns. The differences across measures points to the importance of combining objective and self-report assessments of outcomes whenever possible. Use of self-report measures alone may underestimate the use and/or effectiveness of communication strategies (cf. McCann, Gilley, Hebert, Beckett, & Evans, 1997).

Use of 4 out of the 10 strategies was consistently associated with the occurrence of breakdowns. Fewer breakdowns occurred when caregivers eliminated distractions (Strategy 1), spoke in simple sentences (Strategy 3), and employed yes/no questions (Strategy 6). Conversely, when caregivers reduced their speaking rate (Strategy 4), more breakdowns were observed. For the other six strategies (2, 5, 7, 8, 9), no clear differences in breakdowns occurred for caregivers who used or did not use each strategy. The latter findings cannot be attributed to a lack of breakdowns overall, as there were significantly more breakdowns in caregiver–spouse interactions ($M = 2.01$), than in caregiver–researcher interactions ($M = 0.39$), $t(17) = -6.20$, $p = .000$.

General Discussion

The findings have a number of important implications for the existing literature and practice. First, they validate only a subset of frequently recommended communication strategies. Strategies such as slowing one's speech rate and repeating what one says verbatim were found to be infrequently used by caregivers and ineffective. The ineffectiveness of a slower speech rate may be attributable to the extra working memory demands that result from extending the duration of the utterance. These findings corroborate the experimental results of Tomoeda et al. (1990) and Small et al. (1997), who found that slower than normal speech did not facilitate comprehension by persons with AD. They also support Kemper and Harden's (1999) findings that normal older adults neither prefer, nor more easily comprehend, slow speech.

From among the strategies that caregivers perceived themselves using and those actually employed (3, 5, 9), only use of simple sentences (Strategy 3) was found to be consistently effective. The lack of effects observed for Strategies 5 and 9 may be related to the fact that almost all caregivers predominantly asked one question or gave one instruction when questions or instructions occurred, and that caregiver interruptions were relatively infrequent (5% of utterances). In other words, the comparison group (i.e., nonusers) for these strategies was quite small.

Caregivers used yes/no questions (Strategy 6) about 67% of the time they asked their spouses a question, and this strategy was found to be very effective in reducing breakdowns. These results support some, but not all, previous research (Ripich, 2001; Ripich et al., 1999; Tappen et al., 1997). Ripich et al. (1999) implemented the FOCUSED communication training program with AD caregivers, one component of which was to train caregivers to use yes/no rather than open-ended questions. They found that caregivers could be trained to use yes/no questions, and when they did, the probability of a successful outcome was much greater than when open-ended questions were employed. Tappen et al. (1997) similarly reported that institutional caregivers used yes/no more than open-ended questions when conversing with residents; however, residents were also successful

in responding to the open-ended questions. The findings from the present study and Ripich et al. might lead one to conclude that questions should be asked in a manner that reduces the demand on an impaired memory system. The results of Tappen et al., on the other hand, highlight an important dimension of strategy use that should be considered before recommending this or any other strategy. Although a strategy may be effective in accommodating to the communication needs of persons with dementia, its use may have negative consequences for the maintenance of existing abilities and/or it may reduce the independence of the individual, either of which may lead to negative psychosocial consequences (Ryan, Giles, Bartolucci, & Henwood, 1986).

Addressing the first consequence, in the present study caregivers' use of simple sentences was found to be an effective strategy. This finding is supported by previous research showing improved comprehension by persons with AD when the sentence structure was simplified (e.g., Kemper et al., 1994; Small et al., 1997). However, Small et al. (1997) also found that persons with AD could understand more complex sentences when they were repeated. This raises the question of whether a caregiver should adopt a simplified speech style known to yield immediate success or try to maintain the person's ability to understand a range of sentence types by repeating utterances when they are not initially understood.

Regarding the second consequence, the use of yes/no questions seems to be very effective in enabling the person with AD to respond successfully. However, even though such questions appear to respect the person's autonomy in that they offer a choice, they can also undermine the individual's personhood by limiting their options. Again, one can ask whether it is appropriate to restrict an individual's self-expression for the immediate goal of communication success. We would argue that caregivers should be encouraged to strike a balance between using effective speech accommodations and encouraging the maintenance of existing abilities. When it is essential for the person with AD to understand a message, then employing effective simplifying strategies is appropriate. When there is less urgency to the message, caregivers may engage in more typical communication behavior, using appropriate repair strategies as the need arises.

The use of other strategies, which *prima facie* have no negative consequences for the person with AD, could be deleterious under certain circumstances. For example, eliminating distractions (Strategy 1) would normally improve the conditions for successful communication (as was observed in this study). However, if the "distraction" is something the person with AD is favorably attending to (e.g., background music), its removal by the caregiver may be disruptive to the individual and lead to a breakdown in communication. It is of utmost importance, then, to judge a strategy's appropriateness within the particular context of communication.

In interactions with their spouses, caregivers showed a strong preference for using paraphrased over verbatim repetitions. The outcomes of the two strategies, however, were comparable (i.e., no observable benefit of either). Null findings are difficult to interpret, especially when they conflict with the results of previous studies. Small et al. (1997) reported that persons with AD benefited from both paraphrased and verbatim repetitions in a sentence comprehension task. One explanation for the different findings across studies may be related to the outcome measures used in each study. In Small et al. (1997), the effect of repetition was measured for individual sentence stimuli, and therefore one could directly link the participant's performance to the repetition itself. In the present study, the effect of repetition was measured in terms of number of breakdowns during activities of daily living, a variable that is influenced by other factors besides repetition. Because of pervasive memory problems in AD, it is inevitable that caregivers will have occasion to repeat themselves. In view of the lack of difference in outcomes between verbatim and paraphrased repetitions in this study, and the similar effects of each strategy in previous research (Small et al., 1997), it would seem appropriate to encourage caregivers to use both strategies, though for different reasons, as noted in our introduction.

In summary, caregivers frequently employed strategies involving simplification of their speech, paraphrasing what they say, not interrupting their spouses, controlling environmental distractions, and engaging their spouses' attention. A subset of these strategies was associated with fewer breakdowns: eliminating distractions, speaking in simple sentences, and employing yes/no questions. A strategy to be avoided, because it was associated with a greater number of breakdowns, is speaking more slowly.

Finally, the lack of relationship observed between dementia severity and the use or effectiveness of strategies was unexpected given the progressive nature of communication decline in AD. Because communication strategies attempt to accommodate declining language and cognitive functions, one might expect an increase in strategy use as long as verbal communication is still possible (i.e., from the mild to the moderate stages of the disease). The only significant correlation observed, however, was between dementia severity and caregivers' use of Strategy 3 (simple sentences). This finding indicates that as the dementia progresses, caregivers' utterances become simpler in terms of clause structure. For some of the other strategies, the lack of relationship with severity may be attributable to a "ceiling"

effect in that caregivers used the strategies frequently in the baseline interaction, leaving little opportunity for increased use when interacting with their spouses. Another hypothesis is that the caregivers of more moderately impaired individuals did not further modify their behavior as their spouses' abilities declined. Alternatively, it may reflect common communication problems (and strategy use) across the mild to moderate stages. The strategies investigated in this study have been recommended for caregivers of persons in the mild to moderate stages of dementia, and the caregivers in our study were caring for individuals in these stages. If we had included severe-stage caregivers in the study, the results might have revealed stronger associations between severity and strategy use. Future research should examine the relationship between strategy use and dementia severity by including participants representing a wider range of dementia severity.

Future research should also include a control group with which to compare the caregiver–spouse interactions. Although the baseline conversation in the present study served to establish the caregivers' "normal" speech rate, grammatical complexity, and frequency of interruptions, the frequency of using certain strategies in the baseline interaction was too limited to draw meaningful comparisons with strategy use in the caregiver–spouse interactions. For example, in the baseline conversation, caregivers never gave "instructions" to the researcher and, on average, used fewer than two questions or repetitions (even though the mean number of utterances across the baseline and caregiver–spouse interactions was similar: 72 and 82, respectively). Thus, although the use of the latter strategies in the caregiver–spouse interactions could be determined directly from the interactions, the limited data in the caregiver–researcher baseline interaction did not permit us to address whether the caregiver used these strategies with others. Future research should therefore look at the caregivers' communicative behavior with different interlocutors, and it should include baseline interactions that are similar to the caregiver–spouse activities so that there are comparable opportunities to use particular strategies (e.g., one instruction).

The findings from this study provide insight into the relationship between clinical recommendations and caregivers' communication behavior, and between the latter and the success of caregiver–spouse communication. We found that caregivers perceived themselves as using most of the recommended strategies from the literature but that they employed only 6 out of the 10 when communicating with their spouses. The discrepancies between caregivers' perceived and actual behavior have practical implications for training caregivers to communicate more effectively. Caregivers who misperceive their use of certain strategies may require additional training to become aware of their communication behavior before training on effective strategy use can be implemented successfully. Developing such an awareness would be important for training caregivers to use strategies that are found to be effective (e.g., yes/no questions) as well as to avoid those that are not (e.g., slow speech).

Some of the strategies that caregivers employed were associated with effective communication outcomes (1–eliminate distractions, 3–simple sentences, 6–yes/no questions). These strategies should be highlighted in the literature for caregivers. They should also be emphasized when designing behavioral interventions to enhance communication between caregivers and persons with dementia. Further research is needed to document the effectiveness of these strategies following caregiver training. Knowing which strategies most readily transfer to actual behavior would also help narrow the scope of training and lead to the most optimal cost–benefit outcomes.

In conclusion, the importance of promoting an awareness of the communication challenges facing persons with AD and their caregivers is widely recognized. However, the success of educating caregivers and others depends first on identifying the specific communication needs of caregivers and their spouses and then evaluating the effectiveness of compensatory strategies targeted to meeting those needs. The present findings lead us a step further in documenting which strategies enhance communication between caregivers and persons with AD.

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