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A Comparison of Psychosocial Outcomes in Elderly Alzheimer's Caregivers and Non-Caregivers

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Abstract

Objectives—To conduct an analysis of the stress, coping, and mood consequences of Alzheimer's caregiving.

Design—Cross-sectional.

Setting—Community-based study.

Participants—Sample included 125 Alzheimer's caregivers and 60 demographically similar older adults with non-demented spouses (i.e., non-caregivers).

Measurements—We compared caregivers and non-caregivers on stress, coping, and mood outcomes. We also examined anti-depressant use within the caregiver sample. An emphasis was placed upon effect size differences, including Cohen's *d* as well as more clinically meaningful effect sizes.

Results—Caregivers were significantly more likely to endorse depressive symptoms and to meet clinically significant cutoff for depression (40% for caregivers; 5% for non-caregivers). Approximately 25% of caregivers reported taking anti-depressant medication, although 69% of these continued to experience significant symptoms of depression. Caregivers also utilized fewer positive coping and greater negative coping strategies relative to non-caregivers.

Conclusions—The number of caregivers will increase dramatically over the next two decades, and caregivers will likely seek care from primary care providers. We provide an overview of the psychological issues facing caregivers so that effective screening and treatment may be recommended.

OBJECTIVE

There is a healthcare storm on the horizon in the U.S. As the proportion of aging adults in the U.S. grows, so too will the country's healthcare needs. Currently, older Americans account for a quarter of all physician visits(1), a third of hospital stays(2)and prescriptions(3), and approximately 40% of emergency medical services(4). Despite this great need for medical services, there is an extremely disproportionate number of providers specializing in geriatrics. This shortage will need to be addressed as the Baby Boomer generation ages and requires more healthcare resources. In fact, it has been estimated that by

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2030, the need for geriatricians will be approximately 36,000, compared to just over 7,000 physicians certified in geriatric medicine as of 2007(5).

Alzheimer's disease (AD) will likely account for a significant amount in healthcare costs among older adults. Family caregivers to those suffering with AD constitute a valuable national health resource in that they provide approximately 70% of healthcare to AD patients in the U.S. and offer millions of unpaid hours to care for their loved-ones annually(6). However, a large body of literature suggests that the chronic stress associated with providing care to a loved one with AD can have a deleterious impact on physical and mental health. Indeed, caregiving has been associated with increased risk for illnesses and diseases(7) such as coronary heart disease(8, 9).

Because of these health consequences, caregivers use a substantial proportion of healthcare services. Compared to non-caregivers, caregivers make significantly more physician visits and use more prescribed medications(10). Schubert and colleagues(11)found that over a 6-month period, 24% of dementia caregivers had an emergency department visit or hospitalization, with depressed caregivers being at greatest risk. Perhaps the increased rate of service utilization among caregivers is due to increased mental and physical health morbidity, including increased risk of mortality compared to non-caregivers (12)and high rates of psychiatric problems including depression and anxiety (7, 13). For example, Dura and colleagues report that dementia caregivers are significantly more likely to have a depressive disorder compared to demographically matched non-caregivers (14). In a later study, children caregivers of parents with dementia were found to be significantly more likely to have depressive and anxiety disorder relative to non-caregivers (15). Russo and colleagues also report caregivers to have greater prevalence of psychiatric disorders than demographically matched non-caregivers (16). Regarding health outcomes, caregivers have been found to have increased inflammation (17)and compromised immune functioning (18)relative to non-caregivers. Further, caregiving status appears to be associated with greater concentrations of stress hormones and antibodies (19), and male caregivers appear at greater risk for coronary heart disease relative to male non-caregivers(20). A comprehensive comparison of dementia and non-dementia caregivers(21) found dementia caregivers provided significantly greater hours of care per day, managed more ADLs/IADLs, and reported greater emotional, physical, and financial strain. Finally, a review of caregiving literature summarizes the health risks associated with caregiving, including high rates of depression, anxiety, and physical health morbidity found in this population (22).

Although it is clear that caregivers are at increased risk for negative physical and mental health consequences, it is also important to investigate why and how many caregivers experience these outcomes. The purpose of this study is not to simply restate the problem of caregivers' emotional and psychiatric struggle, as has already been reported in the literature, but to identify areas in which caregivers particularly struggle. Identifying these areas may inform healthcare providers how best to assess risk for health consequences, and elucidate targets for treating caregiver distress. Specifically, we compared a sample of 125 Alzheimer's caregivers and 60 elderly non-caregivers on a variety of psychosocial outcomes encompassing stress, mood, and both positive and negative coping resources which are thought to play a role in the development of negative outcomes in caregivers(23)and ultimately greater utilization of healthcare services. These new data are intended to aid researchers and care providers in determining areas for assessing/screening for caregiver stress as well as for developing and utilizing effective treatments for caregivers to help weather this upcoming healthcare storm.

METHODS

Participants

Participants were 125 caregivers (CG) of spouses with AD and 60 participants married to non-demented spouses (i.e., non-caregivers; NC) enrolled in the Alzheimer's Caregiver Project at the University of California, San Diego (UCSD). The primary purpose of this study was to longitudinally evaluate psychological and physical health in caregivers of dementia patients and demographically similar non-caregivers. Because a greater proportion of caregivers were anticipated to place their spouses into long-term care and/or lose their spouses to death, two caregivers were recruited for every non-caregiving control to adequately power our longitudinal analyses. For the purposes of the present study, however, only baseline data are reported.

All participants were required to be aged 55 years or older and married to and residing with their spouses. In addition, CG were required to be caring for a spouse with a physician diagnosis of AD. All participants were community-dwelling (i.e., none resided in nursing homes or other long-term care facility). Caregivers were primarily recruited from the Alzheimer's Disease Research Center (ADRC) at the University of California San Diego, local support groups, and community health fairs. Non-caregivers were primarily recruited from senior centers, senior health fairs, and referrals from previously enrolled participants (i.e., "snowball" recruitment). To aid in achieving demographic equivalence/comparability, recruitment efforts for caregivers and non-caregivers focused on similar communities. During screening, all non-caregivers were queried regarding the health status of their spouses. If non-caregivers were caring for a spouse with any type of chronic illness they were excluded from the study.

Measures

Global Stress—Participants were administered the Role Overload scale (24), which asks participants to rate 4 items indicative of stress. A total score was created by summing responses to the 4 items. Coefficient alpha for the current sample was 0.82.

Care Receiver Behavior Disturbances and Distress—Behavior disturbances of spouses were assessed with the Revised Memory and Behavior Problem Checklist (RMBPC) (25, 26). Participants were asked the frequency with which their spouses exhibited 24 memory and behavior problems over the past week. A total score was created by summing the individual items. For the current sample, coefficient alpha was 0.90.

A second RMBPC subscale inquires about distress experienced from each of their spouse's memory and behavior problems. For each endorsed memory or behavior problem, participants indicated how much it bothered or upset them on a 5-point scale. A total distress score was created by summing responses to the items. Coefficient alpha for the current sample was 0.90.

Spouse Dementia Rating and Functional Decline—All participants were administered the Clinical Dementia Rating (CDR) scale (27). The CDR is a semi-structured interview in which participants rated memory and functional decline in their spouses. An overall score from 0–3 is assigned, with higher scores indicating greater dementia severity.

Participants also rated the extent to which their spouses depended on them for performing 15 activities or instrumental activities of daily living. A total score was created by summing individual responses. Coefficient alpha for the current sample was 0.95.

Depressive Symptoms—The 10-item version of the Center for Epidemiologic Studies – Depression (CES-D) scale (28) was used to assess depressive symptoms. Reliability for the current sample was 0.83. A score of 10 or greater is indicative of depression (28).

Positive and Negative Affect—We administered the Positive and Negative Affect Scale – Expanded form (PANAS-X) (29). The PANAS-X consists of the 20 mood adjectives from the original PANAS (30) and an additional 40 adjectives loading on a variety of affective states. For each adjective, participants rated the extent to which they experienced that mood over the past few weeks. Responses are scored for the following subscales: a) Positive Affect (PA; $\alpha = 0.88$), b) Joviality ($\alpha = 0.91$), c) Self-Assurance ($\alpha = 0.83$), d) Attentiveness ($\alpha = 0.73$), e) Negative Affect (NA; $\alpha = 0.87$), f) Fear ($\alpha = 0.85$), g) Hostility ($\alpha = 0.84$), h) Guilt ($\alpha = 0.85$), and i) Sadness ($\alpha = 0.88$). For each scale, total scores were calculated by summing individual items.

Coping—The Revised Ways of Coping Checklist (RWCC) (31) was used to assess a variety of coping strategies. For this scale, participants were asked to rate the extent to which they used 42 coping strategies to manage stress. Responses are then scored for the following five coping domains: a) Problem-focused coping ($\alpha = 0.83$), b) seeks social support ($\alpha = 0.85$), c) blames self ($\alpha = 0.64$), d) avoidance coping ($\alpha = 0.62$), and e) wishful thinking ($\alpha = 0.78$).

Religious Coping—Religious coping was assessed using the 3-item Positive Religious Coping scale described by Pargament (32). Participants rated the extent to which they used religion/religiosity to cope with life stresses. The 3 items were summed to create an overall score, and Cronbach's alpha for the current sample was 0.92.

Perceived Control—We used two measures to assess perceived control. The first was the Personal Mastery scale (24), which consists of 7 items inquiring about participants' beliefs that life circumstances are under their control. Individuals rated the extent to which they agreed or disagreed with each statement. Coefficient alpha for the scale was 0.84 for the current sample.

Participants also completed the 13-item Coping Self Efficacy scale (33). This scale lists a series of behaviors that people sometimes engage in to get through life problems, and asks participants to rate their confidence that they can perform the behavior. Three self-efficacy subscales are assessed: a) self-efficacy for using problem-focused coping ($\alpha = 0.88$), b) self-efficacy for stopping unpleasant thoughts ($\alpha = 0.91$), and c) self-efficacy for getting support ($\alpha = 0.77$).

Social Support—Participants completed the social support scale described by Pearlin and colleagues (24). This scale consists of 8 items assessing participants' level of perceived support from friends and family (e.g., “the people close to you let you know they care about you”). Items were summed to create an overall score. Coefficient alpha for this sample was 0.90.

Engagement in Pleasant Events—All participants completed a modified version of the Pleasant Events Scale – AD (PES-AD) (34). Participants rated the extent they engaged in 20 activities during the previous month. Coefficient alpha for this scale was 0.73. For each item, a follow-up question assessed the extent to which the activity was enjoyed. We calculated an ‘obtained pleasure’ score for each activity by multiplying the frequency score with the pleasure score. We then summed these values to create an overall ‘obtained pleasure’ score. Coefficient alpha for the ‘obtained pleasure’ scale was 0.82.

Activity Restriction—Participants completed the Activity Restriction scale (35), which assesses the extent to which participants felt restricted from engaging in 9 areas of social and recreational activity (e.g., visiting friends, working on hobbies). Items are summed to create an overall score, and coefficient alpha for the current sample was 0.85.

Statistical Analyses

CG and NC differences on our outcome variables were compared using Pearson χ^2 tests for categorical variables and independent samples *t* tests for continuous variables. To determine statistical significance we adjusted our alpha level to $p = .001$ to account for multiple testing. In addition to significance comparisons, we present the Cohen's *d* effect size for all continuous outcomes (36). Cohen's *d* is a common measure of effect size representing the difference between two means divided by their pooled standard deviation (36). Effect sizes of 0.2, 0.5, and 0.8 are considered small, medium, and large, respectively (36). Finally, for easier interpretation, outcome variables were summarized into 5 domains: a) Stress, b) mood/affect, c) coping/resource, d) negative coping, and d) health. Mean effect sizes for these domains were presented using the more clinically meaningful Probabilistic Index effect size [$P(X>Y)$] (37). In the present study, $P(X>Y)$ represents the probability that a randomly selected CG has a worse outcome than a NC in the particular outcome. Thus, a value of .68 indicates that when comparing a randomly selected CG against a randomly selected NC, 68% of the time the CG would have a worse outcome.

RESULTS

Participants

Demographic characteristics of CG and NC are presented in Table 1. As seen in the table, CG and NC were demographically similar in all respects except race/ethnicity, in which a greater proportion of NC was minority. As expected, significant group differences existed for CDR scores ($t = 17.46$, $df = 182$, $p < .001$).

Psychosocial Outcomes

Group comparisons on psychosocial outcome domains are presented in Table 1. As seen, CG and NC differed on a number of outcomes. Specifically, CG endorsed greater levels of global stress and greater exposure to behavioral and functional stressors on the part of their spouses (i.e., memory, behavioral, and ADL/IADL outcomes). Mean effect size (Cohen's *d*) for our three stress outcomes was 2.03, and for $P(X>Y)$, there was an estimated 93.7% probability that a randomly chosen caregiver experienced greater stressors than a randomly chosen non-caregiver.

When examining mood/affect variables, CG endorsed significantly greater depressive symptoms, as measured by the CESD, as well as significantly higher NA, fear, hostility, and sadness. In addition, CG were 12.67 times more likely than NC to score 10 or above on the CESD. With regard to PA, CG were more likely to report less PA and joviality relative to NC. Within the mood/affective domain, effect sizes ranged from 0.34 for guilt to 1.15 for depressive symptoms, with a mean effect size among all variables (excluding CESD ≥ 10) of 0.69. The probability of a randomly chosen caregiver experiencing significantly greater mood disturbance than a randomly chosen non-caregiver was 70.6%.

CG also reported significantly lower access to several psychological resources relative to NC, including social support, personal mastery, seeking social support, pleasant activities, self-efficacy for problem-focused coping, and self-efficacy for getting social support. However, no group differences were observed for use of problem-focused coping, positive religious coping, and self-efficacy for stopping unpleasant thoughts. The mean effect size

for positive coping/resources was 0.56 (range = 0.10–1.09). The corresponding mean probabilistic index for positive coping/resources was 61.3%.

In the negative coping range, CG reported significantly greater activity restriction than NC. The mean effect size for these 4 variables was 0.53, ranging from –0.03 for blames self to 1.31 for activity restriction. The mean probabilistic index for this domain was 64.8%.

Exploratory Analyses – Gender Effects Among Caregivers

Literature suggests that male and female caregivers experience the caregiving role differently and thus may report different mood, coping, and health outcomes. Therefore, we conducted a series of exploratory analyses to examine gender differences in our outcomes within the caregiving sample. Results of our analyses indicated that male caregivers reported significantly lower amounts of role overload (4.2 ± 2.6 vs 5.6 ± 3.3 ; $t = 2.22$, $df = 123$, $p = .029$), depressive symptoms (6.3 ± 5.0 vs 9.8 ± 5.9 ; $t = 3.12$, $df = 123$, $p = .002$), negative affect (15.9 ± 6.1 vs 18.8 ± 5.8 ; $t = 2.48$, $df = 123$, $p = .014$), and fear (8.7 ± 3.3 vs 10.5 ± 4.4 ; $t = 2.31$, $df = 123$, $p = .023$). In contrast, male caregivers reported significantly higher self-efficacy for using problem-focused coping ($t = -3.24$, $df = 123$, $p = .002$) and use of the negative coping strategy blaming self (2.7 ± 2.3 vs 1.9 ± 1.7 ; $t = -2.08$, $df = 122$, $p = .039$), and better subjective sleep quality ($t = 3.20$, $df = 123$, $p = .002$). All other outcomes were not significantly different.

Medication Use

Given such large differences in risk for depression in these two groups (40% for CG; 5% for NC), another important analysis is to evaluate the use of anti-depressant medications in the CG sample. This is important for two reasons. First, if utilization of anti-depressants falls below the rate of depression in this population, it suggests that some CG may not be receiving treatments that may be helpful for reducing their distress. Second, if CG are still depressed despite the use of anti-depressant medications, a number of actions could be taken (e.g., changing medications; increasing dose), but perhaps foremost among these might be referral for adjunct treatments such as psychosocial treatments for stress and/or depression (e.g., cognitive-behavior therapy; psycho-educational interventions; multi-component treatments).

Therefore, we made a chi-square comparison of anti-depressant use for CG and NC. Results indicated that 32 CG (25.6%) and 12 NC (20.0%) reported taking anti-depressant medications ($p = .40$). Thus, the percentage of CG taking anti-depressants was lower (25.6%) than the number who met the CESD cutoff for depression (40.0%). When looking within the CG sample, 22 of 32 CG (68.8%) who were taking anti-depressant medications were still above the CESD cutoff of 10. Perhaps of equal interest, 28 of 93 CG (30.1%) were above the CESD cutoff but were not taking anti-depressant medications.

CONCLUSIONS

This study compares a breadth of psychosocial outcomes in demographically similar CG and NC and highlights not only the many struggles that AD caregivers face, but also the many areas that care providers may intervene to improve caregivers' overall well-being. Indeed, few studies highlight caregiver/non-caregiver differences on the number of outcomes assessed in this study (~30 outcomes). While some of our outcomes overlap those presented in prior studies (e.g., depressive and anxiety symptoms), this study provides new comparisons never before presented in the literature (e.g., personal mastery, coping self-efficacy). Specifically, we indicate that CG are far more likely to suffer from depressive symptoms than NC, and are over 12 times as likely to meet or exceed the cutoff for

depression on the CESD. These findings are consistent with previous investigations observing high rates of depression among CG(38). CG also reported significantly greater experience of negative emotions such as fear, hostility, and sadness, as well as significantly fewer experiences of positive emotions. As for degradation of positive coping strategies, CG clearly report reduced utilization of strategies known to affect depression, such as engagement in pleasant events, seeking of social support, and a reduced sense of personal mastery and coping self-efficacy.

In addition to our examination of intermediary/coping factors, our study provides a comparison of medication use in this population. This comparison highlights some medically important areas in which CG may be underserved. Specifically, while 40% of our caregiving sample met our depression cutoff, only 25% were currently taking anti-depressant medications, suggesting that some CG with a need have not been prescribed these medications. A further examination revealed that 30% of CG meeting our cutoff for depression were not taking anti-depressant medications. We concede that some CG may have had access to medications but refused, others may have been prescribed medications but chose not to take them, and still others may not have visited a physician and therefore did not have opportunity to have medications prescribed. Therefore, we do not argue that 30% of CG are being under-served, only that a proportion may have need or desire for these medications and this need may not be met.

Further, the majority of CG taking anti-depressants (69%) continued to exceed the cutoff for depression. In this case, some may not be taking their medications as prescribed, some may need alternate dosing, some may have only recently been prescribed these medications and they have not had time to take effect, and some may need different anti-depressants altogether. Yet, while these explanations may account for some of this effect, they likely do not account for it entirely. Therefore, it seems plausible that for some CG, anti-depressant medication has not been fully successful for reducing depression because anti-depressants do not target the areas described in this manuscript, such as the positive coping/resource, negative coping, and stress domains. For these caregivers, additional treatments for depression, including psychosocial treatments, may be indicated.

Indeed, our study highlights a number of areas that may be useful treatment targets to improve well-being in caregivers. Specifically, we find that caregiving has a detrimental impact on positive coping/resource variables such as social support, personal mastery, engagement in pleasant events, and self-efficacy. Further, CG are significantly more likely to practice negative coping strategies such as wishful thinking, avoidance coping, and activity restriction. These can be easily targeted in psychosocial treatments and are likely to have beneficial impacts on depression. Targeting these intermediary factors may also have beneficial impacts to sleep and health outcomes as well, thereby extending their benefits to areas beyond distress. A number of existing treatments targeting these areas appear particularly well-suited for improving CG well-being. A recent review of empirically-based treatments for CG suggested that cognitive and behavioral treatments, psychoeducational-skill building treatments, and multi-component treatments can be classified as evidence-based treatments for caregiver distress(39). These treatments, to varying degrees, teach techniques for increasing problem-solving and stress-management skills, altering cognitions about caregiving, increasing pleasant events, utilizing social supports, and managing difficult patient behaviors.

A few limitations to our study should be disclosed. Ours was not an epidemiologic study. Rather than selecting participants at random from the community, all participants volunteered for this study as part of a longitudinal evaluation of health. Thus, our CG and NC samples may not perfectly reflect the greater CG and NC populations at large.

Nonetheless, to the extent that these samples were demographically similar to each other, we feel confident that differences observed in this study should be indicative of true differences and not an artifact of sampling bias. Thus, primary care providers should feel confident that CG they see truly are struggling with the coping and emotional issues described in this study.

Another limitation is that our study provides only a snapshot of CG/NC differences at one moment in time, thereby limiting our understanding of when in the caregiving process these detrimental effects are most likely to take place. Further, while differences in these domains are striking, there is still overlap between the samples, suggesting that some CG may not be experiencing negative outcomes. This study is not well-suited to explain why some individuals cope better or continue to live satisfying lives despite caregiving, and we strongly encourage research along these lines that may lead to a better understanding of how to prevent psychiatric morbidity among CG.

A third limitation is the representativeness of our sample to the U.S. population as a whole. In particular, while we feel comfortable with our sample's age and gender breakdown, it was overwhelmingly Caucasian and well-educated. A number of studies have suggested that culture contributes a significant influence on the experience and consequences of care giving (40), and examination of caregiver/non-caregiver differences in other ethnic/cultural groups may yield different results than presented in this study.

In sum, the current investigation is the first of its kind to examine differences between CG and NC on such a broad variety of psychosocial outcomes. CG reported having higher levels of perceived burden and objective stressors associated with their spouses' caregiving demands, poorer mood and higher rates of depression, and poorer coping. In particular, we highlight the many coping and behavioral changes that may occur among CG that may predispose them to greater risk for depression. Indeed, 40% of CG compared to 5% of NC reported significant depressive symptoms. Furthermore, a large proportion of CG with significant symptoms of depression was not being treated with antidepressants, and for those who were, a large proportion remained depressed. Overall, our findings underscore the many areas in which CG struggle, but also highlight areas that care providers may assess and intervene to improve caregivers' overall well-being.

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References

1. Hing, E.; Cherry, D.; Woodwell, B. Advance data from vital and health statistics. Hyattsville, MD: National Center for Health Statistics; 2006. National ambulatory medical care survey: 2004 summary.
2. Merrill, C.; Elixhauser, A. Hospitalization in the United States, 2002: HCUP fact book no. 6. Rockville, MD: AHRQ; 2005.
3. Growth in drug spending for the elderly, 1992–2010. Washington, DC: Families USA; 2000. Cost overdose.
4. Shah M, Bazarian J, Lerner E, et al. The epidemiology of emergency medical services use by older adults: An analysis of the National Hospital Ambulatory Medical Care Survey. *Acad Emerg Med*. 2007; 14:441–447. [PubMed: 17456555]
5. Retooling for an Aging America. Institute of Medicine Report, Executive Summary. 2008. Building the Health Care Workforce for Older Americans.

6. Alzheimer's Disease International. World Alzheimer report 2010: The global impact of dementia. London: Alzheimer's Disease International; 2010.
7. Schulz R, Visintainer P, Williamson GM. Psychiatric and physical morbidity effects of caregiving. *J Gerontol*. 1990; 45:P181–191. [PubMed: 2144310]
8. von Kanel R, Mausbach BT, Patterson TL, et al. Increased Framingham Coronary Heart Disease Risk Score in dementia caregivers relative to non-caregiving controls. *Gerontology*. 2008; 54:131–137. [PubMed: 18204247]
9. Vitaliano PP, Scanlan JM, Zhang J, et al. A path model of chronic stress, the metabolic syndrome, and coronary heart disease. *Psychosom Med*. 2002; 64:418–435. [PubMed: 12021416]
10. Haley W, Levine E, Brown S, et al. Psychological, social, and health consequences of caring for a relative with senile dementia. *J Am Geriatr Soc*. 1987; 35:405–411. [PubMed: 3571789]
11. Schubert C, Boustani M, Callahan C, et al. Acute care utilization by dementia caregivers within urban primary care practices. *J Gen Intern Med*. 2008; 23:1736–1740. [PubMed: 18690489]
12. Schulz R, Beach SR. Caregiving as a risk factor for mortality: the Caregiver Health Effects Study. *JAMA*. 1999; 282:2215–2219. [PubMed: 10605972]
13. Mahoney R, Regan C, Katona C, et al. Anxiety and depression in family caregivers of people with Alzheimer disease: the LASER-AD study. *Am J Geriatr Psychiatry*. 2005; 13:795–801. [PubMed: 16166409]
14. Dura JR, Stukenberg KW, Kiecolt-Glaser JK. Chronic stress and depressive disorders in older adults. *Journal of abnormal psychology*. 1990; 99:284–290. [PubMed: 2212279]
15. Dura JR, Stukenberg KW, Kiecolt-Glaser JK. Anxiety and depressive disorders in adult children caring for demented parents. 1991; 6:467–473.
16. Russo J, Vitaliano PP, Brewer DD, et al. Psychiatric disorders in spouse caregivers of care recipients with Alzheimer's disease and matched controls: a diathesis-stress model of psychopathology. *Journal of abnormal psychology*. 1995; 104:197–204. [PubMed: 7897043]
17. Kiecolt-Glaser JK, Preacher KJ, MacCallum RC, et al. Chronic stress and age-related increases in the proinflammatory cytokine IL-6. *Proc Natl Acad Sci USA*. 2003; 100:9090–9095. [PubMed: 12840146]
18. Kiecolt-Glaser JK, Glaser R, Gravenstein S, et al. Chronic stress alters the immune response to influenza virus vaccine in older adults. *Proc Natl Acad Sci U S A*. 1996; 93:3043–3047. [PubMed: 8610165]
19. Vitaliano PP, Zhang J, Scanlan JM. Is caregiving hazardous to one's physical health? A meta-analysis. *Psychol Bull*. 2003; 129:946–972. [PubMed: 14599289]
20. Vitaliano PP, Scanlan JM, Zhang J, et al. A path model of chronic stress, the metabolic syndrome, and coronary heart disease. *Psychosom Med*. 2002; 64:418–435. [PubMed: 12021416]
21. Ory MG, Hoffman RR 3rd, Yee JL, et al. Prevalence and impact of caregiving: A detailed comparison between dementia and nondementia caregivers. *Gerontologist*. 1999; 39:177–185. [PubMed: 10224714]
22. Schulz R, Martire LM. Family caregiving of persons with dementia: prevalence, health effects, and support strategies. *Am J Geriatr Psychiatry*. 2004; 12:240–249. [PubMed: 15126224]
23. Pearlin LI, Mullan JT, Semple SJ, et al. Caregiving and the stress process: an overview of concepts and their measures. *Gerontologist*. 1990; 5:583–594. [PubMed: 2276631]
24. Pearlin LI, Mullan JT, Semple SJ, et al. Caregiving and the stress process: An overview of concepts and their measures. *Gerontologist*. 1990; 30:583–594. [PubMed: 2276631]
25. Roth DL, Burgio LD, Gitlin LN, et al. Psychometric analysis of the Revised Memory and Behavior Problems Checklist: factor structure of occurrence and reaction ratings. *Psychol Aging*. 2003; 18:906–915. [PubMed: 14692875]
26. Teri L, Truax P, Logsdon R, et al. Assessment of behavioral problems in dementia: The revised memory and behavior problems checklist. *Psychol Aging*. 1992; 7:622–631. [PubMed: 1466831]
27. Morris JC. The Clinical Dementia Rating (CDR): Current version and scoring rules. *Neurology*. 1993; 43:2412–2414. [PubMed: 8232972]
28. Andresen EM, Malmgren JA, Carter WB, et al. Screening for depression in well older adults: Evaluation of a short form of the CES-D. *Am J Prev Med*. 1994; 10:77–84. [PubMed: 8037935]

29. Watson, D.; Clark, L.A. Manual for the Positive and Negative Affect Schedule -Expanded Form. Iowa City, IA: University of Iowa; 1999.
30. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: The PANAS scales. *J Pers Soc Psychol.* 1988; 54:1063–1070. [PubMed: 3397865]
31. Vitaliano P, Russo J, Carr JE. The Ways of Coping Checklist: Revision and psychometric properties. *Multivariate Behav Res.* 1985; 20:3–26.
32. Pargament, KI. Multidimensional Measurement of Religiousness, Spirituality for Use in Health Research: A Report of the Fetzer Institute and the National Institute on Aging Working Group. Kalamazoo, MI: Fetzer Institute; 2003. Religious/Spiritual Coping; p. 43-56.
33. Chesney MA, Neilands TB, Chambers DB, et al. A validity and reliability study of the coping self-efficacy scale. *Br J Health Psychol.* 2006; 11:421–437. [PubMed: 16870053]
34. Teri L, Logsdon RG. Identifying pleasant activities for Alzheimer's disease patients: the pleasant events schedule-AD. *Gerontologist.* 1991; 31:124–127. [PubMed: 2007468]
35. Williamson GM, Schulz R. Physical illness and symptoms of depression among elderly outpatients. *Psychol Aging.* 1992; 7:343–351. [PubMed: 1388854]
36. Cohen J. A power primer. *Psychol Bull.* 1992; 112:155–159. [PubMed: 19565683]
37. Acion L, Peterson JJ, Temple S, et al. Probabilistic index: an intuitive non-parametric approach to measuring the size of treatment effects. 2006; 25:591–602.
38. Schulz R, O'Brien AT, Bookwala J, et al. Psychiatric and physical morbidity effects of dementia caregiving: Prevalence, correlates, and causes. *Gerontologist.* 1995; 35:771–791. [PubMed: 8557205]
39. Gallagher-Thompson D, Coon DW. Evidence-based psychological treatments for distress in family caregivers of older adults. *Psychol Aging.* 2007; 22:37–51. [PubMed: 17385981]
40. Mausbach BT, Coon DW, Depp C, et al. Ethnicity and time to institutionalization of dementia patients: a comparison of Latina and Caucasian female family caregivers. *J Am Geriatr Soc.* 2004; 52:1077–1084. [PubMed: 15209644]

Table 1

Characteristics of the Sample

Variable	Caregivers (N = 125)	Non-Caregivers (N = 60)	t, ² , Fisher's Exact, Mann-Whitney (df)	p-value
Age, M (SD)	74.2 (8.0)	74.5 (6.4)	-0.28 ^a (183)	.780
Female, n (%)	89 (71.2)	40 (66.7)	0.40 ^b (1)	.530
Education, n (%)				
< High School	3 (2.4)	2 (3.3)	3.01 ^b (2)	.222
High School/Some College	67 (53.6)	24 (40.0)		
College graduate	55 (44.0)	34 (56.7)		
Years Married, M (SD)	42.9 (16.5)	42.5 (16.2)	0.17 ^a (183)	.867
Race/Ethnicity, n (%)				
Caucasian, Non-Hispanic	109 (87.2)	45 (75.0)		.018 ^c
Hispanic/Latino	10 (8.0)	7 (11.7)		
African-American	3 (2.4)	2 (3.3)		
American Indian	2 (1.6)	0 (0.0)		
Asian/Pacific Islander	1 (0.8)	6 (10.0)		
Employment Status, n (%)				
Currently Employed Full/Part-time	20 (16.0)	8 (13.3)	0.22 ^b (1)	.636
Retired/Never Employed	105 (84.0)	52 (86.7)		
Monthly Household Income *, M (SD)	\$5,918 (\$5,630)	\$6,759 (\$5,637)	2,188 ^d (1)	.197
Care Receiver Dementia Rating, M (SD)	1.64 (0.65)	0.11 (0.25)	17.5 ^a (183)	<.001

Note.

^a = t-test;^b = chi-square test;^c = Fisher's Exact test;^d = Mann-Whitney U test.

* Data not available for 13 caregivers and 15 non-caregivers

Table 2

Comparison of Caregivers and Non-caregivers on Psychosocial Outcomes

Variable	Caregivers (N = 125)	Non-Caregivers (N = 60)	t, ²	p-value	Cohen's d	P(X>Y)
Stress Variables						
Role Overload [*]	5.19 (3.16)	1.37 (1.90)	8.64	<.001	1.36	.85
Problem Behaviors [*]	23.69 (9.49)	3.35(3.84)	15.97	<.001	2.52	.98
ADLs/IADLs [*]	35.93 (10.46)	16.40 (3.65)	14.04	<.001	2.22	.98
Mood/Affect Variables						
CESD, M (SD) [*]	8.78 (5.83)	2.67 (4.10)	7.30	<.001	1.15	.83
CESD 10, n (%) ⁺	50 (40.0)	3 (5.0)	24.30	<.001	2.43	
Taking Anti-depressant, n (%) ⁺	32 (25.6)	12 (20.0)	0.70	.402	--	
Negative Affect [*]	17.98 (6.04)	13.68 (5.13)	4.75	<.001	0.75	.75
Fear [*]	9.99 (4.16)	7.55 (2.98)	4.07	<.001	0.64	.71
Hostility [*]	10.59 (3.90)	8.98 (3.78)	2.65	.009	0.42	.65
Guilt [*]	8.99 (3.80)	7.82 (2.67)	2.15	.033	0.34	.58
Sadness [*]	10.85 (4.48)	7.03 (3.23)	5.90	<.001	0.93	.77
Positive Affect [*]	31.78 (7.45)	36.70 (6.59)	-4.36	<.001	-0.69	.70
Joviality [*]	23.43 (6.29)	29.35 (5.70)	-6.17	<.001	-0.97	.77
Self-Assurance [*]	15.60 (5.16)	18.08 (4.59)	-3.17	.002	-0.50	.65
Attentiveness [*]	14.36 (2.77)	15.68 (2.57)	-3.11	.002	-0.49	.65
Positive Coping/Resources						
Social Support [*]	25.87 (3.85)	27.90 (3.54)	-3.44	.001	-0.54	.65
Personal Mastery [*]	11.50 (3.29)	15.18 (3.63)	-6.90	<.001	-1.09	.79
Problem-Focused Coping [*]	22.42 (6.97)	21.72 (7.56)	0.62	.534	0.10	.49
Seeks Social Support [*]	7.08 (4.06)	4.85 (4.24)	3.44	.001	0.54	.34
Positive Religious Coping [*]	8.66 (5.98)	7.85 (6.22)	0.86	.394	0.13	.46
Pleasant Events [*]	30.81 (4.66)	34.68 (3.65)	-5.66	<.001	-0.89	.74
Obtained Pleasure [*]	55.36 (12.71)	65.78 (9.25)	-5.67	<.001	-0.89	.74

Variable	Caregivers (N = 125)	Non-Caregivers (N = 60)	t, ²	p-value	Cohen's d	P(X>Y)
Self-Efficacy Problem-Focused Coping [*]	43.91 (10.14)	49.50 (9.63)	-3.57	<.001	-0.56	.66
Self-Efficacy Stopping Unpleasant Thoughts [*]	27.02 (7.49)	28.85 (9.13)	-1.45	.149	-0.23	.58
Self-Efficacy Getting Support [*]	19.33 (6.90)	23.55 (5.66)	-4.12	<.001	-0.65	.68
Negative Coping						
Blames Self [†]	2.12 (1.92)	2.18 (1.72)	-0.21	.831	-0.03	.48
Wishful Thinking [*]	7.85 (4.80)	5.60 (4.13)	3.12	.002	0.49	.64
Avoidance Coping [*]	7.48 (4.02)	6.13 (3.41)	2.24	.026	0.35	.61
Activity Restriction [*]	15.99 (5.73)	9.47 (3.02)	8.28	<.001	1.31	.86

Note. P(X>Y) indicates the probability that a randomly selected caregiver has a worse outcome than a randomly selected non-caregiver.

^{*} df = 183;

[†] df = 1;

[‡] df = 182 (Comparison of 124 caregivers and 60 non-caregivers).