Anger and Depression Management: Psychoeducational Skill Training Interventions for Women Caregivers of a Relative With Dementia

David W. Coon, PhD,1 Larry Thompson, PhD,2 Ann Steffen, PhD,3 Kristen Sorocco, PhD,4 and Dolores Gallagher-Thompson, PhD5

Purpose: This study examines the short-term impact of two theoretically based psychoeducational small group interventions with distressed caregivers, and it also examines the role of specific moderator and mediator variables on caregiver outcomes. Design and Methods: Female participants (N = 169) aged 50 and older who were caring for a community-dwelling relative with a dementing illness were randomly assigned to one of three treatment interventions: anger management, depression management, or a wait-list control group. These interventions took place over a 3- to 4-month period. The primary outcomes examined were anger or hostile mood, depressed mood, frequency of use of positive and negative coping strategies, and perceived caregiving self-efficacy. Results: Significant main effects in the expected direction were found for changes in most of these measures. Participants in both anger management and depression management groups had significant reductions in their levels of anger or hostility and depression from Time 1 to Time 2 in comparison to participants in the wait-list control group. Use of positive cognitive coping strategies increased in the anger management group only. Self-efficacy significantly increased for participants in both intervention groups, and it was also demonstrated to function as a mediator of intervention effects. Pretreatment levels of depressive symptoms and anger expression style (Anger Expression-Out) moderated the relative effects of the two interventions on mood and coping. Implications: These data are consistent with a growing body of evidence supporting the effectiveness of skills training, in small groups, to improve both the affective states and the type of coping strategies used by caregivers. In addition, this study underscores the need to evaluate key pre-treatment variables in order to determine which form of treatment may be more compatible with caregiver characteristics and thus more likely to be beneficial to individuals.

Key Words: Caregiving, Alzheimer’s disease, Older women, Cognitive behavioral interventions, Randomized clinical trials

Research on the effectiveness of interventions to reduce family caregivers’ distress has rapidly increased during the past decade. This is of no real surprise given the well-documented finding that the stresses associated with caregiving lead to psychological distress for many caregivers (Bookwala, Yee, & Schulz, 2000; Schulz, O’Brien, Bookwala, & Fleissner, 1995). Reviews of caregiver intervention research have reported a range of effective interventions, reflecting varied theoretical orientations, including cognitive-behavioral and brief psychodynamic frameworks (Bourgeois, Schulz, & Burgio, 1996; Coon, Gallagher-Thompson, & Thompson, 2003; Gallagher-Thompson & Steffen, 1994; Sörensen, Pinquart, & Duberstein, 2002). Different procedural formats, such as support groups and psychoeducational groups, have also been evaluated (Charleworth, 2001; Gallagher-Thompson et al., 2000). For the most part,
Psychoeducational interventions have been designed to develop specific coping skills to deal with emotional states such as depression (Gallagher-Thompson et al., 2000), caregiver anger and frustration (Gallagher-Thompson & DeVries, 1997; Steffen, 2000), and negative emotional reactions caused by behavioral problems (Pinkston, Linsk, & Young, 1988). Support groups also have been found to be effective for gathering information and peer support but not for dealing with negative emotions such as anger or depression (Gonyea, 1989).

Anger management for caregivers is one area that has received less direct clinical intervention research than other variables of distress. This is surprising given the results of several studies that suggest anger is a very common negative emotion experienced by caregivers (Anthony-Bergstone, Zarit, & Gatz, 1988; Gallagher, Wrabetz, Lovett, DelMaestro, & Rose, 1989). For example, Gallagher and colleagues (1989) found that over two thirds of the caregivers interviewed reported either angry feelings or actual angry behavior toward their care recipient. Moreover, Schmidt and Keyes (1985) suggested that some caregivers might believe that anger is an unacceptable negative emotion for them to experience as caregivers. This viewpoint could be one reason for the lack of research directed toward anger management interventions. To our knowledge, only two published studies have directly examined the effectiveness of caregiver interventions to reduce anger (Gallagher-Thompson & DeVries, 1994; Steffen, 2000), although other researchers have examined anger indirectly as one of many variables of caregiver distress (Zarit, Stephens, Townsend, & Greene, 1998). Gallagher-Thompson and DeVries (1994) described a project that taught female dementia caregivers skills for anger management (e.g., relaxation training). Results indicated that participants not only learned the skills but also were using them 6 months after the program was over and that their self-reported levels of frustration had diminished. Steffen (2000) applied a similar intervention approach using a videotape and bibliotherapy format, and she compared the mode of presentation (in home vs. class based) against a wait-list control. She found that dementia caregivers reported lower posttreatment levels of anger and depression and higher levels of self-efficacy in both intervention conditions, but not the control condition. Steffen (2000) discussed the need for future research on anger management interventions to utilize larger sample sizes and examine the influence of moderator variables.

Despite the fact that an array of caregiver interventions have been found to be effective for some psychosocial outcomes, enthusiasm has been tempered by mixed findings regarding which interventions are effective across the variety of key outcome variables explored (Bourgeois et al., 1996; Haley, Brown, & Levine, 1987; Sörensen et al., 2002). Reviews have provided possible explanations for the lack of consistent treatment effects in caregiver intervention studies. For example, Bourgeois and colleagues (1996) discussed the difficulty of analyzing the published literature given that the "wide variety of intervention approaches do not form mutually exclusive categories" (p. 38). Knight, Lutzky, and Macofsky-Urban (1993) suggested that studies with poorer results may have tried to crowd too much information or training into too few meetings. Others have suggested that insensitive outcome measures might be the culprit (e.g., Bourgeois et al., 1996; Zarit & Teri, 1992), and Schulz and associates (2002) noted that small sample sizes in many studies reduce the statistical power to detect significant effects.

Another possible explanation for inconsistent treatment effects across studies is the lack of attention to moderator variables, which typically have not been formally studied in caregiver intervention research. Kraemer, Stice, Kazdin, Offord, and Kuper (2001) argued clearly for the importance of examining the impact of such variables on outcomes. Mediators and moderators have distinctly different properties and affect outcome data through different mechanisms (Baron & Kenny, 1986). Mediators are variables that have an impact on dependent variables through the effect of the intervention. That is, when the mediator variable changes as a function of the intervention, key outcome variables are affected. Moderators, in contrast, are present at baseline and lead to differential treatment effects.

This paper presents findings from an intervention project with female caregivers of relatives with dementia that compares the relative effectiveness of an anger management small group–class intervention, a depression management small group–class intervention, and a wait-list control condition. The primary outcomes examined are anger–hostility, depressed mood, frequency of use of positive and negative coping strategies, and perceived self-efficacy for caregiving. We also examine the effect of anger expression style and level of depressive symptoms as moderator variables, and change in cognitive self-efficacy as a mediator variable of intervention effects. All aspects of the project’s research protocol were approved by the Administrative Panel on Human Subjects in Medical Research of Stanford University.

Hypotheses

Hypothesis I: Compared with caregivers in the wait-list control (WLC) condition, those who participate in either the anger management class (AMC) or the depression management class (DMC) will evidence significantly less psychological distress on measures of anger or hostility, depressed mood, and negative coping, and they will show improvement in...
positive coping and caregiving self-efficacy after the intervention.

Hypothesis II: The impact of the interventions on change in distress will be mediated by increased self-efficacy beliefs (mediator effect).

Hypothesis III: Caregivers with higher Anger Expression-Out at Time 1 (T1) will benefit more from the AMC than the DMC; and, in contrast, those with higher levels of depressive symptoms at T1 will benefit more from the DMC than the AMC (moderator effect).

Methods

Participants

Participants were recruited by use of a variety of means, including newspaper, radio, and television announcements and targeted mailings, as well as contact with churches, senior centers, medical clinics, and senior service professionals. Criteria for caregiver inclusion in the study were as follows: (a) being a woman aged 50 and older; (b) providing the primary care for a spouse or parent with a physician-confirmed diagnosis of some form of dementing disorder; (c) not exhibiting evidence of psychosis, alcoholism, immediate suicidal risk, or bipolar disorder; (d) not currently being on psychotropic medications or, if so, being stabilized on this medication for a minimum of 3 months; (e) being willing to accept random assignment to conditions; and (f) not showing signs of severe cognitive impairment, as indicated by a score of 25 or more on the Mini-Mental Status Exam (MMSE; Folstein, Folstein, & McHugh, 1975).

As shown in Table 1, the sample consisted of 169 women who were caring for a community-dwelling family member with Alzheimer’s disease or another form of dementia. Participants were generally well educated and in good health, and 90% self-identified as Caucasian. Their care recipients’ cognitive impairments were primarily due to Alzheimer’s disease or stroke. Care recipients were typically in the middle stages of dementia and required assistance with an average of two activities of daily living. Participants had been functioning as caregivers an average of just over 40 months or 3 and one third years (M = 40.7 months; SD = 30.5), which is similar to the average found by Aneshensel, Pearlin, Mullan, Zarit, and Whitlatch (1995) in their study of dementia caregivers.

Table 1. Characteristics of Caregivers and Dementia Patients

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>63.7</td>
<td>8.4</td>
</tr>
<tr>
<td>Education (years)</td>
<td>14.4</td>
<td>2.0</td>
</tr>
<tr>
<td>Time providing care (months)</td>
<td>40.7</td>
<td>30.5</td>
</tr>
<tr>
<td>Median annual income ($)</td>
<td>30,000</td>
<td></td>
</tr>
<tr>
<td>Relationship to patient (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wife</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Daughter or in-law</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Perceived health (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td>Good or excellent</td>
<td>81.6</td>
<td></td>
</tr>
<tr>
<td>CR’s functional status (no. of ADL impairments)</td>
<td>2.2</td>
<td>1.9</td>
</tr>
<tr>
<td>Dementia diagnosis (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alzheimer’s disease</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Multi-infarct or stroke</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Parkinson’s</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Other or unspecified</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>CR’s MMSE score</td>
<td>14.2</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Notes: Total sample is N = 169. CR = care recipient; ADL = activity of daily living; MMSE = Mini-Mental Status Exam.

Intervention Conditions

Both class series were psychoeducational and skill training in nature, teaching and helping caregivers practice distinct self-management skills. Classes were conducted as small groups, in a 2-hr workshop format, for 8 consecutive weeks, followed by two “booster” or skill reinforcement sessions at 1-month intervals. Thus, a total of 10 meetings occurred for intervention participants. Groups typically were small (8–10 caregivers) to encourage self-disclosure, discussion, and personal engagement. The format in both class series was highly structured. It involved a brief “check in” and review of the “homework” or between-session practice to reinforce skills taught in the classes as well as a review of issues of concern to participants. Check-in and review was followed by a 20- to 30-min didactic lecture on the particular skill to be taught that session. The remainder of class was spent personalizing the material for each participant through in-class skill practice and discussion, and it ended with the next week’s homework assignment.

Anger Management Class.—This class (Gallagher-Thompson et al., 1992) was based on early anger management work by Novaco (1975, 1985) and Feindler and Ecton (1986) that was conducted with noncaregivers, but it was adapted and modified for our use. The AMC was designed as a multicomponent anger management intervention and was entitled “Coping with Frustration” for recruitment purposes. In this intervention, a number of terms (frustration, irritation, and anger) were used interchangeably to reflect the language preferred by middle-aged and older women. Our research has found that some related terms (e.g., frustrated) are more acceptable to these participants than angry and lead to improved ability to engage in the intervention. Early sessions presented the cognitive–behavioral model and treatment rationale, discussed sources of caregiver frustration, and taught basic

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relaxation skills and how to monitor use of relaxation techniques with a relaxation log. Participants were then taught specific cognitive skills; how to generate positive self-talk and how to monitor dysfunctional or unhelpful thoughts that preceded feelings of frustration. The focus then shifted to the development of assertiveness skills (to reduce counterproductive use of aggressive or passive communication styles in frustrating situations), including role-playing how to implement these skills with family members in caregiving-related situations. The class series concluded with a segment on thinking ahead to frustrating situations that might arise in the future and “rehearsing” how to use the AMC skills to better cope with these situations.

**Depression Management Class.**—The DMC (Thompson, Gallagher, & Lovett, 1992) was based on social learning theory and also followed cognitive–behavioral principles in its structure. However, a greater emphasis was placed on the intervention’s behavioral components. The goal of this class was to increase life satisfaction of caregivers based on work conducted by Lewinsohn (for a review, see Lewinsohn, Muñoz, Youngren, & Zeiss, 1986) that examines the relationship between negative mood and frequency of engagement in everyday pleasant activities. Sessions focused on teaching caregivers the relationship between mood and pleasant events, developing self-monitoring techniques to assess both factors, and the development of individualized lists of everyday pleasant activities that could be increased. Time was also spent on problem-solving (the chief cognitive component) to overcome obstacles that prevented caregivers from doing these activities, and on increasing their awareness of their ability to control mood by effectively managing their pleasant activities. Final sessions focused on ways to maintain high levels of engagement in positive activities in the future, despite caregiving demands.

**Wait-List Control.**—Participants in this condition received an initial assessment and then a second complete assessment 3 to 4 months later. During that time, brief phone calls were conducted periodically by research assistants to maintain caregivers’ interest in the study and to maximize retention. For example, caregivers were asked if they were still providing care and if care recipients had been placed in a care facility, and then they were reminded about their second assessment appointment. After the second assessment, WLC participants were offered the opportunity to participate in one of the two interventions.

**Interventionists**

Over the course of the study, a total of 18 groups were offered (n = 8 anger management; n = 10 depression management). These groups were co-led by two trained facilitators who were clinical psychologists, clinical interns, advanced level graduate students, and master’s level clinicians working in the community. Educational background was less important than the facilitators’ willingness to learn the treatment model for each course and adhere to the intervention protocols. Initial orientation, training, and weekly supervision were provided to all interventionists. The classes were not audiotaped or videotaped, so competence and adherence ratings are not available for analyses. However, treatments were carried out by using two highly specific and distinct class manuals that provided detailed text, in-class assignments, and homework assignments. Copies of each manual are available from the last author upon request.

**Assessment Times**

In addition to the intake assessment (T1), all participants were assessed again after approximately 4 months (Time 2, or T2). The final follow-up assessment occurred approximately 3 months later (Time 3, or T3). Caregivers in the WLC condition were given the opportunity at T2 to participate in an intervention group, and the majority did so (i.e., 32/44, or 73%). This design choice means that T3 data no longer reflect the results of a randomized clinical trial and therefore are not reported here. T3 data were collected primarily to assess changes in caregiving status (e.g., placement) and associated predictor variables that are not among the hypotheses posed by the current intervention study.

**Measures**

The data used here were collected in a face-to-face administration with an additional packet of self-report psychosocial measures returned by mail. All assessment interviews were performed by research staff who were blind to participants’ intervention condition.

**Interview.**—The Folstein MMSE (Folstein et al., 1975) was administered to help screen out caregivers who would be too cognitively impaired to obtain maximum benefit from the interventions. Any prospective participant who scored below a 25 on the MMSE was deemed ineligible for the study and was referred to other resources. The demographics portion of the interview included age, education, relationship to the older adult (e.g., wife or daughter), and length of time as a caregiver. Perceived health was assessed by the item “How would you rate your overall health at the present time?” (excellent, good, fair, or poor; Mossey & Shapiro, 1982). Participants’ beliefs about their ability to handle caregiving challenges were assessed with the
Self-Report Outcome Measures. — Self-reported levels of anger were assessed with the State–Trait Anger Expression Inventory (STAXI) State Anger Scale (Spielberger, 1988, 1999). The State Anger Scale assesses feelings of anger that exist at the time the scale is completed (i.e., “How I feel right now”) and consists of 10 items reflecting angry feelings. The STAXI scales have been found to have good internal consistency and test–retest reliability (Jacobs, Latham, & Brown, 1988). Self-reported anger-hostility and depression were assessed with the Multiple Affect Adjective Checklist (MAACL) Hostility and Depression subscales (Zuckerman & Lubin, 1965). The MAACL consists of a list of 132 positive and negative mood adjectives. Participants read the list and select those descriptive of how they have felt in the past week. Examples of Hostility subscale items include “mad,”“disagreeable,” and “tender,” and examples of Depression subscale items include “sad,” “blue,” and “happy.” In a review of measures for assessing affect in older adults, the MAACL was shown to have adequate internal and test–retest reliability (Gallagher, 1987). Self-reported use of different coping strategies was measured by the Ways of Coping Checklist—Revised (WCCL-R; Vitaliano, Russo, Carr, Maiuro, & Becker, 1985). This measure produces subscales that reflect use of different coping strategies: Problem Solving, Count Your Blessings, Support Focused, Avoidance, Wishful Thinking, Blame Self, Blame Others, and Religious Coping. In the present study, we created two composite subscales of Positive Coping (problem solving, count your blessings, and seek support) and Negative Coping (avoidance, wishful thinking, blame self, and blame others). A principal components analysis was conducted that supported the pooling of these subscales. We did not use the Religious Coping subscale because religious coping was not proposed to change as a function of the study’s interventions.

Self-Report Moderators of Treatment Effect. — The STAXI Anger Expression-Out scale (AX-O; Spielberger, 1988, 1999) was used as one of the moderators of differential treatment effect. The AX-O measures how often angry feelings are expressed in verbally or physically aggressive behavior. The eight items are rated by caregivers according to frequency, and scores can range from 8 to 32; examples of items include “express anger,” “argue with others,” and “lose temper.” The AX-O scale is correlated with the STAXI Trait Anger Scale (r = .58), suggesting that individuals who experience anger more often are more likely to express it outwardly (Spielberger, 1999). Our choice of this scale is also supported by the findings of Steffen and colleagues (2001) that caregivers who were more critical and hostile in audiotaped speech samples also had lower caregiving self-efficacy and lower use of effective coping strategies. In the present study, the AX-O had the following psychometric properties: M = 13.85, SD = 3.48, skewness = .70, kurtosis = .04, and range = 8–24. These descriptive data indicate that the scores were only slightly skewed, and the mean corresponded with the median. The median split resulted in a “lower AX-O group” with scores from 8 to 13 and a “higher AX-O group” with scores from 14 to 24. This median split fits well with the median for women aged 30 and over (the highest age category referred to in the most recent STAXI manual (Spielberger, 1999). Because investigators in this area of research infrequently study anger-related constructs, insufficient data are available to create groupings based on meaningful clinical criteria.

For the purposes of examining the level of depressive symptoms as a moderator of intervention impact, depressive symptoms were also assessed with the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961); the BDI consists of 21 symptoms of depression, including cognitive, behavioral, and somatic symptoms. Participants were labeled either “lower level of depressive symptoms” or “higher level of depressive symptoms” on the basis of a median split (BDI = 13) of T1 responses. Because of our intent to examine depressive symptom level measured by the BDI as a potential moderator of treatment effect, the BDI is not included in the primary outcome analyses. In this study, the BDI scale had the following psychometric properties: M = 13.00, SD = 6.60, skewness = .49, kurtosis = –.10, and range = 0–31. These descriptive data indicate that the scores were normally distributed and the mean corresponded with the median. The median split resulted in a “lower depressive symptoms” group with scores from 0 to 12 and a “higher depressive symptoms” group with scores from 13 to 31. This median split fits with the recently recommended cut-off score of 13 for “mild depression” (Beck, Steer, & Brown, 1996). More stringent criteria for the “higher depressive symptoms” group were initially tested and then discarded because of the loss of statistical power in substantially unequal groups. For example, an alternative, more
conservative cut-off score of BDI = 17 (the previously recommended cut-off for clinical depression; Beck et al., 1961) would have resulted in only 25% of the sample being placed in the “higher” group.

**Assessment of Care Recipient Functioning.**—To ensure that all study participants were in fact dementia caregivers, confirmation of a physician’s diagnosis of Alzheimer’s disease or another dementia disorder was obtained for the care recipients. The MMSE (Folstein et al., 1975) was used to assess each care recipient’s level of cognitive impairment. This measure has been shown to have high reliability and construct validity for moderate-to-severe cognitive impairment (Tombaugh & McIntyre, 1992). Care recipient level of impairment was also assessed by using the Activities of Daily Living (ADL) Scale (Katz, Ford, Moskowitz, Jackson, & Jaffee, 1963). The ADL Scale is a caregiver report of the care recipient’s level of functioning with regard to basic activities such as bathing, toileting, and feeding oneself. ADL scores range from 0 to 6, with higher scores indicating greater impairment.

**Assignment to Intervention Conditions**

Following informed consent and baseline assessment, caregivers were randomly assigned to one of the three conditions, within the constraints of geographical proximity needed to form the small groups in the active conditions. This randomization process was successful, as the participants in each group did not differ on demographic characteristics such as age, education, and income, Wilks’s $F(6,320) = .49, p = .82$, and $\eta^2 = .01$, caregiving characteristics such as relationship to care recipient, $\chi^2(2, N = 169) = .39$ and $p = .82$, and duration of caregiving, $F(2,167) = 1.10$ and $p = .33$, as well as on initial levels of psychosocial distress, including MAACL hostility, MAACL depression, positive coping, and negative coping, Wilks’s $F(8,266) = 1.08, p = .38$, and $\eta^2 = .03$.

**Results**

In our presentation of study findings, we distinguish among analyses of completion rates, main outcomes, mediational processes, and potential moderators of intervention impact. An alpha level of .05 was used for all statistical tests. Slightly different sample sizes for the various analyses conducted are the result of missing data for some self-report measures returned by mail.

**Treatment Completion Rates**

Of the 169 caregivers assigned to one of the three conditions, 39 (23%) dropped out of the study before completing their program. This dropout rate is comparable with the approximately 20% of caregivers who dropped out of similar caregiver psychoeducational skill training studies (e.g., Gallagher-Thompson et al., 2000, 2003). These participants dropped out for a variety of reasons, including caregivers’ poor health, reduction of caregiving responsibilities as a result of placing the impaired relative in long-term care, and loss of transportation to the intervention site. The proportion of dropouts was not significantly different across treatment conditions: $\chi^2(2, N = 169) = 3.3$ and $p = .19$. In addition, dropouts were similar to completers in demographic characteristics, including age, education, and income, Wilks’s $F(3,161) = .82, p = .49$, and $\eta^2 = .01$; caregiving characteristics such as relationship to patient, $\chi^2(1, N = 169) = .36$ and $p = .55$; and duration of caregiving, $t(1,166) = .86$ and $p = .39$. They were also similar in terms of preintervention levels of psychosocial distress, including MAACL hostility, STAXI state anger, STAXI AX-O, MAACL depression, BDI, positive coping, and negative coping, Wilks’s $F(7,129) = .70, p = .67$, and $\eta^2 = .04$.

**Intervention Outcome**

The primary outcomes (anger or hostility, depressed mood, coping, and self-efficacy) for the interventions were examined by using repeated measures analyses of variance (ANOVAs) and repeated measures multivariate analyses of variance (MANOVAs). Cell means for the intervention conditions across times of assessment are provided in Table 2.

**Anger or Hostility.**—We used two separate repeated measures ANOVAs to examine changes in anger and hostility following the intervention. These measures were not combined into a single set of analyses because different numbers of subjects completed the two measures. Using a single MANOVA would have resulted in the discarding of state anger data for some participants; therefore, we elected to analyze these data separately despite their significant correlation ($r = .45; p < .001$). The Time (before or after) × Intervention (AMC, DMC, or WLC) interaction was significant for state anger, Wilks’s $F(2,101) = 3.9, p = .02$, and $\eta^2 = .07$, and for MAACL hostility, Wilks’s $F(2,88) = 4.5, p = .01$, and $\eta^2 = .09$. An examination of cell means reveals that anger and hostility scores declined over time for caregivers in the two intervention groups but increased for control participants.

**Depressed Mood.**—A repeated measures ANOVA was used to examine changes in depressed mood following the intervention. The Time (before or after) × Intervention (AMC, DMC, or WLC) interaction approached but did not meet our criteria.
for statistical significance: Wilks’s $F(2,88) = 2.9, p = .06$, and $\eta^2 = .06$. To explore this trend toward a general intervention effect, we then collapsed the two intervention groups and ran a second repeated measures ANOVA. In this post hoc analysis, intervention participants showed significantly lowered MAACL depression from T1 to T2 compared with WLC participants: Wilks’s $F(1,89) = 5.6, p = .02$, and $\eta^2 = .06$.

**Coping Strategies.**—T1 to T2 changes in self-reported use of negative and positive coping strategies were examined in a repeated measures MANOVA. The multivariate Time × Intervention interaction effect was significant: Wilks’s $F(4,198) = 2.3, p = .05$, and $\eta^2 = .05$. An examination of the univariate results shows that this is due to differential changes in positive coping: $F(2,100) = 3.0, p = .05$, and $\eta^2 = .06$. The cell means displayed in Table 2 show that, compared with WLC participants and those in the DMC, caregivers in the AMC increased their use of positive cognitive coping strategies over time. In contrast, the univariate effect for negative coping was not significant: $F(2,100) = 2.0, p = .14$, and $\eta^2 = .04$.

**Self-Efficacy.**—We next tested for differential changes in caregivers’ perceived self-efficacy for managing difficult patient behaviors and for controlling upsetting thoughts. The multivariate Time × Intervention interaction effect was significant: Wilks’s $F(4,234) = 3.7, p = .006$, and $\eta^2 = .06$. An examination of the univariate results shows that this is due to differential changes in both self-efficacy for managing behavior problems, $F(2,118) = 4.7, p = .01$, and $\eta^2 = .07$, and self-efficacy for controlling upsetting thoughts, $F(2,118) = 3.8, p = .03$, and $\eta^2 = .06$. The cell means displayed in Table 2 show that both domains of self-efficacy increase for intervention participants and decline for WLC participants.

**Mediating Processes**

Change in caregivers’ self-efficacy for controlling upsetting thoughts was hypothesized to mediate the relationship between the psychoeducational, skill training interventions and the outcome measures reflecting reduced distress and improved coping.

**Analytic Strategy.**—The analytic strategy proposed by Holmbeck (1997) was followed. A series of four regressions was run demonstrating the relationship between 1, the dependent variable and the proposed mediator; 2, the proposed mediator and the independent variable (i.e., intervention–no intervention); and 3, the independent variable and the dependent variable. A final hierarchical regression, 4, included both the proposed mediator (as Block 1) and the independent variable (as Block 2) as predictors of the dependent variable. If the proportion of the variance attributed to the independent variable is reduced in Regression 4 compared with Regression 3, then the third variable is acting as a mediator of this relationship. To test for these effects (and because we have found no significant differences between the two active interventions), data for the AMC and the DMC participants were pooled to create a bivariate independent variable (i.e., active intervention–no intervention). Separate analyses were run for MAACL hostility T2 – T1 change scores and MAACL depression T2 – T1 change scores as the dependent variables. The first three simple regressions demonstrated the relationship among change in self-efficacy for controlling thoughts (computed as a T2 – T1 change score), change in MAACL hostility (T2 – T1 change score), change in MAACL depression (T2 – T1 change score), and intervention (i.e., active intervention–no intervention). These simple regressions (i.e., Pearson correlations), displayed in Table 3, were all statistically significant.

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**Table 2. Before and After Intervention Scores by Condition**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Anger Management M (SD)</th>
<th>Depression Management M (SD)</th>
<th>Wait List M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td>State anger (STAXI)</td>
<td>13.0 (.84)</td>
<td>12.1 (.75)</td>
<td>13.7 (.85)</td>
</tr>
<tr>
<td>MAAACL Hostility subscale</td>
<td>9.2 (.85)</td>
<td>7.1 (.94)</td>
<td>11.0 (.88)</td>
</tr>
<tr>
<td>MAAACL Depression subscale</td>
<td>16.4 (1.3)</td>
<td>15.0 (1.3)</td>
<td>17.8 (1.4)</td>
</tr>
<tr>
<td>Negative Coping (WCCL-R)</td>
<td>28.1 (2.0)</td>
<td>28.9 (2.1)</td>
<td>33.0 (2.0)</td>
</tr>
<tr>
<td>Positive Coping (WCCL-R)</td>
<td>52.1 (1.9)</td>
<td>56.0 (1.8)</td>
<td>55.0 (1.9)</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managing behaviors</td>
<td>57.3 (3.6)</td>
<td>70.0 (3.3)</td>
<td>55.5 (3.6)</td>
</tr>
<tr>
<td>Controlling thoughts</td>
<td>59.6 (3.8)</td>
<td>67.3 (3.7)</td>
<td>52.5 (3.7)</td>
</tr>
</tbody>
</table>

Notes: Table shows intervention scores for completers only. Sample sizes available for different measures vary across time. Anger management, $n = 41$; depression management, $n = 45$; wait list, $n = 44$. STAXI = State-Trait Anger Expression Inventory; MAAACL = Multiple Affect Adjective Checklist; WCCL-R = Ways of Coping Checklist—Revised.
Table 3. Correlations Among Self-Efficacy for Controlling Thoughts, Intervention, Hostility, and Depressed Mood

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SE controlling thoughts (T2 – T1 change)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2. Active intervention (yes or no)</td>
<td>.25**</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>3. MAACL hostility (T2 – T1 change)</td>
<td>—</td>
<td>—</td>
<td>.25**</td>
<td>—</td>
</tr>
<tr>
<td>4. MAACL depression (T2 – T1 change)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>.25**</td>
</tr>
</tbody>
</table>

Notes: Table shows n = 91. SE = self-efficacy; T1 and T2 = Times 1 and 2; MAACL = Multiple Affect Adjective Checklist.
*Correlation is significant at the .05 level (two-tailed)
**Correlation is significant at the .01 level (two-tailed).

Self-Efficacy as Mediator of Intervention Effect on Anger and Hostility.—In the final step of this analytic process, we compared the $R^2$ for intervention when entered as the sole predictor of MAACL hostility change ($R^2 = .09$) to the intervention $R^2$ when self-efficacy change is entered as the first block ($R^2 = .05$). This reduction of 4% of the variance accounted for by the intervention demonstrates that self-efficacy for controlling thoughts explains a portion, but not all, of the relationship between the intervention and a reduction in self-reported hostility. Similarly, we compared the $R^2$ for intervention when entered as the sole predictor of STAXI state anger change ($R^2 = .07$) to the intervention $R^2$ when self-efficacy change was entered as the first block ($R^2 = .04$). This reduction suggests that self-efficacy for controlling thoughts also partially mediated the treatment impact on state anger.

Self-Efficacy as Mediator of Intervention Effect on Depressed Mood.—We then repeated this process for predicting change in MAACL depression. The $R^2$ for intervention when entered as the sole predictor of MAACL depression ($R^2 = .06$) is greater than the intervention $R^2$ when self-efficacy change is entered as the first block ($R^2 = .03$). This reduction of 3% of the variance accounted for by the intervention demonstrates that self-efficacy for controlling thoughts explains a portion, but not all, of the relationship between the intervention and a reduction in self-reported depressed mood.

Moderator Effects

Our final hypotheses focused on both AX-O and level of depressive symptoms as moderators of intervention effect. Specifically, we expected that caregivers that scored higher on the STAXI AX-O scale would show more improvement in hostility, state anger, negative coping, and self-efficacy for managing disruptive behaviors in the AMC versus DMC. In addition, we expected caregivers reporting higher levels of depressive symptoms at T1 to show more improvement in depression, negative coping, and self-efficacy for managing disruptive behaviors in the DMC versus AMC conditions. Only data for AMC and DMC participants were included, because we were specifically interested in testing for differential effectiveness of the two interventions. To test for moderator effects, we created T2 – T1 change scores for MAACL hostility, STAXI state anger, MAACL depression, negative coping, and self-efficacy for managing disruptive behaviors. Median splits were done for both STAXI AX-O scores and BDI depression scores to create “higher” and “lower” groups. We used separate two-way ANOVAs to examine these effects because of the different numbers of participants completing each measure and because using MANOVAs would have resulted in the discarding of some participant data. In these analyses, a significant Intervention × Moderator interaction would be considered evidence of that variable’s functioning as a moderator of intervention response.

Anger Expression-Out.—Higher versus lower levels of STAXI AX-O functioned as a moderator of intervention impact on negative coping, but not on MAACL hostility, STAXI state anger, or self-efficacy for managing behavior problems. Table 4 displays the Fs, p values, and effect sizes (η²) for these ANOVAs. Higher AX-O caregivers in the AMC showed a very small reduction in negative coping ($M = −.77; SD = 8.10$), whereas those in the DMC reported an increase in their use of negative coping strategies ($M = 2.04; SD = 7.98$). Conversely, lower AX-O caregivers in the AMC increased their self-reported use of negative coping strategies ($M = 2.79; SD = 7.45$), and those in the DMC reported a reduction in negative coping ($M = −5.01; SD = 8.71$). The strongest part of this effect appears to be for caregivers reporting lower levels of AX-O; these participants did much better in the class focused on skills to manage depression than in the class focused on skills to reduce frustration.

Depression.—The presence of at least mild levels of depression (BDI ≥ 13) functioned as a moderator of intervention impact on MAACL depression and negative coping, but not on self-efficacy for managing disruptive behaviors. Results of these two ANOVAs are shown in Table 4. As expected, the largest reduction in MAACL depression was for caregivers with higher levels of depressive symptoms in the DMC group ($M = −5.06; SD = 8.58$); caregivers with higher levels of depressive symptoms in the AMC group showed a much smaller reduction in depressed mood ($M = −.79; SD = 6.35$). Caregivers reporting lower levels of depressive symptoms did better in the AMC ($M = −1.94; SD = 6.21$) compared with the DMC ($M = 1.50; SD = 3.97$). Level of
Depressive symptoms also moderated the intervention effect on negative coping, but in a way contrary to our hypotheses. There were no differences in change in negative coping for caregivers with higher levels of depressive symptoms in the DMC (M = -.19; SD = 1.89) versus the AMC (M = -.17; SD = 2.06). In contrast, caregivers with lower levels of depressive symptoms at T1 were more likely to reduce their use of negative coping strategies in the DMC (M = -7.02; SD = 2.20) than in the AMC (M = 1.42; SD = 2.06). Finally, we conducted additional analyses to determine if our results would have been comparable with a more stringent definition of “higher depressive symptoms.” Using a BDI score of 17 or higher as the cut-off resulted in only 25% of the sample falling in the “higher depressive symptoms” group. Effect sizes for the factors were similar for the three variables (i.e., MAACL depression, negative coping, and self-efficacy for managing behaviors), but all results were nonsignificant as a result of the reduction in power associated with disproportionate cell sizes.

### Discussion

The current study adds to a growing body of literature that middle-aged and older female dementia caregivers respond well to time-limited, group-based psychoeducational and skill training interventions grounded in cognitive behavioral principles (e.g., Gallagher-Thompson et al., 2000, 2003; Gallagher-Thompson, Arean, Rivera, & Thompson, 2001). This study’s overall findings suggest that skills training through either depression management (DMC) or anger management (AMC) training can lead to reductions in symptoms of anger, hostility, and depression as well as increases in self-efficacy for managing behavior problems and controlling upsetting thoughts. Participation in the AMC condition in contrast to the DMC or control condition (WLC) also led to increases in positive coping. This may be due not only to AMC’s relative emphasis on both behavioral and cognitive skill training in contrast to DMC’s primary focus on behavioral skills but also to the coping measure’s inclusion of items covering both behavioral and cognitive coping strategies. The effect sizes for the interventions’ impact on outcome variables ranged from 5% to 10% of the variance. Although these are statistically significant, we would classify these as relatively small effects. In part, this might be due to the fact that individuals did not have to meet specific criteria for distress to participate, and a sample composed solely of caregivers experiencing psychosocial distress might have led to stronger intervention effects.

In addition to the study’s main effects, we believe the evidence of the impact of both mediators and moderators is important and warrants additional consideration and exploration. In terms of mediation, changes in caregiver self-efficacy for controlling upsetting thoughts accounted for unique variance changes in hostility and depression. These results indicate that changes in caregivers’ perceived competence to handle their caregiving situations as a result of intervention had an impact on outcomes above and beyond skills introduced in the interventions, and they support Bandura’s previous theoretical and empirical findings that self-efficacy plays a significant role in people’s determination of their ability to accomplish difficult tasks (e.g., Bandura 1977, 1995). The study also offers continued support for the importance of the construct of self-efficacy in understanding how caregiver interventions work and suggests the need to continue to develop and evaluate interventions that increase caregiver self-efficacy.
With regard to moderators of the study’s interventions, the presence of higher levels of depressive symptoms as well as a lower AX-O interacted with the intervention modality to predict outcome. Caregivers reporting more depressive symptoms preintervention showed greater reduction in depression when randomized to DMC compared with those assigned to AMC; and, in contrast to our hypothesis, caregivers with fewer depressive symptoms preintervention were more likely to reduce use of their negative coping strategies in the DMC as compared with the AMC intervention. This latter, unexpected finding requires replication, but one possible explanation is that “depressed” people must first practice intervention strategies and add positive coping strategies until the depression is more effectively managed; only then can they reduce their reliance on their familiar negative coping patterns.

Overall, the study’s moderator effects make conceptual sense and add support for calls in the literature to explore moderators and carefully study Aptitude \( \times \) Treatment interaction (ATI) effects. ATI effects refer to any differential treatment impact associated with some characteristic of the participant (i.e., moderator). These can include demographic characteristics, pretreatment psychiatric diagnoses, or severity of distress on any psychosocial variable of interest present at the beginning of treatment. Investigation of ATI effects is important in order for researchers to develop an empirical base to determine who is most likely to benefit from a given intervention and, as a result, potentially conserve program resources by streamlining treatment (e.g., Coon, Schulz, & Ory, 1999; Gallagher-Thompson & Steffen, 1994; Snow, 1991; Steffen, 2000). Thus, on the one hand, our findings appear to support preintervention screening and differential intervention assignment based on level of depressive symptoms or anger expression style. On the other hand, we caution against immediately beginning such a screening and assignment process for several reasons, including the obvious need for study replication and practical issues encountered when transporting research findings into community agencies with limited resources (e.g., identification of appropriate brief measures, staff training, staff time allocations, and related costs). Still, the current study’s moderating effects should help inform future caregiver intervention research.

Although the investigation of moderating effects helps us understand and strengthen caregiver interventions, we recently took Smith and Sechrest’s (1991) recommendations for conducting intervention research with enough power to find and replicate strong main effects and used the current study’s main findings to create and test stronger versions of these treatment protocols. For example, the California site of the Resources for Enhancing Alzheimer’s Caregiver Health (REACH) Project sponsored by the National Institute for Nursing Research recently investigated the effectiveness of a revised treatment protocol that combines features of the DMC and AMC interventions (Coon et al., 1999; Gallagher-Thompson et al., 2003). In addition, we have developed and are testing a distance-based psychoeducational skill training intervention because not all dementia caregivers are able to leave their homes to attend weekly intervention groups (Gant, Steffen, Silberbogen, & Gallagher-Thompson, 2001; Steffen et al., 2001). Furthermore, we believe caregiver intervention research could benefit from investigations of stepped care models (e.g., Davison, 2000) and moderator effects. Stepped care models are designed to maximize effectiveness and minimize costs by identifying effective, easily transportable interventions that add intervention components to meet the needs of specific caregivers or refer caregivers to additional services as warranted (e.g., psychotherapy). More intensive and potentially more costly and intrusive interventions are only initiated when less intensive interventions have failed or are not in the best interest of the caregiver (Coon et al., 2003).

The current study has several noteworthy limitations. Participation was limited to women, and the vast majority of participants self-identified as White–Caucasian and middle class. Clearly, research is warranted that examines how to develop or tailor such interventions for men and other ethnic or racial groups. Initial clinical and pilot work in our lab suggests that similar psychoeducational and skill-building interventions with White–Caucasian men are both palatable and effective (Coon et al., 2003), and these interventions can be culturally tailored for Latina caregivers with positive results (Gallagher-Thompson et al., 2001, 2003). Finally, the lack of stronger effect sizes for some measures in the current study may be due to floor or ceiling effects, because caregivers did not need to meet specific criteria for emotional distress to enter the study, which led to relatively low mean scores for some measures (e.g., the BDI).

Still, the study demonstrates the effectiveness of two psychoeducational skill-training interventions across several domains of clinical significance put forth by Schulz and his colleagues (Schulz et al., 2002), including reductions in symptomatology (symptoms of depression, anger, and hostility) as well as positive increases in quality of life indicators (coping and self-efficacy). Although no specific cost data were gathered, these relatively brief and group-based programs may have social significance as well by contributing to the search for cost-effective interventions that reduce caregiver distress and enable people to remain in the caregiver role longer while being less negatively affected by it. Finally, participant recommendation of the program to others and the adoption of these interventions by local service organizations serve as indicators of their social validity.
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The University of Maryland School of Nursing is currently seeking applications and nominations for a scholar to occupy the Seruya Zipserkin Gershowitz Endowed Chair in Gerontology to provide leadership in advancing the School's rapidly expanding gerontological research agenda.

Consistently ranked among the top ten schools in the nation by U.S. News & World Report, the University of Maryland School of Nursing enrolls approximately 1,500 students in its baccalaureate, master's, doctoral and continuing education programs and emphasizes the integration of research, teaching and clinical practice. The School of Nursing has built a nationally recognized research program generating over $7.5 million in grants and contracts in FY 2003 targeting many priority health care issues including a focus on gerontology/aging. In addition to the School of Nursing, the University of Maryland, Baltimore campus encompasses five other professional schools - Dentistry, Law, Medicine, Pharmacy and Social Work and is one of the fastest growing health sciences research centers in the United States with more than $265 million in grants and contracts in FY 2003. The School has close ties with the University of Maryland Medical System and the Baltimore Veterans Affairs Medical Center which includes a nationally known GRECC. The unique composition of the campus enables health professionals to address health care, public policy and social issues through multidisciplinary research, scholarship and community action. Its location in the Baltimore-Washington-Annapolis triangle maximizes opportunities for collaboration with government agencies, health care institutions and life sciences industries.

**Responsibilities:** The candidate selected to occupy the Seruya Zipserkin Gershowitz Endowed Chair will be noted for contributions to research, writing and pedagogical talent and provide leadership in gerontology research, secure external funding to support their research, teach in the undergraduate and graduate programs, advise master's and doctoral students and mentor other faculty.

**Qualifications:** Requirements for the position of senior research scientist include an earned doctorate in nursing or a related field, a master's degree in nursing and a current license or eligibility to practice nursing in Maryland. Significant scholarly achievement including research publications and a proven track record in peer reviewed and externally funded research sufficient to qualify for appointment to the rank of associate professor or professor is also required. Prior academic experience is preferred.

**Instructions to Applicants:** Applicants should submit a letter of interest, resume and the names of three professional references to:

Dr. Ruth Harris
Chair, Faculty Search Committee
c/o Lois Reigle
University of Maryland School of Nursing
655 West Lombard Street, Room 502
Baltimore, Maryland 21201

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