Effects of a Caregiver Intervention on Negative Caregiver Appraisals of Behavior Problems in Patients With Alzheimer’s Disease: Results of a Randomized Trial

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Behavioral problems are among the most challenging aspects of caring for a person with Alzheimer’s disease. A sample of 406 spouses-caregivers of patients with Alzheimer’s disease was randomized to an active multicomponent counseling and support intervention condition or to a usual care condition. Caregivers reported on the frequency of troublesome patient behaviors and their reactions to them at baseline and at regular follow-up interviews. Random-effects regression models over the first 4 years after randomization revealed that, although the intervention did not affect the frequency of patient behavioral problems, it did significantly reduce caregivers’ reaction ratings. Because caregiver appraisals have been found to mediate the impact of caregiving stress on depression and to predict nursing home placement rates, they deserve greater attention as an important target of intervention services.

The stress associated with caring for an older relative suffering from Alzheimer’s disease (AD) or another dementing illness is often considerable. The behavior problems associated with dementia, which include depression, agitation, wandering, and incontinence, are among the most challenging stressors for caregivers and are a major cause of nursing home placement of patients (Brodaty, McGilchrist, Harris, & Peters, 1993; Gaugler et al., 2000; Mittelman, Ferris, Shulman, Steinberg, & Levin, 1996; Steele, Rovner, Chase, & Folstein, 1990). Behavioral problems are also among the most important predictors of high levels of caregiver distress (Schulz, O’Brien, Bookwala, & Fleissner, 1995).

Although behavior problems associated with AD generally have a major impact on family caregivers, considerable individual differences have been reported in caregivers’ reactions to them (Haley, Levine, Brown, & Bartolucci, 1987; Kinney & Stephens, 1989; Teri et al., 1992; Zarit, Todd, & Zarit, 1986). The distinction between the occurrence of stressful events and how people react to or appraise them is a key feature of stress process theory (Haley et al., 1987; Lazarus & Folkman, 1984; Pearlin, Mullen, Semple, & Skaff, 1990), and it provides an explanation of the relationship between these events and their effects. Subjective appraisals of caregiving stressors are better predictors of outcomes for caregivers than the frequency of the objective stressors (Aneshensel, Pearlin, Mullan, Zarit, & Whitlatch, 1995; Deimling & Bass, 1986; Haley et al., 1987; Kinney & Stephens, 1989; Pot, Deeg, van Dyck, &Jonker, 1998; Vitaliano, Young, & Russo, 1991; Zarit et al., 1986). High stressfulness appraisals also prospectively predict briefer time to nursing home placement of patients with AD in both White and Black caregivers, even after the occurrence of behavioral problems is controlled for (Stevens et al., 2003).

In a recent paper, Schulz, Gallagher-Thompson, Haley, and Czaja (2000) reviewed the ways in which stress process theory can be used to guide and evaluate caregiver interventions. Caregiver interventions may alter the actual stressors (e.g., decrease behavioral problems), or they may alter caregivers’ subjective appraisals of these problems. Psychosocial intervention for family caregivers could potentially decrease distress by strengthening social support and other resources and altering cognitive appraisal processes. If caregivers learn active coping strategies that limit the negative consequences of behavior problems such as agitation, they should perceive these problems as less upsetting or threatening. In addition, caregivers can be taught to differentiate between problems that may be annoying but present little threat, such as asking the same question over and over again, and problems that present greater risks and demand immediate attention, such as wandering.

We have identified three previous studies that evaluated the impact of caregiver intervention on both subjective reaction to behavior problems and the occurrence of behavioral problems. In the first, Zarit and his colleagues (Whitlatch, Zarit, & von Eye, 1991; Zarit, Anthony, & Boutselas, 1987) found that caregivers’ ratings of how upsetting they found behavior problems decreased significantly over 3 months in both the treatment (individual and family counseling, and support groups) and wait list control groups, but that the frequency of behavior problems did not change in any condition. Burgio, Stevens, Guy, Roth, and Haley (2003) examined the effects of behavioral skills training and a supportive educational intervention for AD caregivers and found that both White and Black caregivers reported decreasing levels of problem behaviors and lower appraisals of behavioral bother, regardless...
of the intervention they received, over a 6-month follow-up. Gitlin and colleagues (2003) examined the effects of a home environmental skill-building program versus usual care controls over a 6-month period; they found that participants in the skill-building program showed lower appraisals of upset with behavior after intervention compared with the controls, and that neither group showed changes in occurrence of behavioral problems. Thus the existing literature suggests that, over relatively short follow-ups (6 months or less), caregiver appraisals may be improved either by treatment or the passage of time, but the literature does not indicate whether such changes can be sustained over the long term.

Stress process models (Haley et al., 1987; Pearlin et al., 1990; Schulz et al., 2000) provided a conceptual motivation for the New York University (NYU) intervention strategy. The focus of the NYU counseling and support intervention is on diminishing the negative aspects of family involvement with caregiving while enhancing the positive supportive aspects. A priority is to increase the adequacy of support for the caregiver while still ensuring that the caregiver’s expectations are realistic. The intervention is intended to have a secondary benefit, through education and support, of changing the caregiver’s appraisal of the behavior problems exhibited by his or her spouse, thereby reducing their impact. However, to date we have not examined the impact of the NYU intervention on patient behavioral problems or on appraisals.

The present analysis examines the effects of this treatment program over a 4-year period on both the frequency of problem behavior in people with AD and the reactions of their family caregivers. We hypothesized that our structured, comprehensive psychosocial intervention for family caregivers of patients with AD would lead to caregivers’ developing more benign appraisals of patients’ behavioral problems, as a result of the support and coping skills that they gained. Although the intervention did not directly target decreasing behavioral problems in the patients, we also explored whether behavioral problems became less frequent after intervention.

**METHODS**

_Participants_

All participants were spouses of patients with a clinical diagnosis of AD, and they had the primary responsibility for their care. All patients were living at home with their spouses at baseline. An additional requirement for participation was that, in each family, the patient or the caregiver had to have at least one relative living in the New York City metropolitan area.

Participants were recruited from among caregivers of patients at the NYU Aging and Dementia Research Center (NYU-ADRC), through meetings of and referrals from the local Alzheimer’s Association, through articles in the Alzheimer’s Association newsletter and other media announcements, and through referrals from physicians, social workers, lawyers, and AD day care centers. Spouse-caregivers who satisfied the eligibility criteria were asked whether they were interested in participating in a study of caregivers of AD patients. The Institutional Review Board of The NYU School of Medicine reviewed and approved this project. Written consent to participate in the project was obtained from each caregiver, as well as from any other relatives who came to the family counseling sessions.

The study had two enrollment phases. In the first phase, which began in August of 1987, 206 participants were recruited over a 3.5-year period. In the second phase, which began in June of 1991, an additional 200 participants were recruited over a 5.5-year period. The last caregiver entered the study in February of 1997. Thus the total sample consists of 406 caregivers.

_Study Design_

After a comprehensive baseline assessment, study participants were randomized by lottery to an enhanced treatment group or a control group that received usual care. All caregivers were interviewed at regular intervals following entry into the study, every 4 months during the first year, and every 6 months thereafter. Interviews were conducted by family counselors by telephone or in person on the basis of the respondent’s preference. A major reason for telephone interviews was that many caregivers lived more than an hour away from the NYU-ADRC and found it difficult to return for follow-up assessments. It should be noted that most studies report that sociodemographic, psychiatric symptoms, and medical history data obtained from telephone and in-person interviews are generally comparable (Aneshensel, Frerichs, Clark, & Yokopenic, 1982; Leinbach, 1982). All study counselors had advanced degrees in social work or allied professions.

Control participants were provided with the normal counseling services offered to all families of patients at the NYU-ADRC, which included information about resources and advice when it was requested, but they did not participate in the formal counseling sessions provided to treatment participants. They were free to seek additional assistance and support elsewhere. Some control caregivers made frequent ad hoc telephone and in-person requests for information and counseling, which were not refused. The treatment did have an effect on the number of caregivers who joined support groups, and the difference between the two groups, although not statistically significant at baseline, became significant by the 8-month follow-up ($\chi^2 = 7.88, p = .005$). Nevertheless, a substantial number of the caregivers in the control group joined support groups within 12 months of enrollment (42%), compared with 58% of those in the treatment group ($\chi^2 = 10.13, p = .0015$).

We now have more than 12 years of follow-up information for some caregivers. We are continuing to follow all caregivers until 2 years after the death of the patient, or until they refuse or are no longer able to participate in the study.

At baseline and at each scheduled follow-up interview, a comprehensive battery of structured questionnaires was administered to all caregivers. The battery includes instruments to measure the frequency of problem patient behaviors and the caregiver’s appraisals of these behaviors (Memory and Behavior Problems Checklist, or MBPC; Zarit, Orr, & Zarit, 1985) as well as the patient’s level of functioning (Global Deterioration Scale, or GDS; Reisberg, Ferris, de Leon, & Crook, 1982). In addition, several dimensions of caregiver well-being, including psychological, physical, financial and environmental problems and social support, were also measured. Detailed information about the instruments used in these assessments has previously been reported (Mittelman et al., 1993).
**Treatment**

The treatment consists of three components. The first component, individual and family counseling sessions, took place in the first 4 months after the caregiver enrolled in the study. (There were two individual sessions and four family sessions.) This is the most structured part of the intervention, as each family in the treatment group participated in the same number of sessions with the same general format. However, the content of these sessions was determined by the needs of each caregiver, as documented by the assessment battery of questionnaires filled out upon entry into the study. For some families, learning techniques for management of troublesome patient behavior was a major objective of the counseling sessions. For other families, promoting communication among family members, reducing family conflict, and improving both emotional and instrumental support for the primary caregiver were primary objectives. Many families also wanted education about AD and resource information. Counselors also provided resource information and referrals for auxiliary help, financial planning, and management of patient behavior problems.

At the end of the initial 4-month period, the second component of the intervention required caregivers to join support groups that met weekly and in which they could continue to participate indefinitely. These groups provided a venue for continuous emotional support and education and an extended social network in a nonjudgmental atmosphere.

The third component of the treatment, which we call “ad hoc” counseling, consisted of the continuous availability of counselors by telephone to caregivers and families to help them deal with crises and with the changing nature and severity of the patient’s symptoms over the course of the disease. Caregivers and families determine the amount of contact they have with the counselors beyond the scheduled structured sessions and the regular follow-up assessment interviews.

Each caregiver in the treatment group received all components of the intervention. An important feature of the NYU intervention was the involvement of other family members in addition to the spouse. An additional unusual feature is that the treatment is not time limited but is available to caregivers and their families indefinitely. The NYU intervention has been described in detail in a book for health care professionals (Mittelman, Epstein, & Pierzchala, 2002).

**Measures Used in the Analysis**

Caregiver reports of the frequency of problem behaviors, and their appraisal of these behaviors, were assessed at intake and at every follow-up assessment while the patient was living at home, with the MBPC (Zarit et al., 1985), which consists of a list of common problems manifested by dementia patients. The caregiver is asked to rate the frequency of each of 29 troublesome patient behaviors and his or her distress when coping with them on two separate 5-point scales: frequency, representing the rate of occurrence of individual behaviors (0 = never occurs, 1 = occurs infrequently and not in the past week, 2 = occurred 1-2 times in the past week, 3 = occurred 3-6 times in the past week, and 4 = occurs daily or more often), and reaction, representing the degree to which individual behaviors “bother or upset” the caregiver (0 = not at all, 1 = a little, 2 = moderately, 3 = very much, and 4 = extremely). For each behavior, there are also two additional categories, the first to indicate that the behavior occurred frequently in the past but no longer occurs, which is rescored as 0, and the second to indicate that it would occur if not supervised, which is rescored at the midpoint of the scale. Two summary scores, one for frequency and the second for reaction (which we use as an indicator of appraisal), are obtained by adding item scores within the scales over all behaviors. Although there is now a revised version of this scale (Teri et al., 1992), only the original version of the MBPC (Zarit et al., 1985) was available at the inception of the study in 1987, and it is being used throughout the study for consistency of measurement.

The MBPC has previously been found to have adequate reliability and validity (Zarit et al., 1987; Zarit & Zarit, 1990). The Guttman split-half reliability is .65 for frequency and .66 for the distress ratings. The test–retest reliability is .80 for the frequency measure and .56 for the distress measure. Validity has been estimated by correlating the frequency measure with global estimates of the severity of cognitive impairment of patients. The frequency of problems had a correlation of .69 with the Mental Status Questionnaire (Kahn, Goldfarb, Pollack, & Peck, 1960) and .49 with the Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975). These findings on reliability and validity are similar to other versions of this measure (Teri et al., 1992).

We administered the MBPC to caregivers only when the patient was living at home. It was no longer administered after the patients had been placed in nursing homes, because both the severity of the caregivers’ reactions to patient behavior and their accuracy in characterizing the frequency of problem behaviors would be expected to decrease when they were no longer living with the patients and were no longer directly responsible for their care.

For the purpose of analysis, treatment group membership was coded as a dichotomous variable, with caregivers in the enhanced treatment group coded 1, and those in the usual care control group coded 0, as was gender, with female caregivers coded 1 and male caregivers coded 0.

**Statistical Methods**

We have confined the analysis for this report to follow-ups conducted during the first 4 years after enrollment. This represents the time period for which we have sufficient follow-up interviews for parameter estimation in statistical analyses. Thus the analyses include the results of eight interviews: intake and every 4 months for the first year and every 6 months thereafter until 4 years after intake.

**Analyses.**—We conducted mixed model growth curve analyses on the MBPC frequency and reaction scores by using SAS Proc Mixed. These growth curve analyses offer many advantages over more traditional repeated measures analyses. One advantage is that growth curves can be fit for each individual participant on the basis of the amount of data that this person has provided. Consequently, we can include caregivers who placed their spouses in nursing homes, whose spouses died at home, or who discontinued participation before the 4-year follow-up assessment, in the growth curve analyses without imputing data for the missing observations. Another advantage is that we can account for the variability in the actual time of the assessments in the model by analyzing time as a random effect.
We used a restricted maximum likelihood estimation for the analysis, and we specified an unstructured covariance structure. We examined both linear and logarithmic growth models to determine the model that best fit the observed data. We modeled growth curve parameters for MBPC frequency and reaction scores separately. We modeled scores obtained after treatment onset (i.e., 4-month, 8-month, 12-month, 18-month, 24-month, ..., 48-month scores) as a function of baseline score, treatment group (treatment vs. control), caregiver gender, time since baseline in weeks (or the natural log of weeks for logarithmic growth models), a Treatment × Time interaction effect, and a Baseline × Time interaction effect. For the continuous predictors of baseline score and time since baseline, we used mean-centered values in the analyses by subtracting out the overall mean from each individual caregiver’s score. This allowed us to examine both main effects and interaction effects in the same growth models. In addition, time since baseline was specified as a random effect so that we could take into account variability in the precise timing of these assessments.

Of the 406 caregivers who started the study, 371 (91%) completed at least one posttreatment assessment that included the MBPC, so we based all growth curve analyses on these 371 participants. We used the Akaike Information Criterion (AIC; Littell, Milliken, Stroup, & Wolfinger, 1996) to evaluate overall model fit and to select the best-fitting growth pattern (linear or logarithmic); lower AIC scores are associated with better fitting models.

**RESULTS**

Demographic Characteristics of Participants, Participant Accrual, and Follow-Up

Demographic characteristics of caregivers and patients at baseline are presented in Table 1. Despite random assignment, 111 (54.7%) caregivers assigned to the treatment group were
female, compared with 133 (65.5%) in the control group. To be sure that our results were not artifacts of this chance inequality, we included caregiver gender as a covariate in all longitudinal growth analyses. There was no difference between the two groups in ethnicity, education, patient income, or severity of dementia at baseline. The number of caregivers who provided data on the MBPC decreased at follow-up time points, largely because of nursing home placement or death of the patients. There were 371 participants at 4 months (91%), 262 at 1 year (65%), 193 at 2 years (48%), 134 at 3 years (33%), and 105 at 4 years (26%) who were able to provide data on the MBPC. The rate of withdrawal from the study while the patient was still living at home was low, and it was largely the result of illness and death of caregivers. In the first 4 years after enrollment, 45 caregivers (11.1%) dropped out, of whom 14 (3.4%) became too ill to participate, an additional 14 (3.4%) died, and 18 refused to continue (4.4%).

Characteristics of Study Participants at Baseline

There was a significant difference between the treatment and control groups in the mean frequency of problem patient behaviors at baseline (Ms = 40.4 and 45.3, respectively, p = .01). The difference between the treatment and control groups in the mean caregiver reaction was not significantly different at baseline (Ms = 22.0 and 23.6, respectively, p = .30). To adjust for differences at baseline between groups and for the effect of initial values on change scores, we included mean-centered baseline values as covariates in the growth models.

Longitudinal Growth Curve Analyses

Frequency of behavior problems.—The AIC indicated that the logarithmic growth model (AIC = 15,607.7) fit slightly better than the linear growth model (AIC = 15,676.4). The estimates of the logarithmic growth curve model are presented in Table 2. These estimates represent the average impact on the frequency of behavior problems associated with each predictor after the effects of the other predictors in the model are adjusted for. The estimate of 2.48 for gender, for example, indicates that female caregivers had an average score that was 2.48 higher on the frequency scale than that of male caregivers on average. (This is equivalent to one more behavior occurring 1–2 times a week, on average, after baseline differences and the other predictors in the model are controlled for.) The statistically significant predictors in the model are the baseline score, gender, time since baseline, and the Baseline × Time interaction effect. The predicted scores for the two treatment groups are depicted in Figure 1. As this figure illustrates, the frequency of behavior problems significantly increased across time, but there was virtually no difference between the two groups in the pattern of change in frequency of behavior problems over the 4-year period.

Caregiver appraisals.—The logarithmic model was also found to fit better than the linear model for the caregiver reaction data (AIC = 15,634.9 and 15,644.9, respectively), indicating that caregiver appraisal of bother associated with patient problem behaviors showed a logarithmic change pattern over time. The estimates of the logarithmic growth curve model for the appraisal data are presented in Table 3. Statistically significant effects were found for baseline score, treatment group, the Group × Time interaction effect, and the Baseline × Time interaction effect. The main effect for treatment group (p = .0226) indicates that the caregivers in the active treatment condition reported lower reaction scores, on average, than usual care caregivers across all assessments after baseline. The Group × Time interaction effect (p = .0368) indicates that this group difference became significantly stronger across increasingly longer follow-up intervals. These effects are displayed graphically in Figure 2. Pairwise comparisons of the covariate-adjusted predicted scores indicate that the treatment caregivers had significantly lower appraisals than the control caregivers beginning at the 1-year follow-up (p = .037) and continuing thereafter through the 4-year follow-up (p = .02). Thus group differences are statistically significant and increasing over time after baseline differences are controlled for.

Table 2. Logarithmic Growth Model for MBPC Frequency Score

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate</th>
<th>SE</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>53.96</td>
<td>0.95</td>
<td>56.54</td>
<td>367</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Baseline (centered)</td>
<td>0.59</td>
<td>0.03</td>
<td>17.90</td>
<td>1359</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Gender (female, 1, vs. male, 0)</td>
<td>2.48</td>
<td>1.09</td>
<td>2.27</td>
<td>1359</td>
<td>.0234</td>
</tr>
<tr>
<td>Group (tx, 1, vs. usual care, 0)</td>
<td>0.24</td>
<td>1.23</td>
<td>0.19</td>
<td>1359</td>
<td>.8469</td>
</tr>
<tr>
<td>Time (centered)</td>
<td>6.88</td>
<td>0.62</td>
<td>11.05</td>
<td>327</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Group × Time</td>
<td>−0.03</td>
<td>0.86</td>
<td>−0.04</td>
<td>1359</td>
<td>.9695</td>
</tr>
<tr>
<td>Baseline × Time</td>
<td>−0.26</td>
<td>0.02</td>
<td>−11.38</td>
<td>1359</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

*Note:* MBPC = Memory and Behavior Problems Checklist; tx = treatment.

DISCUSSION

The NYU caregiver intervention study has demonstrated some of the most powerful benefits of counseling and support for AD caregivers of any study to date. This study evaluates a more comprehensive and long-term treatment and also follows caregivers over a longer period of time than prior studies of interventions for caregivers. Its demonstrated effects include substantial delay of nursing home placement of patients (Mittelman et al., 1996) and a decrease in symptoms of depression in caregivers (Mittelman et al., 1995), maintained over a 3-year period (Mittelman, Roth, Coon, & Haley, in press). In an analysis of data from the first cohort of caregivers in the NYU study, we determined that the caregiver’s reaction to the patient’s troublesome behavior was significantly related...
to depression ($b = .03$, $t = 4.52$, $p < .0001$); moreover, this effect was significant at all three follow-up periods during the first year after enrollment, even after social support, severity of dementia, caregiver health, and demographic characteristics were taken into account (Mittelman et al., 1995). Our previous research also indicates that the severity of caregiver reactions to patient behaviors is a significant predictor of nursing home placement, and, in fact, it accounts for most of the effect of depression on that outcome (Mittelman et al., 1996).

The results suggest that psychosocial intervention can provide caregivers with strategies to help them manage their reactions to behavior problems more effectively. They extend previous reports on the effects of the NYU program of counseling and support for family caregivers by determining that treatment has an impact on caregivers’ appraisals of behavior problems. Although reducing the distress with which caregivers react to problem behaviors is important in and of itself, the fact that our prior work suggests that this in turn may have a favorable impact on caregiver depression and nursing home placement of their spouses with dementia gives additional importance to these findings.

Whereas caregivers in the control group appraised behavior as increasingly distressing over the 4-year period, those in the treatment group had the opposite reaction, experiencing the behavior as less and less distressing. In contrast, during the same time period, rates of behavior problems increased over time and did not differ with treatment. The difference in reaction ratings between caregivers in the treatment and control groups suggests that the intervention provided caregivers with more effective coping strategies for the common behavior problems in dementia. Counseling sessions included discussions of strategies such as distracting the patient, redirecting behavior, or ignoring behaviors that have little consequence, rather than confronting patients and trying to make them conform to prior standards of behavior (Zarit & Zarit, 1998); these strategies can lead to greater feelings of self-efficacy in managing behavior problems and to perceiving the problems as less stressful and upsetting (Zarit et al., 1995; Haley et al., 1996; Schulz et al., 2000). Appraisal can be positively influenced by factors that can also limit the negative effects of caregiving, notably coping strategies and the amount of social support and assistance that caregivers receive (Aneshensel et al., 1995; Zarit & Zarit, 1998). When one is facing a chronically stressful situation such as caregiving that typically continues for several years, it is critical for one to have access to resources that can reduce its harmful effects. Although cognitive behavioral interventions

Ultimately, many of the most troublesome behaviors (e.g., agitation) disappear, whereas other behaviors related to activities of daily living that are time consuming but can be appraised as less threatening to the caregiver become more severe. A problem in caregiving treatment studies is that many caregivers who enroll have initially low scores on outcome measures, indicating that they have relatively few problems (Whitlatch et al., 1991). As a result, the amount of improvement the interventions can bring about is relatively small. In this study, at the time of enrollment, two thirds of the patients were already in the moderate to moderately severe stages of dementia, when troublesome behaviors are most likely to be manifest. The results suggest that caregivers’ appraisal of behavior can be improved when an individually designed intervention is available to meet their current and ongoing needs.

The NYU study showed no overall effect of intervention on the frequency with which problem behaviors occurred. One reason for this finding may have been that the intervention was driven by caregivers’ perceived needs and did not necessarily focus on managing patient behavior. In contrast, studies of interventions that were designed specifically to teach caregivers skills in managing patient behavioral problems (Burgio et al., 2003; Teri, Logsdon, Uomoto, & McCurry, 1997) did demonstrate a decrease in their frequency. The differences in the outcomes of these studies confirm the importance of designing interventions for AD caregivers that take into consideration both behavior problems and caregivers’ reactions to them.

The results of this study should also be viewed in the context of models of the stress process in caregiving. The stressors involved in caring for a relative with AD have been shown to have a cumulative effect over time, increasing the risk of both morbidity and mortality. The caregiver’s appraisal is a key intervening variable linking stressors and negative outcomes (Aneshensel et al., 1995; Haley et al., 1996; Schulz et al., 2000). Appraisal can be positively influenced by factors that can also limit the negative effects of caregiving, notably coping strategies and the amount of social support and assistance that caregivers receive (Aneshensel et al., 1995; Zarit & Zarit, 1998). When one is facing a chronically stressful situation such as caregiving that typically continues for several years, it is critical for one to have access to resources that can reduce its harmful effects. Although cognitive behavioral interventions

### Table 3. Logarithmic Growth Model for MBPC Reaction Score

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate</th>
<th>SE</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
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<td>1.00</td>
<td>25.68</td>
<td>367</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Baseline (centered)</td>
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<td>0.04</td>
<td>10.09</td>
<td>1358</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Gender (female, 1, vs. male, 0)</td>
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<td>1.14</td>
<td>-.35</td>
<td>1358</td>
<td>.7282</td>
</tr>
<tr>
<td>Group (tx, 1, vs. usual care, 0)</td>
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<td>1.27</td>
<td>2.28</td>
<td>1358</td>
<td>.0226</td>
</tr>
<tr>
<td>Time (centered)</td>
<td>0.87</td>
<td>0.65</td>
<td>1.34</td>
<td>327</td>
<td>.1808</td>
</tr>
<tr>
<td>Group × Time</td>
<td>-1.86</td>
<td>0.89</td>
<td>-2.09</td>
<td>1358</td>
<td>.0368</td>
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<tr>
<td>Baseline × Time</td>
<td>-0.19</td>
<td>0.03</td>
<td>-6.17</td>
<td>1358</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

*Note: MBPC = Memory and Behavior Problems Checklist; tx = treatment.*
may help caregivers develop more benign appraisals of behavioral problems (Burgio et al., 2003), interventions that help caregivers cope with behavior problems more effectively or increase their access to support and assistance also appear to be an effective way to change appraisals of stressors.

The importance of developing multimodal approaches to the stress experienced by family caregivers is supported by these findings. Although the therapeutic nihilism that has surrounded AD and other dementias is slowly giving way with the development of new treatments, usual care of family caregivers in community settings still often consists of no more than giving them a few words of advice (Aneshensel et al., 1995). Recent studies, which have been comprehensively reviewed in several articles (Schulz et al., 2002; Sorensen, Pinquart, & Duberstein, 2002), have demonstrated the value of empirically validated treatments in significantly reducing depression, burden, and other negative outcomes for caregivers. These treatments may also be cost effective in that they have been shown to delay institutionalization of the person with dementia and reduce the overall morbidity among caregivers (Brodat & Peters, 1991; Mittelman et al., 1996; Whitlatch, Zarit, Goodwin, & von Eye, 1995).

One understudied topic that deserves greater attention is the effectiveness of combining pharmacologic treatment for patients with psychosocial intervention for caregivers, which could potentially address both the behavioral problems and caregiver appraisals of them. The literature to date shows that both pharmacological and behavioral treatments for reducing behavioral problems in dementia are promising and similar in their effectiveness (Bartels, Haley, & Dumas, 2002). Because pharmacological treatment does not target caregiver appraisals, supplementing medications with psychosocial treatment may yield more potent results than use of medications alone.

These findings imply that treatment of dementia should involve a focus on both the person with the illness and the family caregivers. There is a need for development of appropriate links between physicians and providers and agencies that offer psychosocial and psychoeducational interventions for caregivers. Barriers to using available services also have to be lowered, including the cost of services and the difficulties of obtaining access to them (Malone-Beach, Zarit, & Spore, 1992). The stressors associated with caregiving continue or even increase through the middle stages of AD. Help has to be available over the long haul. This was the case in the treatment used in the present study, which undoubtedly contributed to the positive long-term outcomes.

Behavior problems remain at the heart of the stress experienced by caregivers. The present study demonstrates that caregivers’ stress reactions to behavior problems can be reduced, even when the actual number or severity of problems may be increasing. Treatments that can also effectively reduce the frequency of troubling behaviors, whether pharmacologic, behavioral, or environmental, would be valuable tools for helping family caregivers deal with the most stressful feature of the care situation. More research is needed that focuses on developing optimal strategies for managing both behavior problems and caregivers’ reactions to them. Reducing the impact of behavior problems on family caregivers can make home care for a longer period of time a viable option for many people.

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