ORIGINAL ARTICLE

Well-being, appraisal, and coping in African-American and Caucasian dementia caregivers: findings from the REACH study


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Abstract

Although there has been considerable interest in racial differences in family caregiving for persons with dementia, most research to date has either ignored racial diversity or based conclusions on small numbers of caregivers drawn primarily from single site studies. The current study utilized participants from four sites of the REACH (Resources for Enhancing Alzheimer’s Caregiver Health) multi-site study to compare well-being, appraisal, and religious coping by race. African-American (n = 295) and Caucasian (n = 425) dementia caregivers from four cities (Birmingham, Memphis, Boston, and Philadelphia) were compared in their demographics, care recipient characteristics, mental and physical health, and psychosocial coping resources including appraisal and religious coping. African-American caregivers reported lower anxiety, better well-being, less use of psychotropic medications, more benign appraisals of stress and perceived benefits of caregiving, and greater religious coping and participation, than Caucasian caregivers. Self-rated health did not differ by race, but African-American caregivers reported more unhealthy behaviors than Caucasian caregivers. Some results were specific to site, possibly due to differences in recruitment strategies, inclusion/exclusion criteria, and regional differences. Adjustment for covariates, including caregiver relationship to the care recipient, gender, age, socioeconomic status, and care recipient behavioral problems, altered few of these differences. Results are discussed in terms of their relevance to psychosocial intervention programs for ethnically diverse caregivers.

Introduction

Although family caregiving for persons with dementia continues to be an extremely important topic in gerontological research, most dementia caregiving studies remain limited to Caucasian families. The available empirical research on race or ethnicity and caregiving is growing (Aranda & Knight, 1997; Connell & Gibson, 1997; Dilworth-Anderson, Williams & Gibson, 2002; Janevic & Connell, 2001), but few studies of diversity and caregiving focus on dementia caregiving, which is particularly stressful (Ory et al., 1999). The relative absence of minority caregivers in dementia caregiving studies is explained, in part, by the finding that minority caregivers are less likely than Caucasian caregivers to access services typically used to recruit research subjects such as specialized dementia clinics and Alzheimer’s support groups (Ballard et al., 1993). Empirical evidence, qualitative research and published clinical observations do suggest important differences in how African-American and Caucasian caregivers adapt to dementia, but there are a number of gaps and inconsistencies in the existing literature.

This paper reviews the current evidence related to race and dementia caregiving, proposes a set of hypotheses relating differences between African-American and Caucasian dementia caregivers to stress process variables, and then examines these variables using baseline data from a unique data set. The National Institute on Aging and the National Institute of Nursing Research recently sponsored a multi-site research project, the Resources for Enhancing Alzheimer’s Caregiver Health (REACH) multi-site study. REACH is a multi-year intervention program investigating the effectiveness of innovative...
interventions to support family caregivers that began in 1995 (Coon et al., 1999; Schulz et al., 2003; Winsiewski et al., 2003). It involves six sites across the country, four of which (Philadelphia, Memphis, Boston, and Birmingham) enrolled both African-American and Caucasian caregivers of persons with Alzheimer’s disease or a related dementia. The baseline information obtained from these four sites is presented here.

Differences in demographic characteristics are the most consistent findings in studies comparing African-American and Caucasian caregivers. Compared with Caucasian caregivers, African-American caregivers are less likely to be a spouse and more likely to be an extended relative. Caucasian caregivers are more likely to be married, older, of higher socioeconomic status and report the desire to institutionalize more so than African-American caregivers (Dilworth-Anderson et al., 2002).

Many comparative studies of psychological distress report less depression, burden, and stress among African-American caregivers (Aranda & Knight, 1997; Connell & Gibson, 1997; Haley et al., 1995; Hinrichsen & Ramirez, 1992; Lawton et al., 1992), even after accounting for other demographic differences or in comparison with demographically equated non-caregiving controls (Haley et al., 1995; Lawton et al., 1992; Stueve et al., 1997). However, results have not been uniform and have been criticized because previous studies tend to have serious methodological problems, and lack an orienting theoretical framework (Dilworth-Anderson et al., 2002; Gonzales et al., 1995; Janevic & Connell, 2001). It should also be noted that few studies comparing White and African-American caregivers are based on representative samples, so conclusions from the existing literature should be viewed with caution (Dilworth-Anderson et al., 2002). Other studies report no differences between the two groups along these dimensions, although outcomes contributing to perceived burden are found to differ (Knight & McCallum, 1998; Wood & Parham, 1990; Cox, 1995; Calderon & Tennstedt, 1998). Positive indicators of well-being have been less widely studied, but Haley et al. (1995) found that Caucasian caregivers had lower life satisfaction than African-American caregivers, and longitudinal analyses (Roth et al., 2001) found that Caucasian caregivers’ life satisfaction declined over time while African-American caregivers were stable on this variable.

In terms of physical health, research shows that caregiving can lead to lower self-rated health, poor immune functioning, decrements in health behavior (Haley & Bailey, 1999), and even higher risk of mortality (Schulz & Beach, 1999), and that dementia caregiving is especially burdensome (Ory et al., 1999). In the only known study to date comparing the physical health of Caucasian and African-American dementia caregivers and non-caregivers, Haley and colleagues (1995) found that African-American caregivers and non-caregivers reported poorer self-rated health than their Caucasian counterparts. In a longitudinal follow-up (Roth et al., 2001) both African-American and Caucasian caregivers showed worsening physical health symptoms over time, while non-caregivers showed stability.

Caregiver appraisals of stress and coping responses, particularly religious coping, have also been compared in African-American and Caucasian caregivers. Appraisals are cognitive interpretations of stressors that represent an internal coping resource. The studies that compare appraisals of African-American and Caucasian caregivers generally show that African-American caregivers report less subjective upset with patient self-care and behavioral problems and burden than Caucasian caregivers (Haley et al., 1996; Lawton et al., 1992; Miller et al., 1995; Morycz et al., 1987; Macera et al., 1992). Additionally, Haley et al. (1996) found that these appraisals mediated differences in depression between Caucasian and African-American caregivers.

An important and understudied appraisal is that of perceived benefits of caregiving. An emerging research literature suggests that caregiver stress and burden may be counterbalanced in part by perceptions of positive aspects of caregiving (e.g., Kramer, 1993; 1997; Lawton et al., 1991; 1992; Miller & Lawton, 1997). The few studies comparing positive perceptions of caregiving between African-American and Caucasian caregivers show that African-Americans report higher levels of caregiver satisfaction (Lawton et al., 1992), more affirmative traditional caregiving ideology (Lawton et al., 1992), higher self-efficacy (Haley et al., 1996) and greater self-gain or perceived rewards (Foley et al., 2002; Picot et al., 1997) than their Caucasian counterparts.

A growing body of research shows strong evidence that religion and religious coping afford both physical and mental health benefits for diverse groups of people (see Ellison & Levin, 1998 and Larson et al., 1992 for recent reviews). Several articles suggest that African-American caregivers may use prayer, faith, or religion as a primary coping response to caregiving stress (Dilworth-Anderson et al., 2002; Segall & Wykle, 1988–1989).

Comparative studies have generally shown that African-American caregivers exhibit more spiritual appraisal and higher levels of religiosity (Adams et al., 2002) or report more religious coping than their Caucasian counterparts (Wood & Parham, 1990; Wykle & Segall, 1991), although Haley and his colleagues (1996) did not find racial differences in the use of prayer and church attendance.

Despite a long history of caregiving research, several issues deserve attention in evaluating findings.
about racial differences in dementia caregiving. Most projects looking at diversity and dementia caregiving have used small sample sizes, since it is difficult to recruit large numbers of minority dementia caregivers from a single site. Second, many studies have used a limited range of measures and have not used a theoretical framework to guide selection of measures. Given small sample sizes, dementia caregiving studies addressing diversity have been limited in their ability to address potential confounds and covariates such as socioeconomic status (SES), care-recipient impairment, and relationship to the care recipient.

The REACH program offers several major advantages over previous studies for comparing African-American and Caucasian caregivers. First, the multi-site sample represents a broader geographic distribution of African-American and Caucasian caregivers (South and Northeast). REACH has a clearly articulated theoretical framework (Schulz et al., 2000) rooted in stress process models of caregiving, which have also shown utility in understanding racial/ethnic diversity and caregiving (Haley et al., 1996). While the present paper does not evaluate the theoretical framework, it has been used in identifying conceptually important variables for comparison across race. A broad range and comprehensive set of measures of care recipient impairment, psychological adjustment, and physical health, as well as measures of appraisal and religious coping, are included. Finally, the sample is large enough to permit follow-up covariance analyses to ascertain whether racial differences are maintained after considering potential confounding variables.

The data reported in this study allow a comparison of African-American and Caucasian caregivers across a wide range of measures of mental and physical health, and potential coping resources. Based on the research reviewed above, we propose four predictions:

1. On measures of depression, well-being, and anxiety, African-American caregivers will report lower levels of psychological distress in comparison to Caucasian caregivers, and use fewer psychotropic medications.
2. African-American caregivers will report poorer health status and more unhealthy behaviors than Caucasian caregivers.
3. Subjective appraisals of caregiving stressors will differ by race, with African-American caregivers reporting more benign subjective appraisals. Specifically, African-American caregivers will report lower levels of subjective upset in managing patient behavioral problems and higher levels of subjective benefit from caregiving than Caucasian caregivers.
4. We predict higher levels of religious coping and behaviors in African-American caregivers than in Caucasian caregivers.

Methods

Participants

As noted, the study sample is a subset of the REACH study and comprises 720 primary family caregivers enrolled at the four sites that specifically recruited Caucasian (n = 425) and African-American (n = 295) participants. Research staff collected data during the baseline in-home interviews.

Inclusion/exclusion criteria Caregivers had to be at least 21 years of age, be a family member of the care recipient, have a telephone, plan to remain in the area for the duration of the study, have been caregiving for at least six months, and provide at least four hours of care per day. Caregivers were excluded if they did not live with the care recipient, were undergoing chemotherapy or radiation for cancer, had had more than three hospitalizations in the past year, were terminally ill, or were unwilling to participate in the study. Care recipients had to have a Mini Mental State Exam Score (MMSE; Folstein et al., 1975) less than or equal to 23 or have a documented diagnosis of dementia and be unable to perform two or more Instrumental Activities of Daily Living (IADLs; Lawton & Brody, 1969) or one or more Activities of Daily Living (ADLs; Katz et al., 1963). In addition, two sites also required that the caregiver report at least one (Boston) or two (Birmingham) behavioral problems. Care recipients were excluded if undergoing chemotherapy or radiation for cancer, had more than three hospitalizations in the past year, or if nursing home admission was planned within the next six months.

Recruitment

The study sites used a wide range of recruitment strategies but had in common media paid and free announcements using television, radio, and newspaper outlets. Referral through memory disorders clinics or primary care clinics were also used by the four sites. Details about the overall recruitment efforts are reported in detail elsewhere (Nichols et al., 2000; Tarlow & Mahoney, 2000). Recruitment approaches specific to the sites are detailed in a recently published set of articles describing site-specific outcomes of the REACH interventions. Birmingham utilized home health care agencies for recruitment in addition to the approaches noted above (Burgio et al., 2003). Boston used the approaches noted above but due to their unique environment, most referrals came from academic medical centers (Mahoney et al., 2003). Memphis recruited from primary care medical settings in collaboration with physicians with diverse medical specialties (Burns et al., 2003). Philadelphia recruited participants primarily through a local area agency on aging (Gitlin et al., 2003). Site differences are typical in multi-site trials due to a variety of regional
patterns/differences and varieties of recruitment approaches necessary in different communities (Kraemer, 2000), and this was a special issue in REACH since the study targeted minority dementia caregivers who are typically difficult to recruit.

**Measures**

**Demographic characteristics** We examined caregivers’ age, sex, marital status, primary racial or ethnic group (using census categories), years of formal education, employment status, household income and relationship to the care recipient. Caregivers were asked to identify their and their spouse’s primary occupation that both had for most of their working life. For those that had more than one job at a given time, they were asked to report the job that was their primary source of income. Jobs were coded using NAM-Powers Socioeconomic Status scores for occupations (Nam & Terrie, 1988). Scores range from 0–100, with service sector jobs scoring on the lower end and professional/technical positions scoring at the high end. The maximum NAM-powers job score in the couple was used. The care recipients’ cognitive status was assessed using the Mini-Mental Status Exam Score (MMSE; Folstein et al., 1975), which ranges between 0–30 wherein a lower score indicates more impairment. Finally caregivers were asked to report how many years they had been caregiving for this care recipient and how many hours per day they provided caregiving assistance.

**Caregiving stressors** We assessed caregiver responsibilities as well as the extent to which caregiver's reported disturbing behaviors. The seven-item Activities of Daily Living Scale (ADL; Katz et al., 1963) was used to assess the level of help care recipient required to bathe, dress above and below the waist, eat, use the toilet, groom, and transfer in and out of a bed or chair. The eight-item Instrumental Activities of Daily Living Scale (Lawton & Brody, 1969) assessed deficits in higher-level self-care abilities, such as the help needed to use the telephone, prepare meals, do housework, do the laundry, shop, take medications, travel, and manage finances. Response options were dichotomous, where 0 = no and 1 = help needed. If the caregiver reported that the care recipient (CR) did need help to perform an activity, they then were asked if they provided this help. The ‘yes’ responses to the items on the two scales were summed to yield two scores, total help needed to perform ADLs and IADLs. These were summed to form a single index of self-care impairment (α = 0.84). The Revised Memory and Behavior Problems Checklist (RMBPC; Teri et al., 1992) was used to assess the occurrence of each of 24 behavior problems. Response options ask whether or not the CR exhibited the behavior over the past week, with 0 = no and 1 = yes. A second scale records the caregiver’s appraisal of distress generated by the behaviors and will be discussed later under the construct of appraisal. One point is scored for each behavior that the caregiver notes is present. Higher scores indicate more numerous problem behaviors.

**Caregiver mental health** Depression was assessed with the Center for Epidemiological Studies Depression scale (CES-D) (Radloff, 1977). The CES-D is a 20-item measure that asks about the frequency with which respondents have experienced depressive symptoms within the past week. Response options range from 0–3 for each item. (0 = ‘rarely or none of the time [less than one day]’, 1 = ‘some or a little of the time [1–2 days]’, 2 = ‘occasionally or a moderate amount of time [3–4 days]’, and 3 = ‘most or all of the time [5–7 days]’), and higher scores indicate greater depression. This scale has been extensively used in large studies, including studies with older adult samples (Hertzog et al., 1990), and has been shown to be valid across age, socio-demographic groups. It has also been used in cross-cultural research (McDowell & Newell, 1996). In our sample, the CES-D had acceptable internal consistency (α = 0.717). Because of the importance of measuring not only negative emotional states, but also positive affect, we also utilized the four-item well-being subscale from the CES-D (Gatz & Hurwitz, 1990). Higher scores for the subscale indicate greater well-being. Cronbach’s alpha for the CES-D well-being subscale was 0.724. Anxiety was measured using the 10-item Spielberger State-Trait Personal Inventory (Spielberger et al., 1983). Respondents are asked how much they agree with each of the statements (e.g., I felt calm), reporting over the past week, with possible responses ranging from 1–4 of ‘not at all’, ‘somewhat’, ‘moderately’, and ‘very much’. High scores indicate more anxiety, and the 10-item scale has an α = 0.888. Caregivers’ self-report of medication usage was recorded by brand/generic name and coded as anti-depressant, anxiolytic and/or psychotropic medication according to the Instant Drug Index (Aloisi, 1998).

**Caregiver physical health** The physical health and perceived physical health of the caregiver measure consists of four items that assess perceived physical health (Ware et al., 1996). The first question queries the respondents’ self-rated perception of their health with response options of ‘poor’, ‘fair’, ‘good’, ‘very good’ and ‘excellent’ (1–5). The next three questions include ‘I seem to get sick a little easier than most people’; ‘I am as healthy as anyone I know’ and ‘I expect my health to get worse’. These questions have responses of ‘definitely false’, ‘mostly false’, ‘neither false nor true’, ‘mostly true’, ‘definitely true’ (1–5). Items were summed and higher scores indicate better health. This measure has an overall α = 0.715. Unhealthy behaviors were assessed by
five items that asked about caregivers’ over- or under-eating, drinking alcohol, lack of exercise, excessive weight gain, and smoking habits (Posner et al., 1993).

Appraisals The RMBPC’s second scale contains 24 questions that quantify how much the care recipient’s problem behaviors bother the caregiver. For each endorsed problem behavior on the RMBPC, caregivers respond how much they are bothered by it on a five-point scale (‘not at all’, ‘a little’, ‘moderately’, ‘very much’, ‘extremely’). The Behavioral Bother Score is the average bother rating for only those behaviors exhibited by the care recipient. The higher the score the more bothersome the caregiver appraises the behaviors to be. This approach to calculating appraisal has been used in previous analyses (Goode et al., 1998; Haley et al., 1996) and allows for computation of average appraisals of stressors independent of the number of stressors. In cases in which caregivers reported no behavior problems (three cases), appraisal scores were coded as missing values because we could not divide by a denominator of zero. The Positive Aspects of Caregiving Scale contains 11 items (Schulz et al., 1997) and is designed to assess the caregiver’s perception of benefits associated with the caregiving experience. The respondents are asked how much they agree with each of the statements (e.g., feeling useful, appreciated, or finding more meaning in life) on a five-point scale (‘disagree a lot’, ‘disagree a little’, ‘neither agree nor disagree’, ‘agree a little’, ‘agree a lot’). High scores indicate more positive appraisals, and the scale has an overall α of 0.906 in our sample.

Religious coping and behavior Three items were used to query the importance of religious faith or spirituality (0, not important to 4, very important) attendance at religious services or activities (1, never to 6 nearly every day) and the frequency of prayer or meditation (1, never to 6 nearly every day). These were analyzed as dichotomous variables, using meaningful cut points to aid in interpretation of results. Categories used for frequency of prayer were nearly every day versus less; for attendance at least a few times a week versus less; and for importance, very important versus less.

Data analysis

Initial comparisons assessed the extent to which the Caucasian and African-American caregivers and non-caregivers were comparable in demographic characteristics, patient characteristics, and objective stressors. Two (race) by four (site) ANOVA were completed for continuous variables. Categorical variables were examined via logistic regression or polytomous logistic regression, again using the 2 × 4 framework.

Analysis of covariance (ANCOVA), or related regression approaches, are commonly used as the primary analysis in studies comparing racial/ethnic groups, with statistical adjustment for variables such as income, education, and socioeconomic status, in an effort to equalize these factors across groups and to allow for examination of racial/ethnic differences independent of these factors. However, this usage of ANCOVA in this manner is controversial and may introduce serious problems. For example, if groups differ substantially on a covariate that is not strongly associated with the dependent variable, suppression effects can lead to significant group differences caused not by elimination of error variance, but by distorting the relationships being studied (Pedhazur, 1982). In addition, inclusion of collinear variables as independent variables in ANCOVA or regression can produce misleading conclusions, an issue that is particularly common in multiple-group designs such as ours in which the primary independent variable (race) and potential covariates (such as income, education, and socioeconomic status) are strongly associated (Rothman & Greenland, 1998). Thus, consistent with the approach used in some previous research in this area, (Haley et al., 1995), we utilized unadjusted analyses as our primary analytic strategy, but provided follow-up ANCOVAs to ascertain whether the unadjusted findings remain significant after covariate adjustment. For the primary analysis of the major continuous dependent variables, a two (race) by four (site) ANOVA was performed. We conducted secondary analyses with covariates for NAM-Powers, relationship (coded spouse/non-spouse), caregiver gender, caregiver age, and total memory and behavior problems, based on findings from the comparison of demographic and descriptive variables detailed below. These analyses were used only to ascertain whether the findings presented without covariates remained significant after covariance analyses were completed. Unadjusted means are presented in the tables. Post-hoc comparison of means was used to interpret interaction effects. For the analysis of the major categorical dependent variables, bivariate or discrete ordinal outcomes were created, with independent variables including race, site, and race by site, with logistic regression. Models were repeated adding in the covariates at a second step. We have utilized the unadjusted models as our primary analyses, but report covariance analyses to determine whether unadjusted effects remain significant after covariate adjustment.

Because the NAM-Powers, education, and income were strongly associated with each other, we utilized the NAM-Powers index alone to evaluate socioeconomic status. As we have described in a previous article (Haley et al., 1995), the NAM-Powers is advantageous in an older adult population (compared with income and/or education) in that the score does not decline with retirement, and since...
utilizing the highest score of the married couple more accurately describes the socioeconomic status of married persons in cases where one spouse has lower occupational and educational attainment.

Some continuous variables did not meet assumptions necessary for ANOVA, for reasons such as highly skewed distributions. In such cases, we either used bivariate outcomes (education, income) or transformations of the raw scores we report both the back-transformed mean (used for the analyses) and the raw scores for purposes of comparison to other studies. Adding one to the score and then taking the natural logarithm completed the transformation of the CES-D score. The transformation of the CES-D well-being subscale was computed by raising the score to the 1.5 power.

Finally, site differences typically emerge in multi-site trials due to varied regional patterns (e.g., Arnold et al., 1997; Kraemer, 2000) such as distinct health plans and formal care services that are often used as recruitment sources. Although site differences were not the focus of the current study, we did anticipate such differences and, therefore we included site as a variable in the analyses in order to reduce bias on other variables, and to increase the validity of the statistical analyses as well as the generalizability of the findings. Thus we report site differences where significant, but focus our attention on our primary interest, racial differences.

Results

Demographics and caregiving stressors

Demographic characteristics of Caucasian and African-American caregivers are shown in Table 1. Caucasian caregivers were generally older and more likely to be male, had higher socioeconomic status, were more likely to be married, were less likely to be employed, and more likely to be spouses of the care recipient than African-American caregivers. These results are consistent with results commonly reported in the caregiving literature. Across the two groups, caregivers are predominantly female and not currently employed.

Table 2 includes comparisons of care recipient characteristics and caregiving stressors by race. Compared with Caucasian care recipients, African-American care recipients were older, had lower MMSE scores, and their caregivers reported fewer behavior problems, but no significant racial differences were found on self-care impairment, years of caregiving, or hours of caregiving per day.

Caregiver well-being

Table 3 shows mental and physical health outcomes by Race. For total CES-D, there is a significant Race by Site interaction on the unadjusted analysis. Examination of means revealed that Caucasian caregivers were more depressed than African-American caregivers only at the Boston and Philadelphia sites. There were no significant effects for Race, or the Race by Site interaction, after covariate adjustment.

For the CES-D well-being subscale, there was a significant main effect for Race, with African-American caregivers showing higher well-being in an effect that is consistent across sites. The effect remained significant after covariate adjustment.

For anxiety, a main effect for Race (Caucasian caregivers had higher anxiety), and a significant Race by Site interaction were found. Examination of means showed that this effect of Caucasian caregivers having higher anxiety than African-American caregivers was significant only at the Philadelphia site. Covariate analyses removed the significance of the Race by Site interaction, but the main effect for Race remained significant. Caucasian caregivers had higher anxiety across sites. Thus across both sets of analyses, Caucasian caregivers had higher levels of anxiety than African-American caregivers.

For overall caregiver health there are no significant effects for Race. Logistic regression analysis was used to analyze presence of unhealthy behaviors, and as shown in Table 4, African-American caregivers were more likely than Caucasian caregivers to report unhealthy behaviors. This difference also remained significant after covariate adjustment.

Logistic regression was also used to analyze use of antidepressant, anxiolytic, and any psychotropic medications, as shown in Table 4. For all three of these items, significant effects were found for Race, with Caucasian caregivers more likely to use antidepressant, anxiolytic, or any psychotropic medication. These effects persisted after covariate analysis for antidepressant and any psychotropic medication. The difference for anxiolytic medications was no longer significant after adjustment for covariates.

Caregiver appraisal and religious coping

Table 3 shows caregiver appraisals, and Table 5 shows religious behavior and coping, by Race. The Behavioral Bother Score shows main effects for Race and Site. Caucasian caregivers show higher appraisals of bother than African-American caregivers, and in terms of the site effect, Birmingham had the highest, Boston the lowest, and Memphis and Philadelphia were intermediate. The Race and Site effects remained significant after covariate adjustment. In terms of perceived benefits of caregiving, there is a significant Race effect, with African-American caregivers showing the highest appraisals of positive aspects of caregiving, an effect that is retained after covariate adjustment.

For attending religious services, and importance of religion, shown in Table 5, there were significant
### Table 1. Caregiver demographic characteristics by caregiver race

<table>
<thead>
<tr>
<th>Race</th>
<th>Birmingham</th>
<th>Boston</th>
<th>Memphis</th>
<th>Philadelphia</th>
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<tbody>
<tr>
<td><strong>n</strong></td>
<td>80</td>
<td>79</td>
<td>143</td>
<td>123</td>
</tr>
<tr>
<td>Age Mean (SE)</td>
<td>66.4 (1.2)</td>
<td>63.2 (1.4)</td>
<td>66.4 (1.0)</td>
<td>64.1 (1.3)</td>
</tr>
<tr>
<td>Female (%)</td>
<td>75.0</td>
<td>77.2</td>
<td>73.4</td>
<td>71.5</td>
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<tr>
<td>Nam-Powers Mean (SE)</td>
<td>68.1 (2.1)</td>
<td>73.3 (2.1)</td>
<td>67.8 (1.8)</td>
<td>58.7 (2.1)</td>
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<tr>
<td>Education High School or more (%)</td>
<td>86.3</td>
<td>97.5</td>
<td>90.9</td>
<td>69.9</td>
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<tr>
<td>Income Above $20,000 (%)</td>
<td>76.3</td>
<td>73.7</td>
<td>77.5</td>
<td>53.7</td>
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<tr>
<td>Marital status Married (%)</td>
<td>78.7</td>
<td>75.9</td>
<td>89.5</td>
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<tr>
<td>Employment status Employed (%)</td>
<td>23.7</td>
<td>32.9</td>
<td>21.7</td>
<td>29.3</td>
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<tr>
<td>Relationship to care recipient Spouse (%)</td>
<td>63.8</td>
<td>64.6</td>
<td>67.1</td>
<td>50.4</td>
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### Table 2. Care recipient demographics and descriptive information by caregiver race

<table>
<thead>
<tr>
<th>Race</th>
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</tr>
<tr>
<td>Age mean (SE)</td>
<td>78.1 (0.9)</td>
<td>76.8 (0.9)</td>
<td>78.0 (0.6)</td>
<td>80.9 (0.7)</td>
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<td>MMSE Mean (SE)</td>
<td>14.5 (0.9)</td>
<td>11.5 (1.1)</td>
<td>12.9 (0.6)</td>
<td>12.8 (0.7)</td>
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<tr>
<td>#Self-care impairments Mean (SE)</td>
<td>10.4 (0.3)</td>
<td>10.7 (0.3)</td>
<td>10.7 (0.2)</td>
<td>11.3 (0.2)</td>
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<tr>
<td>#Problem behaviors Mean (SE)</td>
<td>11.0 (0.4)</td>
<td>9.3 (0.5)</td>
<td>10.3 (0.3)</td>
<td>10.2 (0.4)</td>
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<tr>
<td>Years caregiving Mean (SE)</td>
<td>6.7 (0.3)</td>
<td>4.5 (0.3)</td>
<td>3.8 (0.3)</td>
<td>4.7 (0.4)</td>
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<td>Hours/day care Mean (SE)</td>
<td>10.5 (0.7)</td>
<td>10.6 (0.7)</td>
<td>13.7 (0.6)</td>
<td>14.5 (0.7)</td>
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### Notes

1. Degrees of freedom: for F-tests, the degrees of freedom for all Race, Site and Interaction effects are 1,712; 3,712 and 3,712 respectively. For Wald Chi-squares, the degrees of freedom for all Race, Site and Interaction effects are 1, 3, and 3, respectively.

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### Table 3. Caregiver well-being, health, and appraisal by caregiver race

<table>
<thead>
<tr>
<th></th>
<th>Caucasians</th>
<th></th>
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<th>African-Americans</th>
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<th>Cov: P-Test/p-value&lt;sup&gt;a&lt;/sup&gt;</th>
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<td>122</td>
</tr>
<tr>
<td>Total CES-D</td>
<td>13.7</td>
<td>13.3</td>
<td>12.4</td>
<td>16.8</td>
<td>14.2</td>
<td>10.5</td>
<td>12.8</td>
<td>12.7</td>
</tr>
<tr>
<td>Back transformed</td>
<td>10.0 (1.1)</td>
<td>10.1 (1.1)</td>
<td>8.7 (0.9)</td>
<td>12.6 (1.1)</td>
<td>10.5 (1.3)</td>
<td>6.9 (2.4)</td>
<td>9.4 (1.0)</td>
<td>8.5 (1.0)</td>
</tr>
<tr>
<td>Raw Mean</td>
<td>8.9</td>
<td>8.5</td>
<td>8.9</td>
<td>8.0</td>
<td>9.8</td>
<td>9.5</td>
<td>9.3</td>
<td>9.6</td>
</tr>
<tr>
<td>Well-being</td>
<td>9.1 (0.3)</td>
<td>8.8 (0.3)</td>
<td>9.2 (0.3)</td>
<td>8.3 (0.3)</td>
<td>10.0 (0.3)</td>
<td>9.6 (0.6)</td>
<td>9.5 (0.3)</td>
<td>9.8 (0.3)</td>
</tr>
<tr>
<td>Back transformed</td>
<td>14.1 (0.4)</td>
<td>14.9 (0.4)</td>
<td>13.5 (0.3)</td>
<td>13.1 (0.3)</td>
<td>12.9 (0.5)</td>
<td>16.3 (0.6)</td>
<td>13.6 (0.3)</td>
<td>13.7 (0.4)</td>
</tr>
<tr>
<td>Anxiety score</td>
<td>20.6</td>
<td>20.9 (0.7)</td>
<td>20.3 (0.5)</td>
<td>22.7 (0.7)</td>
<td>20.6 (1.0)</td>
<td>18.6 (1.7)</td>
<td>18.9 (0.6)</td>
<td>18.9 (0.6)</td>
</tr>
<tr>
<td>Back transformed</td>
<td>0.16/0.69</td>
<td>4.24/0.01</td>
<td>7.31/0.54</td>
<td>4.79/&lt;0.01</td>
<td>0.27/0.05</td>
<td>0.73/0.54</td>
<td>2.77/0.05</td>
<td>0.19/0.90</td>
</tr>
<tr>
<td>Mean (SE)</td>
<td>1.7 (0.10)</td>
<td>1.3 (0.10)</td>
<td>1.5 (0.07)</td>
<td>1.7 (0.08)</td>
<td>1.5 (1.4)</td>
<td>0.9 (0.19)</td>
<td>1.2 (0.10)</td>
<td>1.2 (0.08)</td>
</tr>
<tr>
<td>Positive aspects</td>
<td>32.6 (1.1)</td>
<td>33.9 (0.9)</td>
<td>34.2 (0.7)</td>
<td>31.7 (0.8)</td>
<td>36.2 (1.1)</td>
<td>36.7 (1.5)</td>
<td>37.7 (0.8)</td>
<td>36.1 (0.7)</td>
</tr>
<tr>
<td>of caregiving</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>score Mean (SE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Degrees of freedom: the degrees of freedom for all Race, Site and Interaction effects are 1,712; 3,712 and 3,712 respectively. The degrees of freedom for all Cov: Race, Site and Interaction effects are 1, 701; 3,710 and 3,701, respectively. For each variable the upper line indicates unadjusted effects and the lower line indicates covariate adjusted effects.
### Table 4. Percent of caregivers reporting unhealthy behaviors and psychotropic medications by caregiver race

<table>
<thead>
<tr>
<th></th>
<th>Caucasian</th>
<th>African-Americans</th>
<th>Wald Chi-square/ p-value&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Birmingham</td>
<td>Boston</td>
<td>Memphis</td>
</tr>
<tr>
<td>n</td>
<td>80</td>
<td>79</td>
<td>143</td>
</tr>
<tr>
<td>Any unhealthy behavior</td>
<td>82.5</td>
<td>82.3</td>
<td>79.0</td>
</tr>
<tr>
<td>Anti-depressant medication</td>
<td>16.3</td>
<td>8.9</td>
<td>21.1</td>
</tr>
<tr>
<td>Anxiolytic medication</td>
<td>18.8</td>
<td>15.2</td>
<td>15.4</td>
</tr>
<tr>
<td>Any psychotropic medication</td>
<td>30.0</td>
<td>21.5</td>
<td>32.2</td>
</tr>
</tbody>
</table>

<sup>a</sup>Degrees of freedom: the degrees of freedom for all Race, Site and Interaction effects are 1, 3, and 3, respectively. For each variable the upper line indicates unadjusted effects and the lower line indicates covariate adjusted effects.

### Table 5. Percent of caregivers engaging in religious behaviors by caregiver race

<table>
<thead>
<tr>
<th></th>
<th>Caucasian</th>
<th>African-Americans</th>
<th>Wald Chi-square/ p-value&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Birmingham</td>
<td>Boston</td>
<td>Memphis</td>
</tr>
<tr>
<td>How often pray</td>
<td>81.3</td>
<td>60.7</td>
<td>82.5</td>
</tr>
<tr>
<td>Nearly every day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often religious services</td>
<td>51.3</td>
<td>36.7</td>
<td>49.7</td>
</tr>
<tr>
<td>At least a few times a week</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How important is religion</td>
<td>75.0</td>
<td>64.7</td>
<td>79.7</td>
</tr>
<tr>
<td>Very important</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>Degrees of freedom: the degrees of freedom for all Race, Site and Interaction effects are 1, 3, and 3, respectively. For each variable the upper line indicates unadjusted effects and the lower line indicates covariate adjusted effects.
effects for Race and Site. African-American caregivers report higher frequency of prayer, attendance at religious services, and greater importance of religion than Caucasian caregivers. In addition, residents of Birmingham and Memphis reported greater frequency of prayer and attendance at religious services, and endorsed importance of religion more frequently than residents of Philadelphia or Boston. These effects remained highly significant after covariate adjustment.

Discussion

The present results provide information from one of the largest studies completed to date comparing Caucasian and African-American family caregivers of persons with dementia from diverse geographic regions of the United States. Caucasian and African-American caregivers and care recipients differed considerably on a number of demographic and patient impairment variables, as has been found repeatedly in other studies. Because of the large sample size, we were able to conduct not only unadjusted analyses, but also to control for important demographic characteristics, including SES, gender, relationship, and age, and for severity of patient memory and behavior problems. In addition, we carefully assessed whether results were consistent across four sites that included cities in both the Southeast and Northeastern United States.

In general, results were consistent with our predictions. We predicted that African-American caregivers would report lower levels of psychological distress in comparison to Caucasian caregivers, and use fewer psychotropic medications. In no instance did we find that African-American caregivers had greater psychological distress or psychotropic medication use than Caucasian caregivers. African-American caregivers generally reported better well-being than Caucasian caregivers on the CES-D well-being subscale and lower anxiety scores. In addition, Caucasian caregivers were far more likely than African-American caregivers to use antidepressant medications, or any type of psychotropic medication. All of these significant effects for race remained statistically significant after adjustment for covariates.

The only finding inconsistent with our prediction was for the overall CES-D score. On the unadjusted analysis, Caucasian caregivers were more depressed than African-American caregivers, only at the Memphis and Philadelphia sites, and all race effects were non-significant after covariance adjustment.

African-American caregivers also showed more benign appraisals of the stress of caregiving on two different measures. First, African-American caregivers rated memory and behavioral problems as less distressing than Caucasian caregivers. African-American caregivers also reported significantly higher appraisals of benefits of caregiving, finding more positive aspects of caregiving. Both effects remained significant after covariance adjustment.

This finding of lower stressfulness appraisals and greater benefits or self-gain from caregiving in African-Americans is consistent with previous findings (Foley et al., 2002; Haley et al., 1996), and is of special interest in understanding possible racial differences in coping with caregiving. The ability to experience positive affect while dealing with chronic stress is increasingly seen as an important mechanism that is effective in coping with stress (Folkman & Moskowitz, 2000). Positive affect can co-exist with negative affect in situations of chronic stress, and may be a product of the ability to find meaning through positive reappraisals, spiritual beliefs, or other adaptive coping mechanisms in the face of stress (Folkman & Moskowitz, 2000). Roth et al. (2001) have found that, over a two-year longitudinal follow-up, African-American caregivers showed sustained high levels of positive life satisfaction, while Caucasian caregivers showed declining life satisfaction over time. Our results suggest that caregiving studies should address such factors as positive affect and perceived benefits of caregiving (Foley et al., 2002) to complement more widely used measures of psychological distress.

Consistent with many previous results, we found that African-American caregivers were more likely to report greater attendance at religious services, and higher importance of religion in their lives. African-American caregivers also used prayer more than Caucasian caregivers. All of these effects remained significant after covariate adjustment.

Caregiving stress has been shown to impact negatively on health behaviors, with stressed caregivers not taking the time to look after their own healthcare needs (Schulz et al., 1995). The only finding suggestive of greater problems in caregiving by African-Americans was on the measure of unhealthy behaviors. This finding is of concern given other indications that African-Americans have generally poorer health and access to health care than Caucasians. In 1997 overall mortality was 55% higher for Black Americans than for White Americans, and the age-adjusted death rates for the Black population exceeded those for the White population by 77% for stroke, 47% for heart disease and 34% for cancer (Kramarow et al., 1999). This finding suggests that, even though African-American caregivers may show indications of psychological resilience in coping with caregiving, we should be alert that physical health may be affected independently of psychological distress. REACH interventions for African-American caregivers have especially targeted health promotion efforts (Gallagher-Thompson et al., 2001).

Consistent with suggestions by Dilworth-Anderson and her colleagues (2002), the relative lack of psychological distress found in African-American caregivers and perceived benefits of caregiving in African-Americans is consistent with previous findings (Foley et al., 2002; Haley et al., 1996), and is of special interest in understanding possible racial differences in coping with caregiving. The ability to experience positive affect while dealing with chronic stress is increasingly seen as an important mechanism that is effective in coping with stress (Folkman & Moskowitz, 2000). Positive affect can co-exist with negative affect in situations of chronic stress, and may be a product of the ability to find meaning through positive reappraisals, spiritual beliefs, or other adaptive coping mechanisms in the face of stress (Folkman & Moskowitz, 2000). Roth et al. (2001) have found that, over a two-year longitudinal follow-up, African-American caregivers showed sustained high levels of positive life satisfaction, while Caucasian caregivers showed declining life satisfaction over time. Our results suggest that caregiving studies should address such factors as positive affect and perceived benefits of caregiving (Foley et al., 2002) to complement more widely used measures of psychological distress.
caregivers may be due largely to strengths of internal resources, such as appraisal, and religious coping. Such factors as prior experience with caregiving roles, expectations that caregiving will occur, cultural support for caregiving, and prior experience with adversity, have all been mentioned as possible mechanisms through which African-American caregivers might evidence strong internal coping resources related to caregiving. The finding of less distress also indicates that the use of fewer psychotropic medications in comparison to Caucasian caregivers was appropriate and did not indicate a lack of treatment. The appropriateness of prescribing of psychotropic medications to older adults is a major concern and geriatric prescribing guidelines recommend encouraging non-drug alternatives, when feasible (Beers, 1997; Mahoney, 1994; Mahoney, Zhan & Eckler, 1999). The findings indicate that successful personal coping mechanisms should be identified and supported whenever possible.

Despite adding considerably to existing literature, the present project does have a number of limitations. There were marked differences in caregiver demographic characteristics, and in care-recipient impairment variables, by both race and site. While we made an effort to control for these factors statistically, covariance analyses are not ideal. Observational studies, even with utilization of covariance analyses, do not provide definitive answers as to whether racial differences are due to culture, versus variables such as socioeconomic status, so this remains an important question to be addressed in future research. We did not assess in detail whether race might interact with some of the other demographic and descriptive factors in determining caregiver well-being; for example, adjustment for relationship to the care recipient does not allow us to ascertain whether this variable may moderate the relationship between race and distress. Despite common inclusion/exclusion criteria and similar approaches to recruitment across the sites, we found major differences in care-recipient impairment variables by site. Thus, some site differences in our dependent variables may be due to site differences in recruitment of participants.

In summary, our results suggest that there are consistent differences by race on measures of caregiver well-being, appraisal, and religious coping. These analyses further our understanding of racial differences in key mediating processes linking health behavior, consistent with stress process models used to study both caregiving and broader aspects of stress (Schulz et al., 2000). REACH investigators anticipated these differences and tried to design intervention strategies that would address these mediators in a culturally acceptable manner (Gallagher-Thompson et al., 2003). Recent publications from the REACH project (Schulz et al., 2003) have provided impressive evidence that caregiver interventions, informed by data on racial/ethnic differences in caregiving, can be effective in reducing caregivers’ distress, regardless or race of ethnicity of the caregiver. Research on diversity in family caregiving can be used to assure that minority older adults, who generally use fewer caregiver support services, receive culturally appropriate and evidence based care.

References


African-American and Caucasian caregivers


Appendix A

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