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Effectiveness of Cognitive/Behavioral Small Group Intervention for Reduction of Depression and Stress in Non-Hispanic White and Hispanic/Latino Women Dementia Family Caregivers: Outcomes and Mediators of Change

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Abstract

This study enrolled 184 middle-aged and older women (95 Non-Hispanic White and 89 Hispanic/Latino) who provided in-home hands-on care to an elderly relative with Alzheimer's disease or another form of dementia. Within ethnic group they were randomly assigned to either a CBT-based small group intervention program called "Coping with Caregiving" (CWC) that taught a variety of cognitive and behavioral skills to reduce stress and depression, or to a minimal telephone based control condition (TSC). Intervention lasted about 4 months; one post-treatment assessment was completed 6 months after baseline by interviewers blind to the intervention condition. Interviews and interventions were conducted in English or Spanish by trained staff.

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Results indicated that those in the CWC (regardless of ethnicity) showed greater improvement from pre to post intervention than those in the TSC on measures of depressive symptoms, overall life stress, and caregiving-specific stress. In order to investigate if these changes may have been related to one proposed mechanism of change in CBT (skill utilization), a new measure was constructed. Change in frequency of use and perceived helpfulness of adaptive coping skills were assessed in all caregivers. Results indicated that caregivers in CWC reported greater frequency of use, and greater perceived helpfulness, of these skills at post intervention compared to caregivers in the TSC. Improvement measured by dependent measures was correlated with an increase in these indices for those in the CWC. Tests for mediation suggest that effective skill utilization may mediate the effect of treatment on outcome. Implications of these findings are discussed and recommendations provided for future research.

Keywords

Caregiving stress; Randomized trial; Dementia; Hispanic/Latino; Interventions; Moderators

Introduction

Over the past quarter century the plight of the dementia family caregiver has led to an increasing number of research studies designed to evaluate innovative strategies for helping families maintain a high quality of life for both caregivers and care-recipients alike (cf. Coon et al. 2003 and Thompson et al. 2006, for discussion of pertinent issues and strategies). Considerable evidence has now accumulated documenting the effectiveness of psychosocial interventions to alleviate caregiver distress (Schulz et al. 2005; Sorensen et al. 2002) although there is consensus that no one treatment is going to be effective for all caregivers at every point in the process. A recent review of psychosocial interventions identified several different strategies meeting strict criteria (established by the American Psychological Association) to be classified as “evidence-based.” Gallagher-Thompson and Coon (2007) grouped them into three categories: (a) psychoeducation/skill building programs, (b) psychotherapy/counseling programs, and (c) multi-component interventions, which included two or more conceptually different approaches in one intervention package. The largest average effect size was found in the psychotherapy category, with cognitive behavioral therapy (CBT) coded as “highly efficacious” for reducing symptoms of depression and other indices of caregiver distress—whether presented in a traditional psychotherapy mode or packaged in a small group/psychoeducational framework.

Over the past several years, there also has been increased interest in the effectiveness of psychosocial intervention programs to reduce distress in racially and ethnically diverse caregivers. Particular emphasis has focused on Hispanic-Americans, since projections indicate that this group will increase at a comparatively high rate over the next few decades (Administration on Aging 2000; Administration on Aging 2005). Interest in this issue is fueled by the apparent cultural differences in beliefs, attitudes and caregiving practices (Aranda 2001; Gallagher-Thompson et al. 2003b; Neary and Mahoney 2005), as well as a decreased likelihood to seek out or utilize caregiver support services (Aranda et al. 2003; Valle et al. 2004). In spite of the discrepant psychosocial and sociodemographic factors

noted between Non-Hispanic White and Hispanic White/Latino caregivers, which are often found to be correlated with treatment outcome in other studies not focused on ethnicity, few investigations have been completed with Hispanic/Latino caregivers themselves.

The REACH studies (Resources for Enhancement of Alzheimer's Caregiver Health Project; Schulz et al. 2003) are a notable exception. The first REACH project consisted of six sites across the U.S. (Boston, Birmingham, Memphis, Miami, Palo Alto, and Philadelphia), investigating various theory-driven interventions that were selected and implemented independently at each site. At the Palo Alto site, Gallagher-Thompson et al. (2003a) conducted a randomized controlled trial to compare the effectiveness of a CBT-based psychoeducational group program designed to increase caregivers' skills to cope with the problems of caregiving (CWC; note that this was an earlier version of the CWC described and used in the present study) with an Enhanced Support Group (ESG) patterned after local community support groups, with both Hispanic/Latino (HL) and Non-Hispanic White (NHW) caregivers. Compared to caregivers in the TSC, those in the CWC reported a significant decrease in depressive symptoms and increased use of positive coping strategies, along with decreased use of negative coping strategies and fewer negative interactions within their social network. Similar patterns of change were found within both ethnic groups.

At the Miami site (the only other REACH I site to enroll Hispanic/Latino caregivers) Eisdorfer et al. (2003) compared Non-Hispanic White and Cuban-American male and female caregivers who were randomized either to a specific type of family therapy referred to as structural ecosystems therapy (SET), or SET plus computer telephone integrated system (CTIS) used for between session contacts and telephone support groups. There also was a minimal support group that received 5–15 min phone calls, consisting of active listening and empathy, biweekly for the first 6 months and then monthly for the next 6 months. Both ethnic groups who received the SET plus CTIS reported a decrease in depressive symptoms, when compared to the SET alone or the minimal control group.

In REACH II, investigators at five of the original sites selected the most effective components from the different interventions that were evaluated in REACH I and integrated them into one structured multi-component intervention. Manuals were developed and interventionists trained to criterion. A randomized clinical trial, comparing this intervention with telephone support, was conducted at all five sites. Participants were Non-Hispanic White, Hispanic/Latino, and African American/Black caregivers (N's were 219, 212, and 211, respectively). The intervention, which was available in English and Spanish, provided 12 individuals, in-home sessions, three telephone sessions, and five structured telephone support group sessions. All sessions were conducted by trained personnel with appropriate cultural and language backgrounds. Although no direct ethnic or racial comparisons were made in this study, again both Non-Hispanic White and Hispanic/Latino caregivers showed significant pre/post decrease on measures of depressive symptoms and burden, along with improvement in coping with problem behaviors, social support, and self-care (REACH Investigators 2006).

Thus, the few efforts reported here that explored ethnic differences in response to structured interventions to improve cognitive and behavioral skills indicate that Hispanic/Latino caregivers can and do benefit equally as well as others if appropriate modifications are made to account for language and other cultural influences. Based on even these few studies, the argument could be made that Hispanic/Latino caregivers will respond positively to structured interventions that reflect language and cultural preferences, irrespective of possible limiting psychosocial and sociodemographic factors.

Despite the impressive number of intervention studies in recent years, it is noteworthy that few have addressed what *mechanisms* might be involved in precipitating positive change. For example, a primary objective of CBT is to increase and/or improve cognitive and behavioral skills that are known to ameliorate the impact of stress, but few studies with caregivers have actually evaluated whether these skills are acquired or used as a result of participating in the intervention. Put another way, more attention has focused on outcome measures, such as depressive symptoms, rather than assessing the impact of mediating variables, such as effective skill utilization, which are presumably affected by the intervention.

In the current study, an updated, modified CWC group intervention was compared to a TSC in the treatment of NHW and HL female caregivers. This study developed a measure of cognitive and behavioral skill utilization to address the question of whether these caregivers were learning and implementing new skills, and to ascertain the effects of skill utilization on level of stress and depressive symptoms. We hypothesized that: (1) Caregivers in CWC will decrease level of stress and depressive symptoms more than those in TSC; (2) CWC will increase utilization of cognitive and behavioral skills more than TSC; (3) Effects of the intervention will be similar for both ethnic groups (i.e. there will be no main effect for ethnicity and no ethnicity by intervention interaction on the outcome measures); (4) A composite score indexing “maximum skill effectiveness” will be correlated with improvement in levels of stress and depressive symptoms.

Method

Participants

Initially, 231 female caregivers responded to community-based recruitment efforts. After brief telephone screening, those who met preliminary eligibility criteria were scheduled for baseline assessment, which occurred variably within a 2-month window of time depending on logistic issues (e.g., scheduling constraints). Since the CWC intervention was conducted in small groups, and was stratified by ethnicity as well, baseline assessments were not scheduled until four or more potential participants of the same ethnicity were identified within close proximity of one another (5–10 mile radius). Caregivers were then interviewed in their homes for data collection. During this interim period, 47 (20%) participants declined to continue before the pre-treatment assessment was begun. Reasons for deciding not to participate in the study were loss of interest, change in caregiver status, moving, no time for the intervention, and lack of reliable transportation. Thus, 184 caregivers (95 NHW and 89 HL) completed baseline assessment; 45 NHW and 42 HL caregivers were randomly assigned to TSC, and 50 NHW and 47 HL were assigned to CWC. Twenty-eight caregivers

(15%) withdrew from the study during intervention, leaving a total of 156 caregivers who completed post-assessment. Of those drop-outs, 15 were NHW (17%) and 13 were HL (15%) indicating that the proportion of drop-outs was not related to ethnicity ($\chi^2 = 0.148$, $df = 1$, $N = 184$, $p > .100$). There were 14 drop-outs from each treatment, indicating that there was no association between treatment modality and completion ($\chi^2 = 0.11$, $df = 1$, $N = 184$, $p > .100$).

Table 1 depicts sociodemographic information for completers and drop-outs within each ethnic group. There were no significant differences between completers and drop-outs for any of the sociodemographic variables in either ethnic group. Generally, age of caregivers ranged in the 50s and 60s, and care-recipient ages ranged in the 70s and 80s. Caregivers had been in this role roughly 4–6 years and were spending 6–11 h per day completing caregiver tasks at baseline assessment. Mean scores on the Center for Epidemiological Studies Depression Scale (CESD; Radloff 1977) ranged from 14 to 16, suggesting mild to moderate depressive symptoms in both ethnic groups. Roughly 75% lived in the same household with the care-recipient; more than half were married. Care-recipients were moderate to severely impaired as seen on the Mini Mental State Examination (MMSE; Folstein et al. 1975). Problematic behaviors as reflected in the Revised Memory and Behavior Problem Checklist (RMBPC; Teri et al. 1992) were rated as causing mild to moderate “bother” for the caregivers. NHW caregivers were generally older than the HLs, were more often spouses rather than daughters, and reported higher educational levels and higher income.

Recruiting Procedures—A variety of strategies were used including media advertisements, targeted calls and mailings, and contact with agencies providing services in the community. All were available in English and Spanish. Recruitment details are reported elsewhere (Gallagher-Thompson et al. 2004). All participants provided written informed consent (in English or Spanish) prior to baseline assessment; assent was obtained from care-recipients when possible to assess cognitive function.

Eligibility Requirements—Caregivers were screened by phone to determine initial eligibility. They had to be female, at least 21 years of age, and provide a minimum of 8 h of care per week (for at least 6 months) to an elder relative with significant memory loss/deterioration in cognitive ability. They also had to have a phone, plan to remain in the area for the duration of the study, and be willing to be randomly assigned to one of two possible treatments. Caregivers were excluded if they were cognitively impaired, diagnosed with Cushing's or Addison's disease, or were terminally ill. Care-recipients had to have either a documented dementia diagnosis or a score of 23 or less on the MMSE and be unable to perform one or more Activities of Daily Living (ADL; Katz et al. 1963) or two or more Instrumental Activities of Daily Living (IADL; Lawton and Brody 1969).

Procedures

Informed consent and baseline data were collected by interview within a 2-month interval following initial screening, in two-in-home sessions. Upon completion, the research assistant and participant together opened a sealed envelope that contained treatment assignment. Randomization was stratified by ethnicity. The “biased coin” strategy (Efron 1971) was used

to maintain balanced distributions across groups, since caregivers were assigned to conditions sequentially. Caregivers completed one follow-up assessment (6 months post-baseline, which was about 2 months after interventions ended) in their home, consisting of essentially the same measures that were obtained at baseline. This was done by research assistants blind to intervention received.

Psychosocial Measures

Sociodemographic Data—Caregiver and care recipient demographic information was obtained during the first-in-home interview using a questionnaire adapted from the REACH program (Gallagher-Thompson et al. 2003a, b).

Depressive Symptoms—Level of depressive symptoms was assessed using the CESD (Radloff 1977). The 20 items in this scale ask about how often participants experienced depressive symptoms (affective, psychological, and somatic) in the past week. CESD has adequate reliability as a measure of change with older adults (Hertzog et al. 1990) and in cross-cultural research (Wisniewski et al. 2003). Internal consistency in the present study was high (Cronbach's $\alpha = .92$).

Perceived Psychological Stress—The 10-item Perceived Stress Scale (PSS-10; Cohen and Williamson 1988) was derived from a 14-item scale (Cohen et al. 1983) measuring general appraisal of stress in the past month. Items are rated on 5-point Likert scales (0 = never to 4 = very often). This scale has demonstrated good reliability and validity in numerous studies (Cole 1999). However, in the present study internal consistency was marginally acceptable (Cronbach's $\alpha = .57$).

Conditional Bother—This subscale of the RMBPC (RMBPC-CB) assessed how much the caregiver was distressed by care-recipient problem behaviors due to Memory Problems, Depressive Symptoms or Disruptive Behaviors. Caregivers indicated how much they were “stressed or bothered” by each problem behavior that occurred on a five-point scale (0 = not at all to 4 = extremely). The subscale score is the average “bother” rating for those behaviors. This scale is frequently used to measure caregiving-specific stress. In the present study internal consistency was high (Cronbach's $\alpha = .88$).

Skill Utilization—We developed a questionnaire containing 21 items reflecting various cognitive and behavioral strategies that logically would appear helpful for caregivers to acquire, to improve their coping skills and that were identified in prior research (Cohen et al. 2002; Haley et al. 1987). Participants were asked to indicate how frequently they used each strategy on a 4-point scale ranging from “Never” to “At least once every day”, and then to rate how helpful it was on a 5-point scale ranging from “Not at all” to “Very helpful”. The Skill Utilization Questionnaire (SUQ) was administered at baseline and again at post-assessment. The cross product of skill utilization and skill helpfulness for the total number of items provides an index of Maximal Skill Effectiveness (MSE).

Additionally, items were grouped into five categories: (1) Learning to relax and be more reflective about problems arising while completing caregiver tasks; (Cronbach's $\alpha = .57$ and $.52$ for frequency and helpfulness, respectively); (2) Monitoring mood, thoughts and

behaviors, noting important contingencies and developing ways to implement desired changes; (Cronbach's $\alpha = .58$ and $.55$ for frequency and helpfulness respectively); (3) Developing a more assertive communication style with family members and medical professionals—(one item); (4) Developing strategies for engaging in more pleasant activities; (Cronbach's $\alpha = .59$ and $.55$ for frequency and helpfulness, respectively); and (5) Obtaining information about planning for the future, as the intellectual and functional abilities of the care recipient continue to deteriorate; (Cronbach's $\alpha = .66$ and $.79$ for frequency and helpfulness, respectively).

Interventions

Both interventions were 13- to 16-week protocol-driven treatment packages that have been implemented successfully (in slightly modified form) with both ethnic groups in previous studies. Variations in time occurred because of scheduling difficulties from time to time. On average, each caregiver was in her program for 4 months. Interventions were conducted primarily by postdoctoral fellows or advanced graduate students in psychology or related fields who had relevant bilingual/bicultural backgrounds. All had at least one year of training or experience working with caregivers. All interventions were conducted under supervision of the first and/or last authors (DGT & LWT).

Coping with Caregiving (CWC)—This is an updated version of that used in the Gallagher-Thompson et al. 2003a, b study. For example, content areas such as planning for future transitions and increasing shared pleasant activities between caregiver and care-recipient were added, and more time spent in role-plays and other forms of active participation in each session. CWC was conducted in a small group format (4–8 caregivers per group) and met weekly for 2-h sessions in convenient local settings such as community centers. Two interventionists co-led each group, based on ethnicity and availability; the program followed a detailed treatment manual similar to that used in previous studies (Gallagher-Thompson et al. 2001; Gallagher-Thompson et al. 2000).

CWC is based on cognitive-behavioral principles; it is a skills-learning based approach and included opportunity for practice and for personalization of material at each meeting. Each session begins with a brief “check-in” where caregivers comment on their week, including any significant events that occurred. Then they discuss their experiences attempting to carry out home practice assignments, and problem-solving is done to address barriers encountered. For example, caregivers are asked if they were able to complete the exercises and if not, to discuss obstacles. About 30 min are allotted for this discussion so that each caregiver has time to share her experience and receive feedback. This is followed by a brief refreshment break during which time leaders meet individually with those needing extra help or with a specific issue to discuss in private. The group then re-convenes and a “mini-lecture” is presented either to introduce the rationale for a new strategy or to continue discussion of an “old” strategy if necessary. The strategy is practiced through role-playing and other forms of engagement. Before leaving caregivers are led in a relaxation technique (5–10 min practice) that they are encouraged to use at home (e.g., slow breathing; visualization). Group ends with review of “home practice” and a reminder about its importance.

Class 1 provided education about dementia, negative effects of stress on the body and mind, how to identify problem behaviors in the care-recipient and record them on a behavior log, and the importance of completing home practice to learn skills taught in the class. Classes 2–5 taught helpful techniques for managing care recipient's problem behaviors (e.g., identify antecedents or “triggers” and plan how to change them). Classes 6–10 taught skills to take better care of the caregiver, including changing unhelpful thoughts, increasing assertive communication, and identifying everyday pleasant activities (both for self and shared with care-recipient). Classes 11 and 12 focused on planning for the care-recipient's future needs (i.e. why to prepare an advance directive) and how to obtain helpful community resources. The last class was an overall review; each caregiver was asked to develop her own “action plan” for how to apply helpful coping strategies to future (anticipated) stressful situations (e.g. grandchild's visit).

Telephone Support Condition (TSC)—This is an individual condition in which empathic support was provided over the telephone for 15–20 min every 2 weeks. Participants received a total of seven telephone calls over 4 months. Educational materials about caregiving, home safety, and other relevant topics were mailed out in Spanish or English, as appropriate to the caregiver's situation. These were obtained from the Alzheimer's Association or other down-loadable Internet resources.

Statistical Analysis

Initial comparisons assessed the extent to which caregivers in CWC and TSC were comparable in demographic characteristics. A series of *t*-tests for independent samples and χ^2 analyses were used to compare continuous and categorical variables, respectively.

Linear regression analyses to examine our hypotheses. Post-treatment scores for symptom and skill utilization measures were the dependent variables in a separate regression for each measure. Independent variables for each analysis were treatment modality, ethnicity, baseline measure (BA) of the respective dependent measure and the following interaction terms: ethnicity by treatment, BA by treatment, BA by ethnicity, and BA by treatment by ethnicity. All values entered into the regressions as independent variables were centred around their respective means (Kraemer and Blasey 2004). Treatment modality was contrast coded so that the CWC intervention equaled +.5 and the TSC equaled −.5. Ethnicity was contrast coded so that HL = +.5 and WNH = −.5. Missing data at follow-up were imputed for an intention-to-treat approach (last value carried forward) for analyses of symptom measures. For the skill utilization measure only caregivers who completed treatment and post-assessment were included. Finally, post hoc exploratory analysis of Maximal Utilization Effectiveness as a mediator of the treatment effect on symptom measures was completed.

Results

Table 1 includes demographic and select psychosocial measures for both ethnic groups separately, grouped according to whether they dropped out after baseline assessment or completed post-treatment assessment. In both ethnic groups there were no significant differences between those who completed post-treatment assessments and those who

withdrew, on any of the measures included. This suggests that attrition is not biased with respect to factors that may influence outcome measures.

Ethnic differences were found on certain variables, as expected from prior research: caregiver age ($t(df = 180.8) = 6.29, p = .000$) and education ($t(df = 121.8) = 8.94, p = .000$), relation to spouse ($\chi^2 = 15.39, df = 1, N = 184, p = .000$), and family income ($\chi^2 = 17.01, df = 1, N = 184, p = .000$). This information is presented for descriptive purposes only; note that there were no significant differences between participants in the CWC and TSC on these measures or any of the other sociodemo-graphic measures reported in Table 1. Further, as will be seen in the analyses below, there was minimal evidence of an ethnicity or ethnicity by treatment effect, indicating that there was little justification for evaluating the two ethnic groups separately when testing the primary hypotheses.

Effects of Treatment Conditions on Outcome Measures

A summary of the regression analyses for symptom measures is in Table 2. There was a significant main effect of treatment modality for all three outcome measures. The CESD posttreatment scores were significantly lower in the CWC than in the TSC, as were the scores on the PSS, and the RMBPC-CB. As expected, although not included in the summary table, the centred baseline value of each measure was highly significant in predicting post-treatment scores for CESD ($t(177) = 12.61, p = .000$), PSS ($t(177) = 11.46, p = .000$), and the RMBPC-CB ($t(177) = 10.25, p = .000$). There was no significant effect for ethnicity and no treatment modality by ethnicity interaction for any of the three outcome measures. Interactions of each respective baseline outcome measure with treatment or ethnicity, as well as the third order interactions were also not significant.

Table 3 contains means and standard deviations for the three symptom measures at baseline and post-treatment, grouped according to treatment condition and ethnicity. Table 3 also includes paired t-tests results of pre- and post-change for the same groups to illustrate the effect of treatment on symptom measures. Looking first at the effects of ethnicity, a comparison of means using independent t-tests revealed that only two of 12 comparisons between NHW and HL caregivers were significantly different. In the TSC, NHW reported that they were more bothered than HLs, by care recipients' problematic behaviors, both at the baseline and post treatment assessments. Thus, in general major ethnic differences are not apparent across the board in the outcome variables. Treatment effects are evident in both groups. The differential effect of the treatment conditions is more clearly illustrated by the paired t-tests. In the TSC only one of the six paired comparisons was, while in the CWC all six paired comparisons were significant at substantially high levels.

Effect of Treatment Conditions on Skill Utilization and Helpfulness

A question often raised in treatment studies is whether the intervention has influenced the participants' target behaviors, which in this case would be the acquisition of skills that were the focus of training in the intervention, along with their level of perceived helpfulness. Table 4 shows that there was a significant effect for treatment modality in all five of the skill categories for both utilization and helpfulness. At the post-assessment, CWC participants reported significantly more frequent use than those in TSC of skills involved in: (1)

Learning to relax and be more reflective about problems arising while completing caregiver tasks; (2) Monitoring both mood and behaviors, noting important contingencies and developing ways to implement desired changes; (3) Developing a more assertive communication style with family members and medical and allied health professionals; (4) Developing strategies for engaging in more pleasant activities; and (5) Obtaining more information about planning for the future as their loved one continued to deteriorate. There was no ethnicity or treatment by ethnicity effect and none of the other interactions were significant. The effect of treatment on helpfulness was also highly significant for all five categories, and again there was no effect for ethnicity or for any of the interaction terms. As expected, the treatment effect was also highly significant when the categories were collapsed into a total score for utilization and for helpfulness.

We assumed that an increase in these skills would improve caregivers' ability to cope with the chronic stress of family caregiving. In order to examine this hypothesis more carefully, we calculated a score that reflects the maximal skill effectiveness of the skills learned (MSE), which is the cross product of the change scores for frequency of use and the level of helpfulness, summed across all item categories. Table 4 also shows the association of this composite MSE with change in the three symptom measures for both interventions. In TSC, none of the correlations between MSE and change in symptom measures was significant, whereas in CWC, two of the three correlations were significant and the third was a trend ($p < .06$). It appeared that the effect of treatment on symptom measures may be due in part to its effect on skill utilization and perceived helpfulness. We completed three tests of mediation using treatment as the independent variable and MSE as the mediator, with each symptom measure as the dependent variable. Sobel's method (1982) was used to determine if this interpretation warranted further consideration. For the CES-D the z score was 2.24; for PSS the z score was 1.63; and for the RMBPC-CB, the z score was 2.00. Thus, skill effectiveness appears to be a significant mediator for two of the three symptom measures (z score > 1.96). It is noteworthy in this regard that the measure of internal consistency for PSS (the one symptom measure where skill effectiveness cannot be established) was only marginal.

Discussion

This study both replicates and extends the findings of prior intervention research with NHW and HL dementia family caregivers. Its major hypothesized finding of improvement in depressive symptoms, reduction in overall "life stress", and reduction in caregiving-specific stress among caregivers who received a CBT-based skill building psycho-educational intervention program (compared to those in a minimal contact control condition) are in close agreement with previous studies (e.g., the REACH investigations, cited earlier, and other studies reported in the review article on evidence based treatments for caregivers by Gallagher-Thompson and Coon 2007). This type of intervention appears to obtain consistent positive effects when compared to a control condition providing limited information and support. Further, as hypothesized, the pattern of results indicates that change was similar in both ethnic groups; this too is compatible with prior published reports (Eisdorfer et al. 2003; Gallagher-Thompson et al. 2003a, b).

Also worthy of mention in helping the reader to evaluate the results presented here is the fact that this study was designed to meet high standards for outcome research that are in common practice today in most clinical trials, but that were slow to be adopted in caregiving intervention research. These include: random assignment of caregivers to treatment; employment of frequently-used, psychometrically sound outcome measures; and recruitment of adequate sample sizes to detect between-group differences. These guidelines were first discussed more than a decade ago when reviews of the then-extant intervention literature led researchers to entreat us to aim for a much higher standard of quality (cf. Knight et al. 1993). This point has been made again, very recently (Lopez et al. 2007).

Another index of the success of an intervention study is its drop-out rate: how many caregivers discontinued during the intervention itself? In this study, the overall drop-out rate was about 16%, with no significant differences by condition or by ethnicity. This is comparable to other studies with ethnically diverse caregivers—e.g., in the second REACH project post assessments were obtained on about 80% of Hispanic/Latino and 82% of Caucasian/White caregivers (drop-out rates of about 20% and 18%, respectively).

This investigation extends prior research by introducing a scale for studying possible mediators between treatment and outcome measures. Our choice for a mediator was a variable that combined skill utilization and perceived helpfulness. This measure was constructed to reflect skills practiced in CWC but only mentioned in the TSC. Findings indicated substantial differential change between the two intervention conditions from pre to post on both frequency and helpfulness of each skill inquired about. Caregivers in CWC reported greater increases in both use and perceived helpfulness of all the strategies asked about (compared to those in TSC), suggesting that this CBT-based intervention is having at least some of its effects through the mechanism of skill utilization. This is consistent with what is reported in the general CBT literature (Barber and DeRubeis 1989; Beck 1995; Ingram 2007). To our knowledge this is the first study that has attempted to investigate this effect in dementia family caregivers.

The five sub-scales of the SUQ were found to have acceptable reliability as indexed by good internal consistency, as well as to be face valid when pilot tested with a group of experienced CBT therapists. While it can be argued that more research is needed to develop a scale with optimal validity and reliability to measure the constructs of “skill acquisition, frequency of use and helpfulness” this measure represents an initial attempt that permits us at least to grossly evaluate the phenomenon of interest. It also permitted us to explore whether or not *change* in frequency of use, and helpfulness, of coping strategies was significantly correlated with *change* in the outcome measures and if so, if different relationships were found in intervention versus control conditions. This in fact was the case: a greater number of significant correlations were found for those in CWC compared to TSC. While these results should be viewed with some caution, they also should pave the way for further inquiry. It is our hope that this will be the first of many studies that will hone this measurement approach, and clarify what the mechanisms of change are that are operative in CBT-based intervention programs.

Several limitations of this study are worth noting. First, only women caregivers were recruited so it is not known whether similar results would obtain with men, who are now more often assuming caregiving responsibilities (Alzheimer's Association & National Alliance for Caregiving 2004). Second, we were limited to one group of ethnically diverse caregivers; future research needs to recruit other groups, since these results cannot be generalized beyond the specific ethnic group studied. Finally, only one post-assessment time of measurement occurred. It is important to know if treatment effects continue over time, so longer term follow-up should be done in future studies. It is noteworthy, however, that post measures were obtained about 2 months after completion of the intervention, and there was still was a substantial effect in the outcome measures and in the mediational analyses. Despite these limitations, this study adds to knowledge about the kinds of interventions that reduce psychological distress in family caregivers, and it suggests that one mechanism of action may be the adaptive coping skills acquired and used as a result of participating in a CBT-based program like this one.

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Table 1
Comparison of completers and dropouts on select sociodemographic characteristics of caregivers and care recipients grouped by ethnicity

	Non-Hispanic white (<i>n</i> = 95)				Hispanic/Latinas (<i>n</i> = 89)			
	Comp (<i>n</i> = 80) <i>M(SD)</i>	Drop (<i>n</i> = 15) <i>M(SD)</i>	<i>t</i>	<i>p</i>	Comp (<i>n</i> = 76) <i>M(SD)</i>	Drop (<i>n</i> = 13) <i>M(SD)</i>	<i>t</i>	<i>p</i>
Caregiver age	63.40 (13.66)	64.13 (12.47)	-0.20	.845	51.45 (11.55)	53.77 (11.86)	-0.67	.506
Caregiver years of education	15.28 (2.03)	14.69 (2.55)	1.01	.315	10.66 (4.58)	8.85 (4.76)	1.31	.193
Caregiver months of caregiving	48.99 (33.95)	64.13 (81.86)	-1.22	.224	48.58 (52.07)	69.23 (37.04)	-1.37	.175
Caregiver Hrs. per day Providing care	9.38 (6.76)	6.94 (4.91)	1.37	.174	11.95 (7.92)	9.69 (4.89)	1.00	.324
Caregiver CESD	14.16 (10.06)	15.13 (9.78)	-0.35	.730	15.07 (13.28)	16.08 (11.22)	-0.26	.797
Caregiving-specific stress	1.69 (0.80)	1.27 (0.97)	1.86	.067	1.30 (1.02)	1.06 (0.78)	0.81	.423
Caregiver FSQ	3.32 (1.65)	2.75 (1.18)	1.31	.194	3.30 (2.00)	3.31 (1.75)	-0.01	.993
Care recipient (CR) Age	80.41 (7.42)	83.94 (5.95)	-1.79	.077	77.88 (9.59)	81.54 (9.98)	-1.26	.210
CR MMSE	16.15 (8.74)	12.1379 (8.43)	1.70	.094	12.97 (7.63)	9.46 (7.10)	1.55	.125
CR Total ADL & IADL	10.07 (3.41)	10.38 (3.12)	-0.34	.738	11.78 (2.91)	12.28 (3.04)	-0.57	.573

	<i>n</i> (%)	<i>n</i> (%)	χ^2	<i>p</i>	<i>n</i> (%)	<i>n</i> (%)	χ^2	<i>p</i>
Caregiver/CR relationship								
Spouse	43 (53.8)	7 (46.7)	0.53	.465	18 (23.7)	2 (15.4)	0.44	.508
Non-spouse	37 (46.3)	8 (53.3)			58 (76.3)	11 (84.6)		
Care receiver lives with caregiver								
No	19 (23.8)	4 (27.0)	5.33	.255 ^a	18 (23.7)	2 (15.4)	0.44	.508
Yes	61 (76.3)	11 (73.0)			58 (76.3)	11 (84.6)		
Caregiver marital status								
Single	4 (5.0)	2 (13.3)	5.33	.255	18 (23.7)	2 (15.4)	1.30	.730
Married	62 (77.5)	10 (66.7)	df = 4		47 (61.8)	8 (61.5)	df = 4	
Widowed	2 (2.5)	2 (13.3)			0	0		
Divorced	11 (13.8)	1 (6.7)			9 (11.8)	2 (15.4)		
Separated	1 (1.3)	0 (0.0)			2 (2.6)	1 (7.7)		
Caregiver income								
Less than 30K	20 (25.0)	4 (26.7)	.000	1.00	45 (59.2)	5 (38.5)	1.94	.164
More than 30K	60 (75.0)	11 (73.3)			31 (40.8)	8 (61.5)		

Note: Comp = Participants who completed the study, Drop = participants who withdrew from the study

M Mean, *SD* Standard Deviation, *ADL* Activities of Daily Living Scale, *IADL* Instrumental Activities of Daily Living Scale, *FSQ* Total Community Services Utilized

Table 2
Summary of linear regression analyses for the effects of treatment on outcome measures

Dependent variables: post-treatment scale scores for outcome measures	ANOVA df = (6/177)		Effect of treatment on outcome measures ^a			
	<i>F</i>	<i>p</i>	<i>B</i> ^b	<i>SE</i>	<i>t</i>	<i>p</i>
Center for Epidemiology Studies—Depression Scale (CESD)	27.62	.000	−2.135	1.073	−1.990	.048
Perceived Stress Scale (PSS)	22.41	.000	−1.530	.760	−2.012	.046
Revised Memory and Behavior Problem Checklist—Conditional Bother Scale (RMBPC-CB)	22.94	.000	−.250	.092	−2.711	.007

^aIndependent variables included treatment, ethnicity, baseline psychological score (centred) and all interaction terms. Only treatment and baseline psychological score was significant. Tolerance for independent variables was >.90 for all three measures

^bUnstandardized coefficient beta, negative signifies greater improvement for CWC than for TSC, SE Standard Error of Measurement

Table 3
Means, SDs and Paired Mests of pre- and post-change for outcome measures grouped according to treatment condition and ethnicity

	Telephone support condition				Coping with caregiving class			
	Non-Hispanic White (<i>n</i> = 45)		Hispanic/Latina (<i>n</i> = 42)		Non-Hispanic White (<i>n</i> = 50)		Hispanic/Latina (<i>n</i> = 47)	
	Baseline <i>M</i> (<i>SD</i>)	Post <i>M</i> (<i>SD</i>)	Baseline <i>M</i> (<i>SD</i>)	Post <i>M</i> (<i>SD</i>)	Baseline <i>M</i> (<i>SD</i>)	Post <i>M</i> (<i>SD</i>)	Baseline <i>M</i> (<i>SD</i>)	Post <i>M</i> (<i>SD</i>)
CESD ^a	13.39 (9.42)	12.82 (9.59)	15.64 (13.60)	12.83 (10.31)	15.14 (10.46)	11.86 (9.90)	14.83 (12.47)	10.26 (9.98)
Perceived Stress Scale (PSS)	18.16 (6.67)	17.04 (6.17)	17.00 (7.79)	16.14 (6.97)	18.92 (6.98)	15.97 (6.49)	18.02 (7.91)	15.23 (7.24)
Conditional Bother Scale, RMBPC ^b	1.61 ^c (.64)	1.57 ^d (.65)	1.22 ^c (.93)	1.15 ^d (.84)	1.58 (.95)	1.24 (.84)	1.30 (1.05)	1.24 (.85)
Paired <i>t</i> -tests	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
CESD ^a	.463	.646	2.096	.042	3.076	.003	3.158	.003
PSS	1.382	.174	1.177	.246	4.275	.000	2.366	.022
Bother Scale ^b	.442	.651	.643	.542	2.622	.012	2.829	.007

Note: Last value brought forward for Ss who dropped out prior to post-treatment assessment

^aCenter for Epidemiology Studies—Depression

^bRevised Memory and Behavior Problem Checklist

^cComparison of ethnicity at baseline: $t(72.15) = 2.22, p = .03$; Equal variances not assumed

^dComparison of ethnicity at post: $t(77.06) = 2.60, p = .01$; Equal variances not assumed. No other ethnic differences obtained

Table 4
Summary of regression analysis for the effect of treatment on skill utilization categories,
and relation of change in skill effectiveness to outcome

Skill utilization categories	Effect of treatment ($n = 149$) ^a			
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Utilization				
Relaxation/reflection	.512	.099	5.176	.000
Change thoughts and behaviors	.324	.103	3.155	.002
Assertive communication style	.390	.164	2.387	.018
Engage in pleasant events	.284	.113	2.525	.013
Information on AD and EOL ^b	.240	.062	3.865	.000
Helpfulness				
Relaxation/reflection	.926	.140	6.613	.000
Change thoughts and behaviors	.812	.140	5.795	.000
Assertive communication style	.912	.229	3.985	.000
Engage in pleasant events	.480	.165	2.915	.004
Information on AD and EOL ^b	.302	.140	2.158	.033
Total sum of skill categories				
Utilization	1.772	.457	3.875	.000
Helpfulness	4.090	.690	5.931	.000
Maximal Skill Effectiveness (MSE)				
Skill utilization $\times$ helpfulness	60.670	11.79	5.158	.000
Relation of change in MSE to change in outcome measures				
Outcome measures	Telephone support ($N = 69$)		Coping class ($N = 80$)	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
CESD	.075	.542	.246	.028
PSS	.050	.683	.319	.004
RMBPC-CB	.001	.993	.214	.056

^aSeven Ss did not complete the Skill Utilization Scale

^bAD Advanced Directive, EOL End-of-life Issues