CHANGES IN EMOTIONAL WELL-BEING AND SELF-PERCEIVED PHYSICAL HEALTH OVER TIME AMONG AFRICAN AMERICAN AND WHITE MALE CAREGIVERS OF OLDER ADULTS

by

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A DISSERTATION

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ABSTRACT

This study is a longitudinal, secondary data analysis of the Family Relations in Late Life (FRILL) 2 study. Using the Pearlin stress process model (SPM) as a guide, the purpose of this study was to test whether there was overall change and/or significant individual variability in emotional well-being and self-perceived physical health over 36 months among African American and White male caregivers of older adults living in the community.

A two-level Hierarchical Linear Model (HLM) was used to predict individual changes over time for each of the five outcome variables (anger, anxiety, depressed affect, resentment, and self-perceived physical health) and examined the influence of race and constructs suggested by the Pearlin SPM among male caregivers.

Race was not a significant predictor of any of the outcome variables. This finding suggests that African American and White male caregivers may be similar in their emotional and physical response to the demands of caregiving. Emotional well-being and health also appear to remain relatively stable over time. An examination of the social context appears to be important to understanding the male caregiving experience and how it changes over time.

The quality of the pre-illness relationship was a significant predictor of change over time for every outcome except anger and depression. Caregivers who reported a higher quality pre-illness relationship reported less anxiety and resentment and better self-perceived health over time. Activity restriction was a significant predictor of
changes in time for emotional well-being but not health. Caregivers who reported more activity restriction also reported more anger, anxiety, depressed affect, and resentment over time. Social support was a significant predictor of two emotional well-being outcomes. Caregivers who reported greater social support reported less depressed affect and resentment over time. These findings support previous findings that an increased sense of social isolation and lack of support from family and friends contributes to negative emotional well-being. Further, the findings suggest that these deficits may have a cumulative effect over time for both African American and White male caregivers. Findings from this study may be used to develop programs and interventions tailored to meet the needs of male caregivers.
LIST OF ABBREVIATIONS AND SYMBOLS

α          Cronbach’s index of internal consistency
n          Number
p          Probability associated with the occurrence under the null hypothesis of a
          value as extreme as or more extreme than the observed value
r          Correlation coefficient
SD         Standard deviation
SE         Standard error
Sig        Significance level
t          Computed value of t test
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Research Problem

Background

Family caregiving.

Family caregivers in the United States, in general, provide an estimated 70-80% of care to people with illness and disabilities and provide approximately $250 billion in unpaid labor per year (Family Caregiver Alliance, 2006). Most of this care is provided to older adults with functional limitations. In the U.S. and throughout the world the number of older adults is increasing in number and as a percentage of the total population. The number of older adults in the U.S. is expected to rise precipitously as the baby boomers turn 65 and will nearly double by 2030 (Institute of Medicine, 2008). It is estimated that, by 2030, one in five Americans will be over the age of 65. Older adults are also living longer with more chronic conditions. The Institute of Medicine estimates that a majority of older adults in the coming decades will have at least one chronic condition and will access the health care system more than previous generations, adding further strain to an already strained system.

Increases in the population of older adults, advances in medical care, and the shift of care from institutions to the community will result in an increasing number of older adults with functional limitations living in the community for longer periods of time (Family Caregiver Alliance, 2006). Recent research has also shown that the use of formal paid care among community-dwelling older adults has decreased while sole dependence on family caregivers has increased (Family Caregiver Alliance, 2006).
Keeping older adults in the community for as long as possible has long been a policy goal in the United States. Current government health policies rely heavily on family caregivers and this is expected to increase due to increasing long-term health care costs and other factors (Gerstel & Gallagher, 2000; Navaie-Waliser, Feldman, Gould, Levine, Kuerbis, & Donelan, 2002). Care for older adults in a nursing home or other long-term care facility increases federal and state expenditures and may reduce the quality of life of the older adult (Family Caregiver Alliance, 2006). In addition, research on consumer preference in long-term care has shown that consumers and their families prefer that older adults remain in the community as long as possible (Family Caregiver Alliance, 2006).

Family caregivers are essential to keep older adults in the community and maintain quality of life for the older adult. However, quality of life for the caregiver is also an important consideration. Over 25 years of research has demonstrated that caregiving for an older adult with functional limitations has adverse effects on the mental and physical health of caregivers, including increased risk for depression and an increased risk of mortality; yet caregivers receive little assistance themselves (Family Caregiver Alliance, 2006). According the Family Caregiver Alliance, continued reliance on family caregivers without recognizing their own support needs could result in greater emotional, physical, and financial straits that would also, in turn, affect the quality of life in the quality of care of the care recipient.

Caregiving for older adults involves attending to many domains that may lead to stress, burden and changes in the caregiver’s life. While there are many positive aspects of caregiving, the research indicates that caregiving can adversely affect both the physical and mental health of the caregiver through added stress, strain and depression (Navaie-Waliser et al., 2002; Thomas et al., 2002). The issues associated with caregiving are numerous and complex. Caregivers may
have issues in multiple, interrelated domains at varying levels of intensity (Schultz et al., 2003) and experience multiple stressors that, combined, affect their mental and physical well-being (Family Caregiver Alliance, 2006). More than one third of caregivers face the demands of caregiving while facing their own deteriorating health (Navaie-Waliser et al., 2002). In addition, caregivers are less likely than non-caregivers to engage in preventive health behaviors and may be at greater risk for mortality (Navaie-Waliser et al., 2002) and depression (Family Caregiver Alliance, 2006). Caregivers consistently report higher levels of depressive symptoms, clinical depression, and anxiety than similar non-caregivers (Yee & Schultz, 2000). Caregivers also consistently report lower levels of health, more chronic illness, greater physical symptoms, poorer immune responses, and slower rates of wound healing compared to non-caregivers (Adler, Patterson, & Grant, 2002).

In order for older adults to remain in the community it is essential to: (1) identify caregivers in need of support; and (2) provide support to caregivers that is appropriate to the context in which the care is provided. Therefore it is imperative for gerontological practitioners, researchers, and policymakers to understand the caregiving context and processes that affect the quality of care provided to older adults and the health and well-being of their family caregivers for diverse populations (Family Caregiver Alliance, 2006).

In an effort to aid this imperative, the Family Caregiver Alliance convened a national conference of researchers, policymakers, and practitioners in 2006. One of the goals of the conference was to establish consensus on the assessment of family caregivers in research and practice settings. In a report produced from this conference called Caregiver Assessment: Voices and Views from the Field, the Family Caregiver Alliance endorsed the Pearlin stress process
model for the assessment of family caregivers and suggested measures to be used for each of the constructs in the model (Family Caregiver Alliance, 2006).

**Gaps in Literature**

Decades of research in family caregiving for older adults has provided a better understanding of the experiences and needs of family caregivers. This research has led to the development of policy goals and practice interventions designed to assist family caregivers in maintaining quality of life for the older adult in the community while minimizing the effect of caregiving on their own health and well-being. However, despite advances in caregiving research, there remain several important gaps in the research literature: (1) Although research on caregivers from different racial/ethnic/cultural groups has increased over the last decade, most of the current knowledge is based on large populations of White caregivers (Janevic & Connell, 2001); thus more research is needed to understand the experiences of non-White caregiving populations; (2) Although male caregivers comprise approximately 30% of the caregiving population, the vast majority of research on caregiving has focused on the female experience with very little research on male caregivers (Kramer, 2002a) and this is especially true of male caregivers from non-White populations; and (3) Most of the research knowledge about the caregiving experience is based on cross-sectional studies and little is known about how the caregiving experience changes over time (Houde, 2002; Pinquart & Sörensen, 2006).

Bookwala, Newman, and Schulz (2002) make several recommendations for methodological advancement in research on male caregivers: (1) larger samples selected through random probability sampling techniques; (2) the use of more sophisticated data analysis that would be supported by larger samples; (3) examine data on male caregivers from larger data sets; (4) use longitudinal designs that would provide information on long-term associations between
caregiving stressors and outcomes for male caregivers and uncover possible causal links; (5) use panel designs that examine the caregiving trajectory in regard to changes in caregiving demands and their association with exit or reentry into the caregiving role or the decision to institutionalize the care recipient; (6) a need to develop research goals that move beyond descriptive to an explanatory focus; (7) conduct theory-driven research to test theoretically-derived hypotheses; and (8) develop a stress-outcome model that is specific to male caregivers.

Purpose

The purpose of this study was to address the aforementioned gaps in the elder caregiving literature by conducting a secondary analysis of a sample of 130 African American and White male caregivers who participated in the Family Relationships in Late Life (FRILL) 2 Project, a NIA-funded multi-site longitudinal study of informal care provided by community-dwelling caregivers of older adults. The goals of this study are: (1) to increase the state of knowledge about the caregiving experiences of male caregivers who are providing care to an older adult; (2) to examine changes in emotional well-being and self-perceived physical health among male caregivers over time; (3) to examine the effect of race/ethnicity on changes in emotional well-being and self-perceived health over time; and (4) to examine how variables from the Pearlin stress process model (see Figure 1) predict changes in emotional well-being and self-perceived health over time.
Figure 1. Pearlin Stress Process Model
Study Aim

The primary aims of this study were to test whether there was overall change and/or significant individual variability in emotional well-being and self-perceived physical health over time among male caregivers for older adults, whether there were differences by race/ethnicity in changes over time, and to examine variability by assessing whether changes over time were influenced by constructs from the Pearlin stress process model (caregiver context variables, primary stressors, secondary stressors, and resources).

These aims were addressed through secondary data analysis of three waves of the Family Relations in Late Life (FRILL) 2 study. The FRILL 2 data are especially well suited for this purpose in that the sample contains a sufficient number of African American male caregivers to make a meaningful comparison to White male caregivers. A sufficient sample of African American male caregivers is unusual in elder caregiving research. The choice of FRILL 2 data for this study is further strengthened by the longitudinal nature of the study.

Variables Used in Study

Variables selected for use in this study were informed by the Pearlin stress process model endorsed by the Family Caregiver Alliance (see Table 1). Although the Pearlin model was used to guide the model used in this study, it should be noted that the FRILL 2 data do not contain many of the constructs contained in the model. This is a limitation of secondary data analysis. Additional limitations are discussed in the Limitations section in Interpretation and Conclusion (see pp. 110-111).
Table 1
Study Variables Informed by the Pearlin Stress Process Model

<table>
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<tr>
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<th>Primary Stressors</th>
<th>Secondary Stressors</th>
<th>Resources</th>
<th>Outcomes</th>
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<tr>
<td>CG Age</td>
<td>ADL/IADL</td>
<td>Perceived Income Adequacy</td>
<td>Social Support</td>
<td>Anger</td>
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<tr>
<td>CR Age</td>
<td>Dementia Diagnosis(^a)</td>
<td>Activity Restriction</td>
<td>Formal Services</td>
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Years Caregiving: Depressed Affect
Spouse/Non-spouse: Resentment
Race: Self-Perceived Health

CG Education
CG Income
Pre-Illness Relationship Quality

Note. * The original proposal for this study contained the Repeatable Battery for Assessment of Neuropsychological Symptoms (RBANS; Randolph, Tierney, Mohr, & Chase, 1998) to represent care recipient cognitive impairment. However, this variable was removed from the study for the following reasons: (1) due to a large amount of missing data, this variable was considered suspect; and (2) the RBANS was not found to be a significant predictor when included in the initial hierarchical linear models.

Caregiving context.

Several contextual variables have been found to play a role in male caregivers’ psychosocial well-being and were included in this study: caregiver age, age of the care recipient, relationship to care recipient, and years in the caregiving role (Carpenter & Miller, 2002). Caregiver education and income were included because of their contribution to socioeconomic status. Race was included to explore the primary aims of the study. The quality of the pre-illness relationship, in particular, may be especially relevant and is included as part of the caregiving context.
Primary stressors.

Measures of care recipient functional impairment (ADL/IADL) and cognitive status (Dementia Diagnosis) were included in this study because they are part of the Pearlin stress process model and represent primary stressors in elder caregiving.

Secondary stressors.

Perceived income adequacy was included in this study because it is considered a secondary stressor in the Pearlin stress process model (Family Caregiver Alliance, 2006) and concern about finances appears to be an important predictor of depression in male caregivers (Kramer, 1997b).

Activity restriction was included in this study as a proxy for social isolation. Social isolation has been identified as an area of concern for male caregivers and has been linked with reports of depression (Kramer, 1997b).

Resources.

Social support was included in this study because it is part of the Pearlin stress process model and has been identified as the strongest predictor of strain and gain among male caregivers (Carpenter & Miller, 2002).

Receipt of formal services was included in this study because it is considered a resource in the Pearlin stress process model (Family Caregiver Alliance, 2006). It has been found that male caregivers tend to utilize formal services less and are less likely to be aware of community resources than female caregivers (Kaye, 2002).

Outcomes.

Depressive affect and self-perceived physical health were included in this study because they are main outcomes of the Pearlin stress process model (Family Caregiver Alliance, 2006).
According to Kramer (2002b), male caregivers may have serious health consequences due to caregiving and may become more depressed over time.

Anxiety was included in this study because the literature suggests that male caregivers may experience anxiety from their efforts to simultaneously handle the multiple domains of caregiving while also developing new skills (Kramer, 2002b). This is particularly salient for older male caregivers early in the caregiving career.

Although not traditionally included in the Pearlin stress process model, there are several reasons for the inclusion of anger and resentment in this study. Kramer (2002a) suggests that the impacts of caregiving on male caregivers may be underestimated due to the underreporting by male caregivers as a result of socialized pressures to minimize or hide emotional responses viewed as feminine. For some men, expression of anger and resentment may serve as a proxy for other emotions such as depression and may be perceived as more socially acceptable and “masculine” (Glicken, 2005). In addition, men who were socialized in traditional masculinity may not have the emotional language to express emotions such as sadness but possess the emotional language to express anger and resentment (Glicken, 2005). Finally, the inclusion of these variables may contribute to the development of a stress process model specific to male caregivers as suggested by Bookwala, Newman, and Schulz (2002).

**Research Questions**

The study addressed the following research questions:

1. How do the emotional well-being and the self-perceived physical health of African American and White male caregivers of older adults change over a three-year period?

2. Are there differences between African American and White male elder caregivers in changes in emotional well-being and self-perceived physical health over time?
3. How do caregiver context variables, primary stressors, subjective stressors, and resources predict the trajectories of caregiver emotional well-being and self-perceived health over three years?

Significance of Study to Research

This study will add to the research on male caregivers and elder family caregiving in several ways. First, since most of the elder caregiving literature is based on the female caregiving experience, findings from this study will contribute to elder caregiving research by focusing on male caregivers. Second, studies that have focused on male caregivers in the research literature have treated them as a homogenous group, and several researchers have called for an examination of male caregivers by subgroups, particularly race. This study will add to the research on male caregivers by comparing African American and White male elder caregivers on indicators of emotional well-being and self-perceived physical health.

Third, in an article on methodological issues in male caregiving research, Houde (2002) concludes that there are many gaps in the male caregiver knowledge base due to methodological issues, especially in sampling design. These issues include: (1) not enough men in caregiving samples; (2) sons, in particular, have been inadequately sampled; (3) most caregiving samples utilize convenience samples so generalizability to the caregiving population is limited; and (4) due to small sample sizes, analysis by gender or family relationship has been limited. FRILL 2 provides a sample design that helps address these methodological issues.

Fourth, although most instruments used in elder caregiving research have been normed on White women, two of the outcomes, depressive affect and anxiety, use measures that are not caregiver specific and are used with a broad range of populations. In addition, two of the outcomes, anger and resentment, are not commonly measured in caregiving studies and may be
particularly relevant with men. Thus, the possibility of gender-bias in measurement will be lessened.

Fifth, most of the elder caregiving knowledge is based on cross-sectional studies and less is known about changes over time. By using longitudinal data, this study will contribute to the research knowledge on changes in emotional well-being and self-perceived health over time. Because of the dearth of longitudinal studies on male caregivers, longitudinal findings will be a particularly important addition to the literature.

Finally, the stress-process models used in caregiving interventions emphasize taking into account the person receiving the intervention, the goal of the intervention, and the context in which the intervention is delivered (Gallagher-Thompson, et al., 2003). Further, Kramer (2002a) states that, in order for there to be responsive and competent practice, caregiver assessment processes and interventions need to be individually tailored and sources of stress unique to subgroups and context must be considered. This study will inform practice and policy by examining changes over time among African American and White male caregivers. Thus, practitioners and policymakers could use the findings from this study to develop programs and interventions tailored to meet the needs of this population.

**Significance to Social Work Practice and Policy**

The aims of this study are congruent with social work ethical standards regarding competent practice and knowledge of cultural and social diversity. Social work practitioners will increasingly be called upon to assist caregivers in caring for their loved ones while maintaining physical and psychological well-being. Social workers in practice settings working with older adults and their family caregivers could use findings from this study to: (1) improve their knowledge of African American and White male caregivers; (2) develop strategies to reach the
male caregiver population; (3) better assess male caregiving clients to identify their needs; (4) develop programs and interventions tailored to meet the needs of male caregivers; and (5) advocate for policies and programs that address the needs of male caregivers.

The primary mission of social work includes a focus on both the well-being of the individual in a social context and the well-being of society. Programs, policies, and interventions that address the needs and improve the well-being of male caregivers may enable the older adult they provide care for to remain in the community longer. This contributes to the well-being of society by reducing the costs of long-term care while simultaneously meeting consumer preference goals.
Literature Review

Male Caregivers

According to Kramer (2002b), men comprise approximately 30% of all caregivers and have unique experiences and needs. In a recent review, Baker and Robertson (2008) report that men in the United Kingdom are just as likely to be caring for an adult in their home as women; and men over the age of 65 are more likely to be caring for a spouse than women. In the United States, husbands outnumber wives as primary caregivers over the age of 75 (Kramer, 2002b). Studies estimate there are approximately 1,750,000 male caregivers caring for an ill elderly family member in the United States and that there are approximately one million elderly men caring for spouses with Alzheimer’s disease (Kaye & Applegate, 1990; Russell, 2001). However, Kramer (2002b) suggests that, due to how we define caregivers, some of these statistics may underestimate the care provided by men.

Population predictions estimate that the number of men involved in caregiving is expected to increase due to the declining male mortality rate, a greater number of functionally impaired elderly persons, smaller family sizes, higher divorce rates, increased social mobility, more women in the workplace, and the broadening of gender norms and roles (Houde, 2002; Thompson, 2002). Other demographic trends include: a decline in the expectation that women will assume the caregiving role, more men engaging in nurturing roles normally ascribed to women, the increased geographic mobility of adult children, and a trend from a communal to an individualistic culture (Kramer, 2002b). Thus, while male caregivers may not be the “majority” of the caregiving population, they exist in substantial numbers (particularly in older groups) that
warrant consideration by researchers, policymakers, and practitioners. Further, demographic
trends will place increasing pressure on men as caregivers in the future. For example, increased
longevity will increase the numbers and proportion of male caregivers across the lifecourse
(Kramer, 2002b).

It is not an exaggeration to say that men have been overlooked or marginalized in the
caregiving literature (Stoller, 2002). The caregiving literature is dominated by research on
female caregivers. Thompson (2002) suggests that there is a propensity among researchers to
disregard male caregivers and this may partly explain the paucity of research with this
population. Researchers, according to Thompson (2002), have rarely stepped out of gender
comparisons to ask how gender constructions, societal reaction, and men’s involvement in
relationships shape their caregiving experience. Men are especially underrepresented in
caregiving interventions, and Kramer (2002b) suggests that current interventions may be gender-
biased. In addition, there has been little effort to develop therapeutic approaches for working
with caregiving men (Kramer, 2002b).

Men appear to experience many of the problems associated with caregiving when
compared with other non-caregiving males. In research that compared male caregivers to non-
caregiving men, male caregivers reported higher levels of depression and higher physical health
consequences (Thompson, 2002) as well as reduced psychological well-being (Kramer &
Lambert, 1999). However, most of the knowledge of male caregivers is based on gender
comparative studies in which men are used as a contrast group to illustrate the challenges and
disadvantages of female caregivers (Kramer, 2002b). For example, in a review by Yee and
Schulz (2000) on gender differences in psychiatric morbidity, the authors’ conclusions are used
to argue that interventions should be targeted toward high-risk female caregivers.
Gender Comparisons

Findings.

Compared to women, there appears to be a qualitative and quantitative difference in the caregiving assistance provided by men (Bookwala & Schulz, 2000) and how the care is provided and experienced (Calasanti & Bowen, 2006). Overall, the literature suggests female caregivers spend more time caregiving and experience worse mental health outcomes than men (Bookwala & Schultz, 2000; Robinson, Adkisson, & Weinrich, 2001). There is some evidence that men manage the care role differently (Cahill, 2000), experience more positive aspects of caregiving (Durkin, Roff, Klemmack, Burgio, & Gitlin, 2010), and that men and women perform different amounts and types of care (Nijboer, et al., 2001). Male caregivers also consistently report less burden, depression, and distress than females (Bookwala & Schultz, 2000; Brown, Chen, Mitchell, & Province, 2007; Lutsky & Knight, 1994; Marks, Lambert, & Choi, 2002; Wallsten, 2000). In a review by Yee and Schulz (2000) on gender differences in psychiatric morbidity, the authors reported higher levels of depression, anxiety, and general psychiatric symptomatology, and lower life satisfaction in female caregivers compared to males.

Although gender differences have been found in the general caregiving literature, studies that have focused on dementia caregiving have found minimal or nonexistent differences between males and females (Ford, Goode, Barrett, Harrell, & Haley, 1997). According to Gallicchio, Siddiqi, Langenberg, & Baumgarten (2002), earlier studies comparing male and female dementia caregivers are inconsistent on burden and depression. Their study on gender differences in dementia caregivers found evidence of gender differences in burden but not depression (Gallicchio, Siddiqi, Langenberg, & Baumgarten, 2002). Other studies have not supported higher female distress and burden in dementia caregivers (Ford, Goode, Barrett,
Harrell, & Haley, 1997). In addition, studies of spousal caregivers have found that men sustain similar levels of burden, similar levels of depressive affect, and higher levels of hostility and work-family conflict as women (Carpenter & Miller, 2002).

In a meta-analysis on gender differences, however, Pinquart and Sörensen (2006) suggest that most caregiver stressors are probably more strongly determined by the needs of the care recipient and availability of resources than by caregiver gender differences in socialization, identity, or motives, and that burden and depression, in particular, are influenced by the amount of assistance the caregiver provides. A recent study in Spain found that gender differences in health were related to the amount and intensity of burden. Overall, men reported less burden and better health than women but, as burden increased, gender differences in health either decreased or inverted (Larranaga, Martin, Bacigalupe, Begiristain, Valderrama, & Arregi, 2008). A longitudinal study of gender differences over time using a large national sample found little evidence for gender differences but suggested inconsistencies in findings may be related to variability in relationship type (Marks, Lambert, and Choi, 2002). Thus, relationship type is an important consideration as well.

Finally, Thompson (2002) posits three possible reasons why men report less distress in caregiving when compared to women: (1) men’s style of caregiving is truly less distressing; (2) men’s true level of distress is poorly measured; or (3) it could be a research artifact that arises when male caregivers are compared to women. This last issue is discussed in the following section.

**Issues.**

Although research comparing male and female caregivers indicates that men experience fewer demands and adverse effects compared to women, gender comparative studies are
problematic for several reasons. First, gender has rarely been treated with any level of specificity to account for individual differences within the gender category (Baker & Robertson, 2008). Further, simplifying comparisons between men and women tends to hide variability within groups (Baker & Robertson, 2008). Men, in particular, have been studied as a homogenous group that narrows the range of masculinities and sets up the gender stereotype as the sole model of manhood (Thompson, 2002).

Kramer (2002a) expands on this argument by suggesting that many of the research limitations in regards to male caregivers have resulted from viewing male caregivers through the lens of the female experience and that gender comparative approaches have fostered stereotypical views of male caregivers. Gender comparative research, according to Ducharme, Lévesque, Zarit, Lachance, and Giroux (2007), has generally used the theoretical perspective of gender role socialization and has been based on a stereotyped concept of gender roles. By comparing the experiences of male caregivers to female caregivers, gender comparative studies overlook the stress process involved in male caregiving and the variations among men in the caregiving role (Ducharme, Lévesque, Zarit, Lachance, & Giroux, 2007). Houde (2002) further argues that, although there is evidence that men report fewer negative responses to caregiving than females, the factors that contribute to this difference are not clear.

In their recent review of male dementia caregivers, Baker and Robertson (2008) note that research on male caregivers, especially gender comparative studies, has yielded only broad typologies. In addition, they note that there is an explicit lack of an explanatory framework in the literature on dementia male caregivers and that the overall literature is limited to a “surface level description” (Baker & Robertson, 2008, p. 419). Thus, the unique experiences and contributions of male caregivers are often ignored.
There are also publication issues. In the literature review for their meta-analysis, Miller and Cafasso (1992) note that published articles tend to emphasize statistically significant gender differences, ignoring findings of no difference. Pinquart & Sörensen (2006) suggest that results that do not conform to common gender stereotypes are more difficult to publish.

Finally, Bookwala, Newman, and Schulz (2002) suggest that it is unclear whether reported gender differences represent true differences or the tendencies of men to underreport distress. In addition, established measures normed on female caregivers may not be sensitive to the caregiving experiences of men. A large body of literature has demonstrated that there are gender differences in self-reports of health, distress, and burden and this is especially true for interviews and questionnaires (Addis & Mahalik, 2003; Baker & Robertson, 2008). Lutzky and Knight (1994) have explicitly cautioned against the use of self-report measures of distress since these measures may exaggerate gender differences. Some researchers suggest that directly comparing caregiving male caregivers with non-caregivers provides a more accurate understanding of the potential impact of caregiving on the health of male caregivers relative to the general male population (Bookwala, Newman, and Schulz, 2002).

Several authors have called for the caregiving research to move beyond the gender comparative approach to examine subgroups of men, especially racial/ethnic groups, without comparison to women (e.g. Ducharme, Levesque, Zarit, Lachance, & Giroux, 2007). Research examining subgroups among male caregivers is conspicuously missing in the elder caregiving literature and recent articles have called for more research in this area. Bookwala, Newman, and Schulz (2002) emphasize the need for a clearer understanding of the male caregiving experience as comprising a set of demands and outcomes possibly unique to the male caregiver and not merely as a deviation from the female normative caregiving experience. It should also be noted
that, in their review of dementia male caregivers, Baker and Robertson (2008) were only able to identify one study that examined male caregivers longitudinally.

**Race/Ethnicity**

According to Kramer (2002a) there is a substantial research gap in our understanding of the variability among male caregivers, especially ethnic and cultural variations among male caregivers. This is echoed in the recent review by Baker and Robertson (2008). For non-White populations overall, research has shown that racial and ethnic groups may vary in the intensity of stressors, availability of resources, and coping strategies (Aranda & Knight, 1997; Sörensen & Pinquart, 2005) as well as the relationship of stressors, resources and strategies to caregiver outcomes (Janevic & Connell, 2001).

In the larger caregiving literature, ethnic minority caregivers consistently report worse physical health than Whites (Pinquart & Sörensen, 2005). African American caregivers report lower levels of psychological distress, appraise the caregiver situation more favorably and report more benefits than Whites (Farran, Miller, Kaufman, & Davis, 1997; Haley, et al., 2004; Janevic & Connell, 2001; Navaie-Waliser et al., 2001; Pinquart & Sörensen, 2005; Roff, Burgio, Gitlin, Nichols, Chaplin, & Hardin 2004). They also report lower anxiety, greater religious coping and participation (Haley, et al., 2004; Roff et al., 2004) and less use of psychotropic medications than Whites (Haley, et al., 2004).

In addition, African American and Hispanic/Latino caregivers, despite being exposed to more stressors than White caregivers and reporting more hours of care, appear to be more resilient in the face of stress through positive appraisal, and utilize more religious coping than White caregivers (Navaie-Waliser et al., 2001; Sörensen & Pinquart, 2005). Higher informal support, often an assumption in the literature on ethnic minority caregivers, has been challenged
Pinquart and Sörensen (2005) state that many studies report higher informal support among ethnic minority caregivers while others do not.

African American and Hispanic/Latino caregivers are also more likely to be employed, working in jobs with little scheduling flexibility and are more likely to be raising children concurrent with their caregiving duties (Sörensen & Pinquart, 2005). This is partly due to the fact that African American and Hispanic/Latino caregivers are less likely to be a spouse and more likely to be another family member (such as a son or daughter) than White caregivers and, subsequently, to be younger in age than their White counterparts (Janevic & Connell, 2001; Pinquart & Sörensen, 2005).

In a meta-analysis of caregiving research over a 20-year span, Dilworth-Anderson, Williams, & Gibson (2002) found significant differences among racial and ethnic populations. Whites were more likely than African Americans to utilize only immediate family in caregiving and received more social services. African Americans, on the other hand, had more members in their caregiving networks and were more likely to share caregiving responsibilities than were Whites. Both Hispanics and African Americans were more likely to use informal services than Whites (Dilworth-Anderson, Williams, & Gibson, 2002). Research suggests that there are racial differences in the utilization of formal services with African Americans being less likely to access these services than their White counterparts (Dilworth-Anderson, Williams, & Gibson, 2002; Miller & Guo, 2000); however these findings have not been disaggregated by gender.

However, racial/ethnic differences should be interpreted with caution. One methodological issue with research on ethnic caregiving populations involves the use of relatively small, nonrepresentative, convenience samples (Navaie-Waliser et al., 2001). As Pinquart and Sörensen (2005) point out, convenience samples in the caregiving population are
more likely to include highly distressed caregivers and, because nonsignificant results are less likely to be published, the reported ethnic differences may be larger than in the overall population.

Although numerous studies have documented racial and ethnic differences in the caregiving experience (e.g. Aranda & Knight, 1997; Lawton, Rajagopal, Brody, and Kleban, 1992; Roff et al., 2004), few have addressed gender (Dilworth-Anderson, Williams, & Gibson, 2002). According to Sörensen and Pinquart (2005), ethnicity may moderate gender differences in caregiving outcomes. In their meta-analysis examining racial and ethnic differences in caregiving, Sörensen & Pinquart (2005) found that men, in general, report less caregiver burden than women and that African American men report even less burden than Whites (Sörensen & Pinquart, 2005). However, in a study by Haley et al. (2004), the researchers found that African American men were the group most likely to feel burdened compared to African American women and Whites of both genders.

Research has also found that White male caregivers are more likely to be a spouse while African American male caregivers are more likely to be a son (Sörensen & Pinquart, 2005). In examining gender differences, Haley et al. (1995) found that both African American and White male caregivers were more likely to have fewer social supports and to receive fewer visits from family and friends than women.

In a study that compared African American and White male caregivers, Carpenter and Miller (2002) found significant differences on income and depression with African American men having significantly lower income and depression. When they controlled for stressors and resources, the difference in depression remained and a significant difference in role strain emerged with African American men reporting lower role strain. Higher depression was
associated with poorer health, higher task distress, and lower mastery. Higher role strain was associated with higher task distress, more behavior problems, and higher mastery (Carpenter & Miller, 2002). However, it should be noted that only 25 African American men were included in the study.

Among Asian Americans, the oldest son and his wife are expected to assume the caregiver role and non-Western cultures, in general, place greater influence on the family needs over individual needs (Pinquart & Sörensen, 2005; Youn, Knight, Jeong & Benton, 1999). Harris and Long (1999) conducted a cross-cultural study examining the caregiving experiences of husbands and sons in the United States and Japan. While there were many differences, some things were common in both populations. Men in Japan and the United States expressed similar emotions of sadness, guilt, despair and frustration and expressed a sense of loss on multiple levels. They reported receiving little support or understanding of their situation and expressed that most friends, neighbors and coworkers did not understand their acceptance of the caregiving role (Harris & Long, 1999). “The American model of good caregiving,” according to Harris and Long (1999), “emphasizes the need for caregivers to have time away for themselves, and to express openly their feelings and concerns about their situation” (p.261). This is contrasted to the Japanese model which requires total, undivided attention to the needs of the care recipient. One interesting finding is that Japanese sons experienced strain in their relationship with their wives. American sons, on the other hand, experienced greater conflict with their siblings but reported that their wives were a source of great support (Harris & Long, 1999). American men also experienced less pressure from society and relied on numerous ways of coping including emotional dependence on their wives, the use of respite, work and religion (Harris & Long, 1999). Youn, Knight, Jeong and Benton (1999) compared Korean, Korean American and white
American caregivers. They found that Korean and Korean American caregivers reported higher levels of burden and anxiety than their white counterparts while Koreans reported higher levels of depression than both their white and Korean American counterparts (Youn, Knight, Jeong & Benton, 1999).

**Longitudinal Studies**

One methodological problem with the caregiving literature in general is the preponderance of cross-sectional studies (Houde, 2002), and longitudinal studies on male caregivers are scarce. Little is known about how males adapt over time and how their needs vary throughout the caregiving career (Kramer, 2002a). In one of the few longitudinal studies on male caregivers, Kramer and Lambert (1999) showed that caregiver husbands experienced a decline in happiness and higher levels of depression after taking on the caregiving role. In another longitudinal study, the researchers found that that caregiver husbands varied in their responses to stressors over time (Ducharme, Lévesque, Zarit, Lachance, & Giroux, 2007). Similar to the overall caregiving literature, the authors found that subjective stressors rather than objective stressors were significant predictors of outcomes over time and they noted that this underscores the importance of using a multidimensional model such as the Pearlin stress process model, as they found different sets of significant predictors for each outcome (Ducharme, Lévesque, Zarit, Lachance, & Giroux, 2007).

**Theories**

While many sociological and psychological theories have been used in caregiving research (e.g. identity theory and social exchange theory), most of the research on male caregivers has used a gender comparative approach and this approach is dominated by the theoretical perspective of gender role socialization. This section discusses the gender role
socialization perspective and issues with its use in research as well as two other explanatory
theories: the social role perspective and the gender role late-life shift.

**Gender role socialization.**

According to this theory, gender socialization creates a gender structure whereby
individuals have specified behavioral expectations, role prescriptions, and life opportunities
based on their gender (Glicken, 2005) and that people learn the rules for appropriate behaviors in
early childhood (Gilligan, 1993).

Based on this theory, caregiving is defined as a female responsibility (Miller & Cafasso,
1992). Women, according to this theory, are socialized to be more nurturing and sensitive to
relationships while men are socialized to be independent and focus on instrumental behaviors
(Ingersoll-Dayton & Rashchick, 2004; Miller & Cafasso, 1992).

Gender role socialization suggests that female caregivers are more likely to perform
personal care and household tasks than males and may be socialized to respond more than males
to similar levels of need. Further, the higher appraisal of caregiver burden by female caregivers
may be partly explained by women’s greater ease in expressing feelings or by men’s tendency
toward stoicism (Miller & Cafasso, 1992). The theory also suggests that males would find
personal care tasks more stressful than women, while females would find instrumental tasks
more stressful (Ford, Goode, Barrett, Harrell, & Haley, 1997).

However, many researchers argue that the use of gender socialization theory is
problematic because it is based on a stereotyped concept of gender roles (e.g. Ducharme,
Lévesque, Zarit, Lachance, & Giroux, 2007; Stoller, 2002). According to Stoller (2002), reliance
on gender socialization as an explanatory theory for differences in caregiving has four
limitations: (1) it is not a causal theory; (2) it tends to underemphasize the significance of gender
in the institutional framework of society, particularly how this framework limits the choices that men and women make; (3) it exaggerates the differences between the sexes, particularly through a quantitative focus on differences in central tendency and a tendency to ignore overlap in distributions; and (4) it underplays the importance of adult experiences, the demands of the current situation, and intersecting categories such as race-ethnicity, social class, and partner preference.

**Masculinity theories.**

Theories of masculinity propose that men are socialized from a young age to be self-reliant, independent, and emotionally stoic (Brooks, 1998; Cohen, 2001; Glicken, 2005). As part of this socialization, men are taught to control and deny their feelings. Accompanying this socialization are behavioral expectations, role prescriptions, and life opportunities (Glicken, 2005).

According to these theories, masculinity and femininity are viewed as independent constructs and may vary depending on the social context (Glicken, 2005). Degrees of masculinity or femininity may manifest in personality traits, attitudes, and/or behaviors (Cohen, 2001). For example, in the U.S., the dominant male image involves physical strength, emotional control, self-sufficiency and virility (International Longevity Center, 2004). As a consequence, men may refuse to admit to or acknowledge pain and deny what they (or society) consider to be a weakness or vulnerability (International Longevity Center, 2004).

How men internalize this socialization is not static but exists on a continuum from what is considered to be “traditionally” masculine to displaying more feminine or androgynous traits (Brooks, 1998). Men who are more traditionally masculine tend to be neglectful of their health
needs, less verbally expressive, and tend to have an overreliance on the women in their lives for nurturance and emotional expressiveness (Brooks, 1998 Glicken, 2005).

Much like gender socialization theory, masculinity theories suggest that caregiving is not an expected role for men. As such, men may not have had the socialization to be prepared to take on the role as opportunities for a more nurturing role may not have presented earlier in life. When men do take on the role, these theories suggest that men may not be willing to admit to some of the negative consequences of caregiving out of concern over appearing weak (Brooks, 1998 Glicken, 2005; Kosberg, 2005). Another result may be a reluctance to give up the caregiving role (Kosberg, 2005).

**Social role perspective.**

The social role perspective, on the other hand, focuses more explicitly on the current social role and situational demands as the primary explanation for gender differences in emotional distress. Exposure to stressful situations determines stress level. Women, according to this perspective, are more distressed than men because they have more stressful experiences and more role strain. In addition, this perspective suggests that gender differences become less salient later in life. Therefore greater gender differences in stress should be found among child caregivers compared to spouses (Miller & Cafasso, 1992).

For caregiving, the social role perspective suggests that the severity of impairment of the care recipient will determine gender differences in task involvement and that few differences in burden should occur as long as stressors, the use of social resources and other factors are similar (Miller & Cafasso, 1992).
Gender role late life shift.

This perspective suggests that men and women go through changes later in life and that, as a result of these changes, the psychological needs of men and women shift such that men may desire more nurturing roles and be more concerned about the quality of their relationships while women may desire more productive and assertive roles (Gutmann, 1994). Thus, gender differences in caregiving distress are related to these psychological changes in late life. Older men, particularly husbands, may enjoy their new role as caregivers while women may yearn for freedom from caregiving (Ingersoll-Dayton & Raschick, 2004). Conversely, younger men may find caregiving less satisfying while younger women may find caregiving more satisfying.

Heterogeneity of population.

Male caregivers vary tremendously in regards to stressors, resources, and outcomes of caregiving as well as how caregiving is approached by different subgroups (Kramer, 2002a). Because of the tremendous diversity in the male caregiving population, sociological and psychological theories have limited explanatory power when applied to the caregiving experience. As Miller and Cafasso (1992) note, while some studies find support for explanatory theories, others do not and this is partly due to the heterogeneity of the population, particularly with age. However, several conceptual models have been developed to assist researchers and practitioners in both the assessment of and intervention with family caregivers.

Conceptual Models Used in Caregiving Research and Practice

In models that have been developed for use in caregiving research, health (both physical and mental) is the primary outcome, because health is viewed as an important outcome on both the individual and societal level and because stress and health have been consistently linked. All models of caregiving recognize that contextual, situational, and individual differences contribute
to caregiving outcomes (Schulz, Gallagher-Thompson, Haley, & Czaja, 2000). Two of the most commonly used conceptual models in caregiving research are discussed below: the stress/coping model and the stress process model.

**Stress/coping model.**

The basic stress-coping model is a framework for interactions between the individual and the environment (Schulz, Gallagher-Thompson, Haley, & Czaja, 2000). When caregivers are faced with primary stressors associated with caregiving, they evaluate whether the demands are potential threats or whether they're able to cope with them. If they perceive environmental demands as threatening and view their coping resources as inadequate, they perceive themselves to be under stress. This appraisal of stress is presumed to result in negative affect. Negative emotional responses may also trigger behavioral or physiological responses that place the individual at increased risk. It is also possible that caregivers may view a potential stressor as benign and/or they believe they have the ability to cope with it. This may lead to positive emotional responses (Schulz, Gallagher-Thompson, Haley, & Czaja, 2000).

According to the stress/coping model proposed by Folkman (1997), caregivers’ appraisal of their experiences, coping, and health status are possible mediators that affect the relationship between caregiving stressors and the consequences of caregiving. In this model, positive affective states may have an influence on sustaining positive coping strategies which may affect the appraisal of stressful situations. One strength of this model is that it contains many possible feedback loops which emphasize that dealing with stressors is a complex, dynamic process in which responses at one stage may feed back to an earlier stage (Schulz, Gallagher-Thompson, Haley, & Czaja, 2000).
**Pearlin stress process model.**

The stress process model developed by Pearlin and colleagues (Pearlin Mullan, Semple, & Skaff, 1990; see Figure 1) is perhaps the most frequently used model in elder caregiving research and has been endorsed by the Family Caregiver Alliance for use in both research and practice (Family Caregiver Alliance, 2006). What makes this model particularly useful in research, practice, and policy is that it acknowledges that environmental stressors can place an individual at risk for negative outcomes even when the appraisal does not result in perceptions of stress or negative emotional responses (Schulz, Gallagher-Thompson, Haley, & Czaja, 2000). This is particularly useful for social work research and practice because it is congruent with the mission of social work that values working with the individual in a social context.

The Pearlin stress process model has five main components: (1) caregiving context; (2) primary stressors (objective and subjective); (3) secondary stressors (role strains and intrapsychic strains); (4) resources; and (5) outcomes. Objective primary stressors include problems with activities of daily living (ADL) and/or instrumental activities of daily living (IADL), cognitive deficits, and behavior problems. Subjective primary stressors may be defined in several ways but include such concepts as role overload, loss of relationship, role captivity, and appraisals of stress (e.g. burden). Secondary stressors are not directly related to the care recipient’s illness but impact the caregiving situation. Secondary role strains include: family conflict, job conflict, and economic problems (e.g. perceived income inadequacy). Secondary intrapsychic strains include such concepts as mastery, self-esteem, loss of self, competence, and gain. Resources include coping, social support, and formal services. Finally, the following outcomes are recommended for use in research and practice with family caregivers: physical health, emotional well-being (e.g. depressive symptomology), facility placement, and service utilization (Zarit, 2006).
The Pearlin stress process model proposes that caregiving context variables (e.g., age, gender) affect each part of the stress process and can have implications for the types of stressors facing caregivers, the perception or appraisal of those stressors, and outcomes such as caregiver depression (Family Caregiver Alliance, 2006). Thus, the consideration of diversity is essential to assessment and intervention with caregivers of older adults. The Pearlin stress process model has been found to be useful with caregivers from diverse backgrounds. For example, previous studies have found the Pearlin stress process model to be a good fit for both male and female caregivers (Bookwala & Schulz, 2000). In a recent study by this researcher and colleagues testing the Pearlin stress process model using baseline data from the Resources for Enhancing Alzheimer’s Caregiver Health (REACH) II project, the model was found to be a good fit across racial/ethnic groups of dementia caregivers (Hilgeman, Durkin, Sun, DeCoster, Allen, Gallagher-Thomson, & Burgio, 2009) suggesting that the overall model is applicable to varied caregiving contexts. However, racial/ethnic differences were found in the individual components of the model. This suggests that the Pearlin stress process model may be a good place to start when working with caregivers, but cultural differences may be an important consideration when targeting areas for intervention. For example, African Americans in the REACH II study were found to have higher levels of role strain than Whites and Hispanics suggesting that interventions that target this component may be more useful with African American dementia caregivers. Cultural differences may also be related to age cohort. Earlier research on caregiver role strain from the 1990s reported lower levels of role strain among African American caregivers when compared to Whites (e.g., Farran, Miller, Kaufman, & Davis, 1997). Further, Dilworth-Anderson and Gibson (2002) recommend that future research and practice models include cultural and
social information about diverse groups of dementia caregivers. In the following section, study variables are discussed within the context of the Pearlin stress process model.

**Caregiving context.**

**Demographics.**

Several contextual variables have been found to play a role in male caregivers’ psychosocial well-being, including: caregiver age, age of the care recipient, relationship to care recipient, and years in the caregiving role (Carpenter & Miller, 2002). Specifically, younger men have been found to have more difficulty in the caregiving role; and duration of caregiving has been found to have a positive effect on strain (Carpenter & Miller, 2002). Harris (1993) found that husbands who had assumed the caregiving role the longest seemed to express the least burden and the most satisfaction with their role.

Carpenter and Miller (2002) also note that little is known about how race, socioeconomic status, and other contextual variables such as income and education affect negative and positive aspects of caregiving among male caregivers; however Kramer (1997b) suggests that background and contextual factors influence caregiver appraisals of strain and gain. Among caregivers in general, lower income and education have been found to be related to poorer physical health (Pinquart and Sörensen, 2007). Among male caregivers, education has been found to have a negative relation with satisfaction with caregiving (Carpenter & Miller, 2002) and a positive relation with self-perceived health (Ducharme, et al., 2007).

**Relationship to care recipient.**

In exploring the experiences of male caregivers, some researchers have focused on the familial relationship of husbands and sons. Differences in the role of husband or son can affect the caregiving relationship. In the caregiving literature that includes an examination of male
caregivers, most studies have examined spousal caregivers (Cahill, 2000; Fuller-Jonap & Haley, 1995; Hagedoorn et al., 2002; Hooker, Frazier, & Monahan, 1994; Kramer, 1997; Kramer & Lambert, 1999; Pruchno, & Resch, 1989; Russell, 2001; Wallsten, 2000; Williamson & Shaffer, 2001). In studies that examine both spousal and filial caregivers, the relationship with the care recipient was found to be one of several factors associated with perceived well-being (Berg-Weger, Rubio, & Tebb, 2000). Adult child caregivers demonstrated higher positive affect, increased well-being and lower depression compared to caregiving spouses (Berg-Weger, Rubio, & Tebb, 2000; Ford, et al., 1997). Similar to these findings, Marks, Lambert, and Choi (2002) found that spouses experience more negative effects than adult children and that spousal caregiving is more problematic for women.

Married men have lower death rates than non-married men and there is ample evidence that the health effects of marriage are greater for men than women. Therefore, spousal male caregivers, particularly dementia caregivers, may be of particular risk due to the alteration of the marital relationship (Adler, Patterson, & Grant, 2002; see Dementia Diagnosis section for further discussion). The loss of companionship may also be a major issue with spousal male caregivers (Harris, 1993).

Caregiving sons have not received as much attention as male spouses. Sons tend to become caregivers if they are the only child, in a male-only sibling network, or if they are the only geographically available child (Campbell & Martin-Matthews, 2003; Horowitz, 1985). A study comparing caregiving sons and daughters, Horowitz (1985) found that, overall, caregiving is less stressful for sons. Sons spent less time caregiving than daughters, were significantly more likely to report that they had no problems and were less likely to believe that they had to give up anything or neglect family responsibilities (Horowitz, 1985). In studies on caregiving sons, sons
are as likely as daughters to provide emotional and financial support, to live with their parents and to have positive gains associated with the caregiving experience (Harris, 1998). Filial obligation has been cited as a positive motivator for sons in the caregiving role (Campbell & Martin-Matthews, 2003; Harris, 1998).

*Pre-illness relationship quality.*

The quality of the pre-illness relationship, in particular, may be especially relevant. According to Williamson and Shaffer (2001), the quality of the pre-illness relationship may influence adaptation to the caregiver role and the quality of care provided, and appears to initiate a process that can determine caregiver outcomes. Previous studies suggest that the quality of the prior relationship affects the current caregiving relationship (Neufeld & Harrison, 1998) and has been linked to caregiver depression and maltreatment of the care recipient (Williamson & Shaffer, 2001). For example, caregivers who rated past and present relationship quality as high reported less depression (Williamson & Shaffer, 2001).

However, one reason dementia caregivers may be more depressed than non-dementia caregivers may be because they perceive fewer current relationship rewards compared with the past (Williamson & Shaffer, 2001). In an interesting finding with a sample of older husband caregivers, the more the spousal relationship was satisfactory prior to illness, the greater the psychological distress (Ducharme, et al., 2007)

*Primary stressors.*

Measures of care recipient functional impairment (ADL/IADL) and cognitive status (Dementia Diagnosis) are part of the Pearlin stress process model and represent primary stressors in elder caregiving. Behavior problems, physical deterioration, or cognitive decline of the care recipient have all been found to contribute to negative psychosocial well-being in male
caregivers (Carpenter & Miller, 2002). According to Femiano and Coonerty-Femiano (2002), the physical and psychological deterioration of the care recipient may have particularly significant detrimental impacts on a male caregiver’s well-being.

*Care recipient functional impairment.*

Among caregivers overall, an increase in functional impairment over time has been linked to institutionalization of the care recipient (Gaugler, Kane, Kane, & Newcomer, 2005). Male caregivers have been found to express a sense of grief and loss as the physical and cognitive functioning of their care recipient declined and physical, and cognitive decline has been found to contribute to negative psychosocial well-being (Carpenter & Miller, 2002). Men also experience stress depending on the amount and type of caregiving tasks, particularly hands-on personal care. In particular, men reported increased stress as their increasing responsibilities necessitated an invasion of the care recipient’s rights or privacy (Carpenter & Miller, 2002).

*Dementia diagnosis.*

A diagnosis of dementia in the care recipient creates unique challenges for caregivers and some may be particularly problematic for spousal male caregivers. In the caregiving literature overall, dementia caregivers who experience emotional stress and burden are more likely to institutionalize than those who do not (Gaugler, Kane, Kane, Clay, & Newcomer, 2003). A decline in cognitive impairment and functional ability coupled with disruptive and aggressive behaviors has been found to be more predictive of institutionalization, especially for men (Coehlo, Hooker, & Bowman, 2007). Research has found that memory-behavior problems and cognitive decline in the care recipient have a positive relationship with strain in men (Carpenter & Miller, 2002).
For husbands caring for wives with dementia, the loss of female companionship has been found to be a significant factor (Harris, 1993; Kramer, 1997a; Kramer & Lambert, 1999). Husbands who care for wives with Alzheimer’s disease report social isolation, a decline in emotional support and a significant decline in their marital relationship (Harris, 1993; Kramer & Lambert, 1999). According to Kramer (1997a), the loss of a partner to dementia may be particularly challenging to older husbands who typically rely on their wives for emotional and social support. Research also indicates that men are less skilled in decoding non-verbal cues, a potential deficiency in caring for an older person with cognitive impairment, especially those suffering from Alzheimer’s (Neufeld & Harrison, 1998).

Secondary stressors.

Perceived income adequacy.

Perceived income adequacy is considered a secondary stressor in the Pearlin stress process model and may also be referred to as financial strain (Family Caregiver Alliance, 2006). Concern about finances appears to be an important predictor of depression in male caregivers (Kramer, 1997b) and has been found to contribute to depression in African American older adults (Lincoln, 2007). Financial strain may also increase psychological distress and create both short-term and long-term stressors by reducing the availability of important resources (Blazer, Sachs-Ericsson, & Hybels, 2005). Financial strain as a secondary stressor in the Pearlin stress process model may increase the risks for poor outcomes by exacerbating the primary stress of caregiving (Pearlin, Mullan, Semple, & Skaff, 1990). In a recent study by this author and colleagues, perceived income adequacy was found to be a better predictor of depression and anxiety in dementia caregivers than household income (Sun, Hilgeman, Durkin, Allen, & Burgio, 2009).
Activity restriction.

Activity restriction has been negatively associated with relationship quality, and both activity restriction and relationship quality have been correlated with depressive symptoms (Bookwala & Schulz, 2000). Activity restriction may also serve as a proxy for social isolation since engaging in activities outside the home increases social contact.

Social isolation has been identified as an area of concern for male caregivers and has been linked with higher reports of depression (Kramer, 1997b). In some studies, male caregivers have reported a sense of abandonment and isolation (Carpenter & Miller, 2002). In addition, Femiano and Coonerty-Femiano (2002) report that, in previous studies, male caregivers have been found to have an increased sense of social isolation and to experience declines in social and recreational activities and emotional support. Alternatively, Thompson (2002) proposes that men control their emotional experience by maintaining different roles in addition to the caregiving role. Thus, activity restriction appears to be a particularly strong indicator of well-being in male caregivers.

Among dementia caregivers in particular, the increased demands of dementia care may promote social isolation and reduce contact with outside sources (Kaye, 2002). Russell (2001) reports that feelings of isolation are common among husbands caring for wives with dementia.

Resources.

Social support.

Social support has been identified as the strongest predictor of strain and gain among male caregivers, and studies have reported positive effects when informal support was available (Carpenter & Miller, 2002). In the male caregiver research, positive informal supports are related to decreased burden while negative ones are related to increased burden (Carpenter &
Miller, 2002). Research suggests that male caregivers often feel isolated in the caregiving role and, as social support declines, depression increases (Femiano and Coonerty-Femiano, 2002). In a study by Kramer (1997a), lower strain scores were reported by caregiving husbands who were more satisfied with social support, suggesting a social support may have a buffering effect.

*Formal services.*

Receipt of formal services is considered a resource in the Pearlin stress process model (Family Caregiver Alliance, 2006). It has been found that male caregivers tend to utilize formal services less, are less likely to be aware of community resources than female caregivers (Kaye, 2002), and may be resistant to the use of formal services (Carpenter & Miller, 2002). Carpenter and Miller (2002) suggest resistance to formal support among male caregivers may vary by race, cohort, relationship, or disease progression. Disease progression, in particular, has been found to explain variance in formal support usage – men became more willing to consider formal support when the disease had progressed to a severe stage (Carpenter & Miller, 2002).

Some research suggests that formal support may moderate the impact of stressors on psychosocial outcomes for male caregivers; however, some studies have reported that men’s feelings of burden increased with outside community service usage (Carpenter & Miller, 2002). They suggest that the effects of both informal and formal support on well-being may not be mutually exclusive but may have degrees of both positive and negative outcomes at the same time.
Outcomes.

Depressive affect.

Depressive affect is one of the most common indicators of emotional well-being in studies using the Pearlin stress process model (Family Caregiver Alliance, 2006) and has been linked to the quality of care of the older adult (Beach, Schulz, Williamson, Miller, & Weiner, 2005). Compared to non-caregivers, male caregivers report poorer mental health, particularly depression and burden (Carpenter & Miller, 2002; Femiano & Coonerty-Femiano, 2002; Thompson, 2002). One research study suggests that male caregivers may become more depressed over time (Kramer, 2002b); however, little is known about how depression changes over time due to a paucity of longitudinal studies of male caregivers.

Self-perceived physical health.

The physical health of the care recipient is a major outcome in the Pearlin stress process model (Family Caregiver Alliance, 2006). Studies have reported that men, in general, may be more physically reactive to stressors (Adler, Patterson, & Grant, 2002). Male caregivers have been found to experience a greater level of physical issues than female caregivers (Adler, Patterson, & Grant, 2002) and may have serious health consequences due to caregiving (Kramer, 2002b). Spousal caregivers, in particular, have been found to have a greater risk of developing a serious illness and hypertension and a greater relative risk of mortality (Adler, Patterson, & Grant, 2002).

The evidence suggests that men may be more vulnerable to the physiological consequences, including immune alterations, of chronic stress in the caregiving role. The notion that male caregivers are protected from the adverse health effects of caregiving may not generalize to physical health (Adler, Patterson, & Grant, 2002). Carpenter and Miller (2002)
suggest that male caregivers may initially have a more physiological response to psychosocial stress, and psychosocial responses may exist further along in the caregiving career. In one study of community-dwelling dementia husband caregivers, health remained stable over one year (Kramer, 2000).

*Anxiety.*

Although anxiety may be more prevalent among family caregivers than depression (Mahoney, Regan, Katona, & Livingston, 2005), it has not received as much attention in the caregiving literature as depression (MacNeil, Kosberg, Durkin, Dooley, DeCoste, & Williamson, 2009). Anxiety and depression are often highly correlated in the caregiving literature; however, while many studies have found that depressed caregivers are also anxious, caregivers may report high levels of anxiety without comparable levels of depression (Mahoney, Regan, Katona, & Livingston, 2005). In a review of articles that examined anxiety in a dementia caregiving sample, Cooper, Balamurali, and Livingston, (2007) concluded that predictors of anxiety and depression may not be the same; therefore they need to be treated as separate outcomes. Compared to non-caregiving males, male caregivers report higher anxiety (Femiano & Coonerty-Femiano, 2002). The literature suggests that male caregivers may experience anxiety from their efforts to simultaneously handle the multiple domains of caregiving while also developing new skills (Kramer, 2002b). This is particularly salient for older male caregivers early in the caregiving career. For some men, the challenge of learning new skills while simultaneously coping with multiple losses associated with caregiving may lead to a tremendous sense of anxiety (Femiano & Coonerty-Femiano, 2002).
Anger and resentment.

There are several reasons for the inclusion of anger and resentment in this study. Kramer (2002a) suggests that the impacts of caregiving on male caregivers may be underestimated due to the underreporting by male caregivers as a result of socialized pressures to minimize or hide emotional responses viewed as feminine. For some men, expression of anger and resentment may serve as a proxy for other emotions such as depression and may be perceived as more socially acceptable and “masculine” (Glicken, 2005). In addition, men who were socialized in traditional masculinity may not have the emotional language to express emotions such as sadness but possess the emotional language to express anger and resentment (Glicken, 2005).

Anger and resentment have been understudied in the caregiving literature (MacNeil, Kosberg, Durkin, Dooley, DeCoster, & Williamson, 2009). Caregiver anger and resentment have been positively linked to a greater need for ADL assistance, care recipient behavior problems, feelings of caregiver burden (Ansello, 1996; Croog, Burleson, Sudilovsky, & Baume, 2006) and the quality of care provided to the care recipient (Williamson & Shaffer, 2001). In one of few studies that directly examined resentment, Williamson, et al. (2005) found that caregiver resentment was not directly linked to care provision or dementia status but was instead predicted by care recipient behavior that was appraised by the caregiver to be controlling and manipulating.

In a study by this author and colleagues using the FRILL 2 data (MacNeil, Kosberg, Durkin, Dooley, DeCoster, & Williamson, 2009), caregiver anger was found to be a complex contributing factor to the relation between caregiver emotional well-being and the quality of care provided to the care recipient. Specifically, the level of caregiver anger was found to influence the impact of anxiety, depression, and resentment on quality of care. The relation to depression
and resentment was even more complex such that high levels of depression and resentment coupled with feelings of anger greatly increase the potential for harming the care recipient, a precursor of elder abuse.

Summary and Conclusions

Research suggests that male caregivers of older adults exist in sufficient numbers to warrant the attention of researchers, practitioners, and policymakers; and demographic trends suggest that more men will be assuming the caregiving role in the future. Yet, a vast majority of research on caregivers of older adults has focused on the female caregiver with comparatively little research on male caregivers.

Most of the research on male caregivers has been through gender comparative studies. Research to date suggests that male caregivers may be quantitatively and qualitatively different from female caregivers and that men report less caregiving distress than women. However, gender comparisons are problematic for multiple reasons and research is needed that explores the male caregiver experience without constant comparison to women. When compared to non-caregiving men, male caregivers appear to be experiencing issues related to caregiving but these issues are masked when compared with women. Other factors, such as culture and ethnicity, suggest that men may be more heterogeneous than research would suggest; yet most research on male caregivers to date has treated this population as a homogenous group. Finally, research on male caregivers is further limited by a lack of longitudinal studies that examine change over time. The preponderance of cross-sectional studies is an issue for the caregiving literature overall, but is particularly problematic in research with male caregivers. Longitudinal examinations of male caregivers are exceedingly rare.
While many sociological and psychological theories have been applied to the caregiving experience, gender role socialization theory has dominated the discourse due to the extensive use of a gender comparative approach in caregiving research. The use of this theory in caregiving research is problematic for several reasons, particularly because of its reliance on gender role stereotypes. Gender socialization theory and other theories commonly used in the caregiving literature have limited explanatory power when applied to the male caregiving experience due to the heterogeneity of the population.

Masculinity theory may be more applicable to male caregivers because, rather than relying on gender role stereotypes, it places masculinity on a continuum based on the internalization of masculine and feminine traits, behaviors, and attitudes - from what is considered to be more “traditionally” masculine to a more contemporary masculinity that is characterized by feminine and androgynous traits. Thus, while “gender” as a category is still an important consideration, assumptions are based on the degree of adherence to socialized expectations rather than static roles. However, theories based on socialization are further complicated by evidence that gender roles become less salient in later life.

Conceptual models are more useful in caregiving research because they account for individual variation in the caregiving experience and provide constructs that can be used in assessment, intervention, and evaluation. The Pearlin stress process model is particularly useful in social work and gerontological research, practice, and policy for several reasons: (1) it is the most commonly used model in elder caregiving research; thus studies that use this model can be meaningfully compared; (2) it has been found to be applicable across a broad range of caregiving populations, including male caregivers and caregivers from different racial/ethnic backgrounds; (3) it offers a framework for assessment that accounts for individual variation in caregiving
context, stressors, resources, and outcomes; (4) it provides a measurable model that explains how these constructs relate to each other; and (5) interventions can be developed evaluated and that target single or multiple domains of the caregiving experience.
Research Methods

Research Design

Secondary data analyses were conducted on data from 130 African American and White male caregivers in three waves of the Family Relationships in Late Life (FRILL) 2 Project (n = 444). FRILL 2 (AG15321, P.I.: Gail Williamson) was a NIA-funded multi-site longitudinal study of informal care provided by community-dwelling caregivers of elderly care recipients with whom they co-resided. Three waves of data were collected over three years approximately 18 months apart. Both the caregiver and care recipient were assessed at all three waves; however, only data from the caregivers are included in this study. It should be noted that FRILL 2 did not include an intervention component; thus changes over time were not influenced by researcher intervention.

The overall purpose of the FRILL 2 project was to merge elder caregiving and elder abuse research in order to: (1) develop a profile of the quality of care provided by informal caregivers; (2) identify at-risk caregivers; and (3) identify specific caregiver emotional well-being factors that mediate relations between predisposing factors and subsequent quality of care.

FRILL 2 Sampling Strategies

The volunteer sample was recruited in and around the communities of Athens, GA, Pittsburgh, PA, and Tuscaloosa, AL by means of probability-based random digit dialing (RDD) and word-of-mouth advertising. To be eligible for the study, caregivers had to be self-defined as the individual primarily responsible for the care of a cognitively or physically impaired care
recipient over the age of 60 and providing unpaid help for at least one basic activity of daily living (ADL) or two instrumental activities of daily living (IADL).

A primary goal of FRILL 2 was to oversample African American caregiving dyads in order to obtain data sufficient to address issues (e.g., longitudinal comparisons between White and African American caregivers) conspicuously missing in previous research on the quality of informal elder care. Efforts began with Random Digit Dialing (RDD) in the data collection sites, then narrowed to Age-Targeted RDD (e.g., individuals 60 years of age and older, according to U.S. Census data). To increase the number of African American participants, FRILL 2 used community-based snowball referral methods at the Georgia site in which enrolled African American dyads were re-contacted and asked to provide the names and telephone numbers of other potentially eligible dyads. In initial screening, RDD methods identified 877 potential dyads. Snowball methods produced 95 potential dyads. These methods resulted in a sample that was 55% White and 45% African American. Recruitment efforts resulted in 765 eligible dyads, 321 (42%) of whom declined participation, resulting in a sample of 444 caregivers (58% participation rate). Of these, 21 caregivers had enough missing data to be excluded from analyses, resulting in a total sample of 423. This study examined data from the 130 African American and White male caregivers in this final sample.

**Data Collection**

Face-to-face structured interviews, lasting between 1.5 and 2 hours, were conducted in respondents’ homes by pairs of carefully trained interviewers. Each participant was paid $25 for a completed interview. To prevent data contamination, caregivers and care recipients were interviewed separately and simultaneously by two project interviewers. The consent form for the study contained a sentence advising participants that suspected cases of abuse would be reported.
to the proper authorities. No reportable cases were observed, and no participants refused to be interviewed after receiving information informing them of the obligation to report suspected cases of abuse.

The length of time between waves was approximately 18 months. The attrition rate between Wave 1 and Wave 2 was approximately 36% (37% for White males and 30% for African American males). The attrition rate between Wave 2 and Wave 3 was approximately 37% (20% for White males and 30% for African American males).

**Characteristics of Total FRILL 2 Sample at Baseline**

Similar to national estimates (e.g., Family Caregiver Alliance), 30% of caregivers in the study were men. Mean caregiver age was 60 years of age ($SD = 15$, range 18 – 98), and care recipients were, on average, 75 years of age ($SD = 8$, range 60 – 102). Slightly over half of the caregivers (52%) were spouses of their care recipients. The ethnic background of the final baseline sample was 55% White (n=242), 41% African American (n=183), 2% Hispanic (n=9) and 2% other ethnic heritage (n=8). Two had missing data on race. Only African American and White caregivers were included (n=425) in analyses on the FRILL 2 sample. Twenty-seven percent of care recipients had received a medical diagnosis of dementia or another disorder that causes memory problems (e.g., Alzheimer’s disease, Parkinson’s disease). Duration of care provision at the time of the interviews ranged from less than one year to more than 50 years ($M = 6.9$ years, $SD = 7.8$, range <1 – 58). Sample characteristics of African American and White caregivers at baseline are presented in Appendix A.
Measures Used in Study

Caregiving Context.

Socio-demographic characteristics. These include: caregiver age in years, care recipient age in years, and race (coded 0 = African American and 1 = White).

Relationship to the care recipient. This construct was assessed using a single item (What is your relationship to [care recipient]?) with 9 categories. For the analyses conducted for this study, this variable was dichotomized to 0 = spouse, 1 = non-spouse.

Caregiver education. This construct was assessed using a single item (How much education have you had?) with 7 categories (1 = < 7 years to 8 = graduate degree) and treated as a continuous variable in the analyses.

Caregiver income. This construct was assessed using a single item (If you don’t mind, would you tell me your approximate annual income before taxes?) with 11 categories (1 = < $5,000 to 11 = $100,000 or more) and treated as a continuous variable in the analyses.

Time in the caregiving role. This construct was assessed using a single item (How long have you been providing care for care recipient?) and measured in months. The variable was changed to years providing care for easier interpretation.

Pre-illness relationship quality. This construct was assessed using the caregiver report of the Mutual Communal Behavior Scale (Williamson & Schulz, 1995a), a 10-item measure of communal feelings between the caregiver and care recipient prior to onset of illness. Responses ranged from 1 = never to 4 = always. Respondents were asked to think about the type of interactions they had with the care recipient prior to illness onset. Five items evaluate the caregiver communal behavior toward the care recipient and five additional items evaluate care recipient communal behavior toward the caregiver. Sample items include: “If the patient was
feeling bad, I tried to cheer him/her up” and “The patient did things just to please me.”

Cronbach’s alpha for this sample is .88. Higher scores indicate better pre-illness relationship quality.

**Primary stressors.**

**Care recipient functional impairment.** This construct was measured using the Activities of Daily Living Scale (ADL; Katz et al., 1963) and the Instrumental Activities of Daily Living Scale (IADL; Lawton & Brody, 1969). The 7-item ADL Scale (Cronbach’s alpha in the current sample = .81) measured the caregiver’s assessment of the care recipient’s ability to perform basic tasks of daily functioning independently (e.g., bathing, dressing, toileting, eating, grooming, and transfer). Similarly, the 11-item IADL Scale (Cronbach’s alpha = .83) measured the caregiver’s assessment of the assistance needed by the care recipient to perform higher-level tasks such as shopping, operating the telephone, preparing meals, doing housework or laundry, and managing finances or medications. Total level of assistance needed for ADLs and IADLs were summed with higher scores indicating more functional impairment.

**Dementia diagnosis.** This construct was assessed using caregiver report of a single item (Has [care recipient] been diagnosed as having any condition that causes memory problems, such as Alzheimer’s disease or dementia?). Responses were either 0 = No or 1 = Yes.

**Secondary stressors.**

**Perceived income inadequacy.** Financial strain was measured by a single item measuring the caregiver’s assessment of the perceived difficulty in paying for basic needs such as food, housing, medical care, and heating along a 5-point Likert-type scale (1 = much more than adequate to 5 = not adequate at all).
**Activity restriction.** Because FRILL 2 does not contain an instrument that measures caregiver social isolation, the Activity Restriction Scale (Williamson, Shaffer, & Schultz, 1995a) was used as a proxy for social isolation. This scale is a 10-item measure of restriction in caregiver activity due to the caregiving role. Caregivers were asked how much caring for the care recipient has restricted them in 10 areas (e.g. “caring for yourself,” “visiting friends,” “working on hobbies”). Responses ranged from 0 = *never or seldom did this* to 4 = *greatly restricted*. Cronbach’s alpha for this sample is .85. Higher scores indicate more activity restriction and, as proxy, greater social isolation.

**Resources.**

**Caregiver social support.** Social support from family and friends was measured using the 6-item version of the Interpersonal Support Evaluation (Cohen, Mermelstein, Kamarck, & Hoberman, 1985). On a scale ranging from 1 = *definitely false* to 4 = *definitely true*, respondents rated statements such as “When I feel lonely, there are several people I can talk to” and “If I were sick, I could easily find someone to help me with my daily chores.” Cronbach’s alpha for this sample is .75. Higher scores indicate greater social support.

**Receipt of formal services.** Caregivers were asked whether or not they or the care recipient received 7 formal services (e.g. paid homemaker services, transportation services). Responses were coded 0 = No, 1 = Yes and summed to create a Total Formal Services variable.

**Outcomes.**

**Caregiver anger.** A short form of the Spielberger State-Trait Anger Scale (Spielberger, 1983) was used to assess caregiver anger. Respondents were presented with 10 items (e.g. “angry,” “like yelling at someone,” “about to explode”) and asked how often they felt that way in
the past week using a scale ranging from 1 = almost never to 4 = always. Cronbach’s alpha for this sample is .89. Higher scores indicate greater anger.

**Caregiver anxiety.** Anxiety was measured using the Spielberger’s State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970). The measure consists of two subscales, one measuring enduring (trait) and the other capturing transient (state) aspects of anxiety. Respondents were asked to indicate their response to items that best describe how they usually feel on a scale ranging from 1 = almost never to 4 = almost always. Sample items include: “I feel pleasant,” “I feel rested,” and “I worry too much over something that doesn’t really matter.” Cronbach’s alpha for this sample is .89. Higher scores indicate greater anxiety.

**Caregiver depressed affect.** FRILL 2 measured symptoms of depression with the Center for Epidemiological Studies Depression (CES-D) scale (Radloff, 1977). Twenty items assessing the frequency of depressive symptoms during the past week were rated on a 4-point scale (0 = rarely or none of the time, less than 1 day, 3 = most or all the time, 5-7 days). The responses were summed with higher scores indicating elevated levels of depressive symptoms. Individuals with scores of 16 or above are considered to be at risk for clinical depression; 27% of caregivers in this study were in this category. Cronbach’s alpha for this sample is .89.

**Caregiver resentment.** Caregiver resentment was operationalized as the sum of responses to a 17-item instrument adapted from previous research. Prior analyses have shown that combining 10 items from a resentment scale devised by Thompson, Medvene, and Freedman (1995) with 7 items from the Caregiver Burden Scale (Zarit, Reever, & Bach-Peterson, 1980) results in a measure of caregiver resentment that is psychometrically sound (Williamson, Shaffer, & FRILL, 2000; Williamson et al., 2005). Caregivers indicated how often (1 = never, 5 = almost always) they felt resentful about such circumstances as not having enough time for themselves,
having to give up plans for the future, or that their care recipients were overly dependent or made unreasonable demands. Cronbach’s alpha for this sample is .93. Higher scores indicate greater resentment.

Caregiver self-perceived health. A single item derived from Schulz et al., 1997 was used to assess subjective health. Caregivers were asked “How would you rate your overall health right now?” Respondents rated their general health on a 5-point scale from 1 = poor to 5 = excellent. Scores range from one to five, with higher scores indicating better perceived health.

IRB Approval

The data used in this study are from a completed research study and do not identify the respondents. Use of the data has been approved by The University of Alabama Institutional Review Board (IRB). The original FRILL 2 project obtained IRB approval from each of the three research sites: The University of Alabama, The University of Georgia, and The University of Pittsburgh.

Analysis Plan

Descriptive analyses.

Data were analyzed using the Statistical Package for Social Sciences (SPSS 13.0). The first stage of the analysis was the psychometric testing of the scale instruments used in the study through reliability tests. Results of reliability tests are reported for each scale in the “Measures used in study” section above. Descriptive analyses were conducted to describe the profile of the overall sample, and bivariate analyses were used to compare differences between African American and White male caregivers at baseline. Pearson correlation analyses were used to determine the relation between outcome variables. An alpha level of .05 was used to determine statistical significance across the study.
Hierarchical linear modeling.

Comparison of baseline and longitudinal samples.

The first step of the analysis was to descriptively compare the baseline sample and the study sample that completed all three waves in order to illustrate how the longitudinal sample might differ from the baseline sample. Data were analyzed using the Statistical Package for Social Sciences (SPSS 13.0). Significant differences between the two suggest caution in the interpretation of the results.

Correlation analyses between predictor and outcome variables.

In the second step, each set of predictors was examined separately and variables that did not have a statistically significant correlation with any individual change parameters were dropped. This step is standard in HLM analyses. It is used to develop a parsimonious model and attend to Type I error considerations. Data were analyzed using the Statistical Package for Social Sciences (SPSS 13.0).

Hierarchical linear modeling analyses.

Hierarchical Linear Modeling (HLM) was used to estimate the trajectory of the outcome variables over the three waves. There were several benefits to using HLM in this study. HLM has the capacity to analyze information about the rate and the pattern of change in targeted variables over multiple time points, taking into account inter- and intra-individual variability in change and cross-level interactions of time with predictors (Raudenbush & Bryk, 2002). Specific advantages of HLM over standard repeated measures analyses in this study were: (1) HLM allowed the examination of predictor variables that change over time; (2) HLM allowed the use of data from participants that did not have data from all three time points; and (3) HLM took into account variance in the spacing of assessments across participants. Although participants were
supposed to be assessed at 18 months between waves, the true intervals between assessments varied due to scheduling and other issues (i.e. care recipient not feeling well).

A two-level HLM was used to predict individual changes over time for each of the five outcome variables (anger, anxiety, depressed affect, resentment, and self-perceived physical health) using the HLM software (version 6.02; Raudenbush, Bryk, & Congdon 2005). The level 1 model for each outcome variable specified the shape of individual change parameters (i.e., linear growth) over time. Graphs of changes in the outcome variables over time were developed to determine the appropriate level 1 model (e.g. linear, quadratic). The control variable related to care recipient functional impairment (ADL/IADL) may vary significantly between waves and thus needed to be considered a time-varying covariate. Observation-level variables were included at Level 1, whereas participant-level variables were included at Level 2. Due to the time-varying nature of ADL/IADL, main effects were expected in Level 1; thus ADL/IADL was included as a covariate in Level 1 (see equation I in Figure 2). In the Level 2 models, main effects were expected for baseline measures of the control variables, so these were included as predictors of the Level 1 constant coefficient (see equation II). Age and years caregiving were expected to interact with time, and so these were included as predictors of the Level 1 coefficient for time (see equation III). Resource variables were expected to interact with care recipient functional impairment, so these were included as predictors of the Level 1 coefficient for ADL/IADL (see equation IV).
Figure 2. Equations in HLM Analyses

Level 1 model:
\[ Y_{ij} = \pi_{0i} + \pi_{1i} \text{(time)} + \pi_{2i} \text{(ADL/IADL)} + e_i \quad (I) \]

Level 2 model:
\[ \pi_{0i} = \beta_{00} + \beta_{01} \text{(race)} + \beta_{02} \text{(dementia diagnosis)} + \beta_{03} \text{(relationship to CR)} + \beta_{04} \text{(income)} + \beta_{05} \text{(perceived income adequacy)} + \beta_{06} \text{(education)} + \beta_{07} \text{(pre-illness relationship quality)} + \beta_{08} \text{(social support)} + \beta_{09} \text{(activity restriction)} + \beta_{10} \text{(formal services)} + \gamma_{0i} \quad (II) \]
\[ \pi_{1i} = \beta_{10} + \beta_{11} \text{(CG age)} + \beta_{12} \text{(CR age)} + \beta_{13} \text{(years caregiving)} + \gamma_{1i} \quad (III) \]
\[ \pi_{2i} = \beta_{20} + \beta_{21} \text{(social support)} + \beta_{22} \text{(activity restriction)} + \beta_{23} \text{(formal services)} + \gamma_{2i} \quad (IV) \]
Data were then analyzed using HLM software (version 6.02; Raudenbush, Bryk, & Congdon 2005). In each HLM, a model that included the fixed and random effects of both level 1 independent variables was examined (time and ADL/IADL). This initial model was then revised using the following guidelines:

1. Level 1 predictors that did not have significant fixed or random effects on the outcome were not included in the revised model.
2. Level 1 predictors that had significant fixed effects, but not significant random effects on the model were included in the revised model as fixed effects.
3. Level 1 predictors that had significant random effects (whether the fixed effects were or were not significant) were included in the revised model as fixed and random effects.
4. Level 2 predictors were added to explain the variability in any level 1 coefficients that had significant random effects.

To create a parsimonious model, Level 2 predictors that did not have significant fixed effects on the outcome in the revised model were not included in the final model. The final model was used as the basis for drawing conclusions and included:

1. Variables essential to answer the research questions (race and time);
2. ADL/IADL at Level 1 if there were significant fixed or random effects on the outcome; and
3. Level 2 predictors that were significantly correlated with the outcome variable and had significant fixed effects on the outcome.

Group mean centering on level 1 continuous variables was used to reduce multicollinearity concerns and to enable better interpretation of results (Raudenbush and Bryk,
Grand mean centering was used for level 2 continuous variables to allow for easier coefficient comparisons. Dichotomous categorical variables were included using dummy codes to ease interpretation.
Results

Introduction

This chapter presents the results of the analyses followed by a brief discussion. First, descriptive information (frequencies and distributions) for the sample of male caregivers at baseline is presented. Second, African American and White male caregivers are compared on baseline measures used in the study. Third, preliminary analyses that compare the baseline and longitudinal samples and the correlations between the study variables are presented. Finally, using the procedures described in the data analysis section, hierarchical linear modeling analyses were used to answer the following research questions:

1. How do the emotional well-being and the self-perceived physical health of African American and White male caregivers of older adults change over a three-year period?

2. Are there differences between African American and White male elder caregivers in changes in emotional well-being and self-perceived physical health over time?

3. How do caregiver context variables, primary stressors, subjective stressors, and resources predict the trajectories of caregiver emotional well-being and self-perceived health over three years?

Hierarchical linear modeling analyses were also conducted on the entire sample with caregiver sex added as a predictor variable. However, in order to avoid issues with gender comparisons discussed previously, these analyses were omitted from the study. Results for these analyses may be found in Appendix B.
Descriptive Analyses

Data analysis.

Descriptive analyses were conducted to describe the profile of the overall sample at baseline, and bivariate analyses were used to compare African American and White male caregivers on predictors and outcome variables at baseline. Bivariate analyses were conducted using T-tests, Chi-square tests, and Mann-Whitney tests depending on the level of measurement. An alpha level of .05 was used to determine statistical significance across the study.

Results.

Sample demographic characteristics.

Table 2 presents the characteristics of the overall sample of male caregivers at baseline. The characteristics of the entire sample are presented in Appendix A. Both caregivers and care recipients tended to be older in age with the average age being 63 for caregivers and 73 for care recipients. The average years caregiving was approximately 7 years. Although a majority of the sample was White (58%), African American men made up approximately 42% of the sample. The vast majority of caregivers were caring for a female care recipient (84%) and a majority of participants were spouses (69%). Only 16% of the sample cared for a care recipient with a dementia diagnosis. The sample tended to be fairly well-educated with less than one quarter reporting less than a high school education. Reported annual household income for this sample was low with over 75% reporting an annual household income of less than $40,000 and 40% reporting $20,000 or less. Approximately 50% of the sample reported that their income was adequate to meet their basic needs. However, 40% reported that their income was inadequate to meet their basic needs while only 10% reported that their income was more than adequate.
Table 2
Sample Demographic Characteristics at Baseline

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<td>68.5%</td>
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<td></td>
</tr>
<tr>
<td>Dementia Diagnosis</td>
<td>16.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 7 years</td>
<td>2.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior High</td>
<td>7.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some High School</td>
<td>14.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School Graduate</td>
<td>35.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade School</td>
<td>6.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some College</td>
<td>12.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Graduate</td>
<td>6.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate School</td>
<td>14.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household income a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $5,000</td>
<td>2.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$5,000 - $10,000</td>
<td>9.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$10,000 - $15,000</td>
<td>11.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$15,000 - $20,000</td>
<td>16.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$20,000 - $30,000</td>
<td>15.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$30,000 - $40,000</td>
<td>20.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$40,000 - $50,000</td>
<td>6.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$50,000 - $60,000</td>
<td>4.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$60,000 - $70,000</td>
<td>5.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$70,000 - $100,000</td>
<td>4.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater than $100,000</td>
<td>4.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Income Adequacy a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Much More than…</td>
<td>2.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than Adequate</td>
<td>7.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate</td>
<td>50.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat Inadequate</td>
<td>33.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all Adequate</td>
<td>6.9%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * For descriptive purposes, education, household income, and income adequacy are reported by category in this table. In further analyses, they were treated as continuous variables.
Sample demographic characteristics by race.

Table 3 shows the results of racial/ethnic differences in demographic characteristics at baseline. There were significant differences between African American and White male caregivers at baseline on caregiver age, relationship to the care recipient, and education. Compared to Whites, African American male caregivers were younger (60 vs. 67), less likely to be a spouse (58% vs. 76%), and less educated. Only 11% of African American men in this study reported a college education or higher compared to 28% of Whites while 35% of African American men reported less than a high school degree compared to 17% of Whites. It should be noted that all 11% of African American men reporting a college degree or higher reported a graduate degree. There were also significant differences on income and perceived income adequacy. A little over half of African American participants reported an annual household income below $20,000 compared to 31% of Whites while 19% of African Americans reported an annual household income above $40,000 compared to 34% of Whites. Almost half of African American men (47%) reported that their income was inadequate to meet their needs compared to 33% of Whites. Although African American men reported being in the caregiving role for an average of 2 years longer than Whites, the difference was not significant. There were no significant differences between African American and White participants on care recipient characteristics (care recipient age, sex, and dementia diagnosis).
Table 3  
*Sample Demographic Characteristics by Race at Baseline*

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Mean (SD) / % White (n = 75) Range</th>
<th>Mean (SD) / % African American (n = 55) Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR Age</td>
<td>72.9 (8.7) 55 - 94</td>
<td>72.8 (10.6) 56 - 100</td>
</tr>
<tr>
<td>CG Age**</td>
<td>66.5 (13.6) 21 - 85</td>
<td>59.1 (15.9) 20 - 87</td>
</tr>
<tr>
<td>Years Caregiving</td>
<td>6.1 (7.0) .08 - 34</td>
<td>8.1 (8.6) .42 - 45</td>
</tr>
<tr>
<td>Female (CR)</td>
<td>82.2%</td>
<td>86.5%</td>
</tr>
<tr>
<td>Spouse*</td>
<td>76%</td>
<td>58.2%</td>
</tr>
<tr>
<td>Dementia Diagnosis</td>
<td>18.7%</td>
<td>12.7%</td>
</tr>
<tr>
<td>Education* a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 7 years</td>
<td>0%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Junior High</td>
<td>5.3%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Some High School</td>
<td>12.0%</td>
<td>18.3%</td>
</tr>
<tr>
<td>High School Graduate</td>
<td>34.7%</td>
<td>36.4%</td>
</tr>
<tr>
<td>Trade School</td>
<td>5.3%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Some College</td>
<td>14.7%</td>
<td>9.1%</td>
</tr>
<tr>
<td>College Graduate</td>
<td>10.7%</td>
<td>0%</td>
</tr>
<tr>
<td>Graduate School</td>
<td>17.3%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Household income** a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $5,000</td>
<td>2.9%</td>
<td>2.1%</td>
</tr>
<tr>
<td>$5,000 - $10,000</td>
<td>4.3%</td>
<td>16.7%</td>
</tr>
<tr>
<td>$10,000 - $15,000</td>
<td>8.6%</td>
<td>16.7%</td>
</tr>
<tr>
<td>$15,000 - $20,000</td>
<td>15.7%</td>
<td>16.7%</td>
</tr>
<tr>
<td>$20,000 - $30,000</td>
<td>14.3%</td>
<td>16.7%</td>
</tr>
<tr>
<td>$30,000 - $40,000</td>
<td>22.9%</td>
<td>16.7%</td>
</tr>
<tr>
<td>$40,000 - $50,000</td>
<td>8.1%</td>
<td>6.8%</td>
</tr>
<tr>
<td>$50,000 - $60,000</td>
<td>10%</td>
<td>2.1%</td>
</tr>
<tr>
<td>$60,000 - $70,000</td>
<td>4.3%</td>
<td>6.3%</td>
</tr>
<tr>
<td>$70,000 - $100,000</td>
<td>4.3%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Greater than $100,000</td>
<td>7.1%</td>
<td>0%</td>
</tr>
<tr>
<td>Perceived Income Adequacy** a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Much More than…</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>More than Adequate</td>
<td>10.7%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Adequate</td>
<td>52%</td>
<td>47.3%</td>
</tr>
<tr>
<td>Somewhat</td>
<td>26.7%</td>
<td>41.8%</td>
</tr>
<tr>
<td>Inadequate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all Adequate</td>
<td>6.7%</td>
<td>5.3%</td>
</tr>
</tbody>
</table>

Note. * For descriptive purposes, education, household income, and income adequacy are reported by category in this table. In further analyses, they were treated as continuous variables. *Significance at .01 level. **Significance at .05 level.
**Descriptive results of predictor and outcome variables by race at baseline.**

Table 4 shows the results of racial/ethnic differences in predictor and outcome variables at baseline. The only significant difference between African American participants and White participants was reported on self-perceived health. On average, African American men reported worse self-perceived health than Whites (2.9 vs. 3.3).

Table 4  
*Descriptive Results of Predictor and Outcome Variables by Race at Baseline*

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Mean (SD) White (n = 75)</th>
<th>Range</th>
<th>Mean (SD) African American (n = 55)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADL/IADL</td>
<td>7.0 (4.2)</td>
<td>0 - 18</td>
<td>7.0 (5.2)</td>
<td>0 - 18</td>
</tr>
<tr>
<td>Formal Services</td>
<td>0.6 (0.9)</td>
<td>0 - 4</td>
<td>1.0 (1.4)</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Social Support</td>
<td>19.4 (4.3)</td>
<td>7 - 24</td>
<td>20.1 (3.6)</td>
<td>11 - 24</td>
</tr>
<tr>
<td>Activity Restriction</td>
<td>13.4 (4.7)</td>
<td>6 - 28</td>
<td>14.0 (7.0)</td>
<td>0 - 40</td>
</tr>
<tr>
<td>Pre-Illness Rel. Quality</td>
<td>34.3 (5.4)</td>
<td>20 - 40</td>
<td>34.2 (5.1)</td>
<td>20 - 40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcomes</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-perceived Health*</td>
<td>3.3 (1.0)</td>
<td>2 - 5</td>
<td>2.9 (1.0)</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Anger</td>
<td>13.0 (3.7)</td>
<td>10 - 26</td>
<td>13.0 (4.5)</td>
<td>10 - 28</td>
</tr>
<tr>
<td>Anxiety</td>
<td>33.7 (10.9)</td>
<td>20 - 77</td>
<td>35.3 (10.0)</td>
<td>20 - 61</td>
</tr>
<tr>
<td>Depression</td>
<td>10.0 (9.5)</td>
<td>0 - 40</td>
<td>11.2 (9.7)</td>
<td>0 - 47</td>
</tr>
<tr>
<td>Resentment</td>
<td>29.0 (12.2)</td>
<td>17 - 62</td>
<td>28.6 (12.7)</td>
<td>17 - 57</td>
</tr>
</tbody>
</table>

*Note. *Significance at .05 level.
**Bivariate correlations.**

Table 5 presents the results of the Pearson correlations between means of outcome variables. Results are reported by variable.

Table 5

*Pearson Correlations between Means of Outcome Variables.*

<table>
<thead>
<tr>
<th></th>
<th>Anger</th>
<th>Anxiety</th>
<th>Depressed Affect</th>
<th>Resentment</th>
<th>Self-perceived Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anger</td>
<td>1.00</td>
<td>.51**</td>
<td>.56**</td>
<td>.46**</td>
<td>-.15</td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td>1.00</td>
<td>.82**</td>
<td>.62**</td>
<td>-.42**</td>
</tr>
<tr>
<td>Depressed Affect</td>
<td></td>
<td>1.00</td>
<td>.62**</td>
<td>-.32**</td>
<td></td>
</tr>
<tr>
<td>Resentment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.24*</td>
</tr>
<tr>
<td>Self-perceived Health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Note.* ** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).

**Anger.**

Caregiver anger was significantly related to anxiety (r = .51, p<.01), depressed affect (r = .56, p<.01), and resentment (r = .46, p<.01) such that caregivers who reported higher levels of anger also reported higher levels of anxiety, depressed affect, and resentment. There was not a significant correlation between caregiver anger and self-perceived health.

**Anxiety.**

Caregiver anxiety was significantly related to anger (r = .51, p<.01), depressed affect (r = .82, p<.01), and resentment (r = .62, p<.01) such that caregivers who reported higher levels of anxiety also reported higher levels of anger, depressed affect, and resentment. Caregiver anxiety
was significantly related to self-perceived health (r = -.42, p<.01) in the negative direction such that caregivers who reported higher levels of anxiety rated their health as worse.

*Depressed affect.*

Caregiver depressed affect was significantly related to anger (r = .51, p<.01), anxiety (r = .82, p<.01), and resentment (r = .62, p<.01) such that caregivers who reported higher levels of depressed affect also reported higher levels of anger, anxiety, and resentment. Caregiver depressed affect was significantly related to self-perceived health (r = -.32, p<.01) in the negative direction such that caregivers who reported higher levels of depressed affect rated their health as worse.

*Resentment.*

Caregiver resentment was significantly related to anger (r = .46, p<.01), anxiety (r = .51, p<.01), and depressed affect (r = .51, p<.01) such that caregivers who reported higher levels of resentment also reported higher levels of anger, anxiety, and depressed affect. Caregiver resentment was significantly related to self-perceived health (r = -.24, p<.05) in the negative direction such that caregivers who reported higher levels of resentment rate their health as worse.

*Self-perceived health.*

Caregiver self-perceived health was significantly related to anxiety (r = -.42, p<.01), depressed affect (r = -.32, p<.01), and resentment (r = -.24, p<.05) such that caregivers who rated their health as worse also reported higher levels of anxiety, depressed affect, and resentment. There was not a significant correlation between self-perceived health and caregiver anger.
Hierarchical Linear Modeling: Preliminary Analyses

Comparison of baseline and longitudinal samples.

The first step of the analysis was to descriptively compare the baseline sample and the study sample that completed all three waves in order to illustrate how the longitudinal sample might differ from the baseline sample. Data were analyzed using the Statistical Package for Social Sciences (SPSS 13.0). Significant differences between the two suggest caution in the interpretation of the results.

Data analysis.

Bivariate analyses were used to compare the study sample and the longitudinal sample on predictors and outcome variables at baseline. Bivariate analyses were conducted using T-tests, Chi-square tests, and Mann-Whitney tests depending on the level of measurement.

Results.

Out of the sample of male caregivers in FRILL 2, 64 participants had observations at all three waves while 66 had observations at baseline only. Participants who attrited from this study were caring for care recipients that were significantly older than those who completed all three waves (75 vs. 70, p < .01) and were significantly less likely to be a spouse (p < .01). They were also providing significantly more ADL/IADL assistance (9 vs. 6, p ≤ .01), and reported higher depression (13 vs. 8, p < .01) and higher anxiety (37 vs. 32, p < .05).

Correlation analyses between predictor and outcome variables.

Data analysis.

First, mean scores across time were calculated for each of the outcome variables for use in the HLM analyses (see Table 6). Second, Pearson and Spearman correlations tests were conducted to examine the relation between the predictor variables and each of the outcome
variables. Only predictor variables that had a significant correlation with each outcome variable were included in the HLM analyses.

Table 6  
*Means and Standard Deviations for Outcomes Across 3 Time Points*

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anger</td>
<td>12.8</td>
<td>3.5</td>
</tr>
<tr>
<td>Anxiety</td>
<td>34.5</td>
<td>10.1</td>
</tr>
<tr>
<td>Depressed Affect</td>
<td>10.3</td>
<td>9.0</td>
</tr>
<tr>
<td>Resentment</td>
<td>28.2</td>
<td>1.5</td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>3.1</td>
<td>0.9</td>
</tr>
</tbody>
</table>

*Results.*

Table 7 presents the results of the Pearson and Spearman correlations between the predictor variables and the means of outcome variables. Results for each of the outcome variables are discussed below. Correlations between predictor variables are reported in Appendix A; however, only results of interest to this study are reported below.
Table 7
Spearman and Pearson Correlations Between Predictors and Means of Outcome Variables

<table>
<thead>
<tr>
<th></th>
<th>Anger</th>
<th>Anxiety</th>
<th>Depressed Affect</th>
<th>Resentment</th>
<th>Self-perceived Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR Age</td>
<td>.19&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.14&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.24&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>.19&lt;sup&gt;*a&lt;/sup&gt;</td>
<td>-0.04&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>CG Age</td>
<td>-0.36&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>-0.17&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.19&lt;sup&gt;*a&lt;/sup&gt;</td>
<td>-0.16&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.03&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Years Caregiving</td>
<td>-0.05&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.03&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.01&lt;sup&gt;a&lt;/sup&gt;</td>
<td>&lt;0.01&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.01&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Spouse/Non-spouse</td>
<td>0.36&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.14</td>
<td>0.28&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.20&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.05</td>
</tr>
<tr>
<td>CG Race</td>
<td>-0.10</td>
<td>0.06</td>
<td>0.08</td>
<td>-0.07</td>
<td>-0.20&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>Dementia Diagnosis</td>
<td>0.13</td>
<td>0.07</td>
<td>0.13</td>
<td>0.23&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-0.01</td>
</tr>
<tr>
<td>CG Education</td>
<td>0.12</td>
<td>-0.25&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-0.25&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.18&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.32&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>Income</td>
<td>-0.10</td>
<td>-0.30&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-0.28&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-0.09</td>
<td>0.24&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>Perceived Income Inadequacy</td>
<td>0.16</td>
<td>0.28&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.26&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.14</td>
<td>-0.16&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>ADL/IADL</td>
<td>0.07&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.05&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.17&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.24&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>0.02&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Formal Services</td>
<td>0.21&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.12&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.15&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.15&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.05&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Social Support</td>
<td>-0.25&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>-0.26&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>-0.33&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>-0.37&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>0.06&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Activity Restriction</td>
<td>0.40&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>0.37&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>0.45&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>0.40&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>-0.20&lt;sup&gt;*&lt;/sup&gt;a</td>
</tr>
<tr>
<td>Pre-Illness Rel. Quality</td>
<td>-0.32&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>-0.23&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>-0.19&lt;sup&gt;*a&lt;/sup&gt;</td>
<td>-0.39&lt;sup&gt;**a&lt;/sup&gt;</td>
<td>0.17&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Note. ** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed). <sup>a</sup> denotes results of Pearson correlation tests.

Anger.
Caregivers who were younger (r = -.36, p<.01), non-spouses (r = .36, p<.01), and reported more activity restriction (r = .40, p<.01) and receipt of more formal services (r = .21, p<.05) were more likely to report higher levels of anger. Social support (r = -.25, p<.01) and pre-illness relationship quality (r = -.32, p<.01) had a negative relation to anger such that caregivers who reported more social support and a better pre-illness relationship reported lower levels of anger.

Anxiety.

Caregivers who reported lower education (r = -.25, p<.01), greater perceived income inadequacy (r = .28, p<.01) and more activity restriction (r = .37, p<.01) were more likely to report higher levels of anxiety. Social support (r = -.23, p<.01) and pre-illness relationship quality (r = -.26, p<.01) had a negative relation to anxiety such that caregivers who reported more social support and a better pre-illness relationship reported lower levels of anxiety. Interestingly, the relation between income and anxiety was in the negative direction (r = -.30, p<.01). Caregivers with higher incomes reported greater anxiety.

Depressed affect.

Caregivers who were non-spouses (r = .28, p<.01), reported lower education (r = -.25, p<.01), greater perceived income inadequacy (r = .26, p<.01) and more activity restriction (r = .45, p<.01) were more likely to report higher levels of depressed affect. There was also a significant relation with age. Caregivers who were younger (r = -.19, p<.05) and who cared for an older care recipient (r = .24, p<.01) reported higher levels of depressed affect. Social support (r = -.33, p<.01) and pre-illness relationship quality (r = -.19, p<.05) had a negative relation to depressed affect such that caregivers who reported more social support and a better pre-illness relationship reported lower levels of depressed affect. As with anxiety, the relation between
income and depressed affect was in the negative direction (r = -.28, p<.01). Caregivers with higher incomes reported higher levels of depressed affect.

Resentment.

Caregivers who were non-spouses (r = .20, p<.05), reported higher education (r = .18, p<.05), and more activity restriction (r = .40, p<.01) were more likely to report higher levels of resentment. Social support (r = -.37, p<.01) and pre-illness relationship quality (r = -.39, p<.01) had a negative relation to resentment such that caregivers who reported more social support and a better pre-illness relationship reported lower levels of resentment. Caregivers who were caring for a care recipient who was older (r = .19, p<.05), had a dementia diagnosis (r = .23, p<.01), and needed more assistance with ADL/IADL (r = .24, p<.01) were more likely to report higher levels of resentment.

Self-perceived health.

Higher education (r = .32, p<.01), income (r = .24, p<.01), and income adequacy (r = -.16, p<.01), and a better pre-illness relationship (r = .17, p<.01) were associated with better self-perceived health. Caregivers who reported more activity restriction (r = -.20, p<.05) also reported worse health. In the only significant finding of a racial difference, White male caregivers were more likely to report better health than African American male caregivers (r = -.20, p<.05).

Predictors.

There were several correlations of interest to this study. Caregivers who were caring for a care recipient with dementia report significantly more assistance with ADL/IADL (r = .42, p<.01), the receipt of more formal services (r = .21, p<.05), more activity restriction (r = .24, p<.01), and less social support (r = -.30, p<.01). Spousal caregivers (r = -.20, p<.05) and
caregivers with lower education (r = -.20, p<.05) were more likely to report a higher quality pre-
illness relationship. Caregivers providing more ADL/IADL assistance were more likely to be
caring for care recipients who were older (r = .39, p<.01) and had dementia (r = .42, p<.01),
more likely to utilize formal services (r = .39, p<.01), and more likely to report activity
restriction (r = .45, p<.01) and less social support (r =-.31, p<.01). Spousal caregivers were also
more likely to receive formal services than non-spouses (r = .30, p<.01).

Hierarchical Linear Modeling Analyses

Hierarchical linear modeling analyses were used to answering the following research
questions:

1. **Question:** How do the emotional well-being and the self-perceived physical health of
African American and White male caregivers of older adults change over a three-year
period? **Procedure:** To answer this question, time was entered as a variable at Level 1.

2. **Question:** Are there differences between African American and White male elder
caregivers in changes in emotional well-being and self-perceived physical health over
time? **Procedure:** To answer this question, race was entered as a variable at Level 2.

3. **Question:** How do caregiver context variables, primary stressors, subjective stressors,
and resources predict the trajectories of caregiver emotional well-being and self-
perceived health over three years? **Procedure:** To answer this question, two HLM
analyses were run on each outcome variable following the guidelines outlined in the
Research Methods section (see pp. 58-62). In the first HLM (revised model), predictor
variables that were correlated with each outcome variable were entered into separate
models at Level 2. ADL/IADL (time-varying covariate) was entered at Level 1 if it had
significant random or fixed effects. In the second HLM (final model), predictor variables
were entered at Level 2 if they had significant fixed effects in the revised model.

ADL/IADL (time-varying covariate) was entered at Level 1 if it had significant random or fixed effects. Race and time were entered into the final model regardless because they are essential to answer the research questions.

The final model used as the basis for drawing conclusions included:

1. Variables essential to answer the research questions (race and time);
2. ADL/IADL at Level 1 if there were significant fixed or random effects on the outcome; and
3. Level 2 predictors that were significantly correlated with the outcome variable and had significant fixed effects on the outcome.

Anger.

Data analysis.

Using the results of the correlation analyses, the following predictors were included in the initial model (see Table 7): CG age, relationship (spouse/non-spouse), formal services, social support, activity restriction, and pre-illness relationship quality. After following the steps described in the Research Methods section (see pp. 58-62), the following variables were included in the final model: relationship (spouse/non-spouse) and activity restriction. Race and time were included in the final model because they are essential to answer the research question.

Results.

Figure 3 presents the graph of changes in means of caregiver anger over time to determine the appropriate level 1 model. Changes over time appear to be linear.
Figure 3. Caregiver Anger Over Time.
Table 8 presents the final model and results of the HLM analysis for caregiver anger. The results suggest that non-spousal caregivers ($\beta = 2.70$, SE = .73, p<.01) and those who reported more activity restriction ($\beta = .23$, SE = .08, p<.01) reported more anger. There was a main effect of time ($\beta = -.35$, SE = .18, p=.05), such that anger lessened in the later sessions. There was no significant main effect for race suggesting that there are no significant differences between African American and White male caregivers in their report of anger over time. Random effects were significant ($\chi^2 [109] = 459.01$, p <.01) suggesting that there is still some variance unexplained by the variables in the model.
### Table 8

**Final HLM for Caregiver Anger**

#### Model

Caregiver Anger = \( \pi_{0i} + \pi_{1i} \) (Time) + \( e_i \)

\( \pi_0 = \beta_{00} + \beta_{01} \) (Race) + \( \beta_{02} \) (Relationship) + \( \beta_{03} \) (Activity Restriction) + \( \gamma_{0i} \)

\( \pi_1 = \beta_{10} \)

#### Estimates and Variances

<table>
<thead>
<tr>
<th></th>
<th>Estimate (SE) for fixed effects</th>
<th>Variance component for random effects</th>
<th>Test</th>
<th>p</th>
</tr>
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<tbody>
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<td>Predicting ( \pi_0 ) (mean Caregiver Anger)</td>
<td>( \beta_{00} )</td>
<td>12.29 (.39)</td>
<td>( t[109] = 31.78 )</td>
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<td></td>
<td>( \beta_{01} ) (Race)</td>
<td>-0.62 (.55)</td>
<td>( t[109] = -1.13 )</td>
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<td></td>
<td>( \beta_{02} ) (Relationship)</td>
<td>2.70 (.73)</td>
<td>( t[109] = 3.72 )</td>
<td>0.001</td>
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<tr>
<td></td>
<td>( \beta_{03} ) (Activity Restriction)</td>
<td>0.23 (.08)</td>
<td>( t[109] = 3.01 )</td>
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<td></td>
<td>( \gamma_{0i} )</td>
<td>6.79</td>
<td>( \chi^2 [109] = 459.01 )</td>
<td>&lt; .001</td>
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<td>Predicting ( \pi_1 ) (effect of time on Caregiver Anger)</td>
<td>( \beta_{10} )</td>
<td>-0.35 (.18)</td>
<td>( t[231] = -1.95 )</td>
<td>0.052</td>
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</table>
Anxiety.

Data analysis.

Using the results of the correlation analyses, the following predictors were included in the initial model (see Table 7): CG education, CG income, perceived income adequacy, social support, activity restriction, and pre-illness relationship quality. After following the steps described in the Research Methods section (see pp. 58-62), the following variables were included in the final model: CG education, social support, activity restriction, and pre-illness relationship quality. Race and time were included in the final model because they are essential to answer the research question.

Results.

Figure 4 presents the graph of changes in means of caregiver anxiety over time to determine the appropriate level 1 model. Changes over time appear to be linear.
Figure 4. Caregiver Anxiety Over Time
Table 9 presents the final model and results of the HLM analysis for caregiver anxiety. The results suggest that caregivers with less education ($\beta = -1.92$, $SE = .36$, $p<.01$) and greater activity restriction ($\beta = .71$, $SE = .12$, $p<.01$) reported higher levels of anxiety. Caregivers who reported a better pre-illness relationship ($\beta = -.50$, $SE = .14$, $p<.01$) reported less anxiety. There was no significant main effect of time suggesting that anxiety levels remained relatively stable over time. There was no significant main effect for race suggesting that there are no significant differences between African American and White male caregivers in their report of anxiety over time. Random effects were significant ($\chi^2 [108] = 482.17$, $p <.01$) suggesting that there is still some variance unexplained by the variables in the model.
Table 9  
**Final HLM for Caregiver Anxiety**

<table>
<thead>
<tr>
<th>Model</th>
<th>Caregiver Anxiety = π₀ᵢ + π₁ᵢ (Time) + εᵢ</th>
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</thead>
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<tr>
<td></td>
<td>π₀ = β₀₀ + β₀₁ (Race) + β₀₂ (Education) + β₀₃ (Activity Restriction) + β₀₄ (Relationship Quality) + γ₀ᵢ</td>
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<tr>
<td></td>
<td>π₁ = β₁₀</td>
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### Estimates and Variances

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<th>Variance component for random effects</th>
<th>Test</th>
<th>p</th>
</tr>
</thead>
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<td>L1 Error in predicting Caregiver Anxiety</td>
<td>εᵢ</td>
<td>29.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicting π₀ (mean Caregiver Anxiety)</td>
<td>β₀₀ 35.17 (1.14)</td>
<td>t[108] = 30.80</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>β₀₁ (Race) -2.73 (1.61)</td>
<td>t[108] = -1.70</td>
<td>0.092</td>
<td></td>
</tr>
<tr>
<td></td>
<td>β₀₂ (Education) -1.92 (.36)</td>
<td>t[108] = -5.29</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>β₀₃ (Activity Restriction) .71 (.12)</td>
<td>t[108] = 5.76</td>
<td>&lt; .001</td>
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</tr>
<tr>
<td></td>
<td>β₀₄ (Relationship Quality) -.50 (.14)</td>
<td>t[108] = -3.47</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>γ₀ᵢ 53.21</td>
<td>χ² [108] = 482.17</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td>Predicting π₁ (effect of time on Caregiver Anxiety)</td>
<td>β₁₀ .09 (.36)</td>
<td>t[230] = .25</td>
<td>0.801</td>
<td></td>
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</table>
Depressed Affect.

Data analysis.

Using the results of the correlation analyses, the following predictors were included in the initial model (see Table 7): CR age, CG age, relationship (spouse/non-spouse), CG education, CG income, social support, activity restriction, and pre-illness relationship quality. After following the steps described in the Research Methods section (see pp. 58-62), the following variables were included in the final model: CG age, CG education, social support, activity restriction, and pre-illness relationship quality. Race and time were included in the final model because they are essential to answer the research question.

Results.

Figure 5 presents the graph of changes in means of caregiver depressed affect over time to determine the appropriate level 1 model. Changes over time appear to be linear.
Figure 5. Caregiver Depressed Affect Over Time

Caregiver Depressed Affect

Mean

15 - 13 - 11 - 9 - 7 - 5

Time

1 2 3

Mean

10.5 8.9 8.4
Table 10 presents the final model and results of the HLM analysis for caregiver depressed affect. The results suggest that caregivers with less education ($\beta = -1.24$, SE = .36, $p<.01$), greater activity restriction ($\beta = .62$, SE = .14, $p<.01$), and a better pre-illness relationship ($\beta = 4.64$, SE = 1.78, $p \leq .01$) reported higher levels of depressed affect. Caregivers who reported more social support ($\beta = -.60$, SE = .18, $p<.01$) reported less depressed affect. There was no significant main effect of time suggesting that depressed affect levels remained relatively stable over time. However, caregiver age ($\beta = .08$, SE = .04, $p<.05$) was positively related to changes in depressed affect over time such that levels of depressed affect increased with age. There was no significant main effect for race suggesting that there are no significant differences between African American and White male caregivers in their report of depressed affect over time. Random effects were significant ($\chi^2 [107] = 489.56$, $p <.01$) suggesting that there is still some variance unexplained by the variables in the model.
Table 10

Final HLM for Caregiver Depressed Affect

Model
Caregiver Depressed Affect $= \pi_0 + \pi_1 (\text{Time}) + e_i$
$\pi_0 = \beta_{00} + \beta_{01} (\text{Race}) + \beta_{02} (\text{Education}) + \beta_{03} (\text{Relationship}) + \beta_{04} (\text{Social Support}) + \gamma_0i$
$\pi_1 = \beta_{10} + \beta_{11} (\text{CG Age})$

<table>
<thead>
<tr>
<th>Estimates and Variances</th>
<th>Estimate (SE) for fixed effects</th>
<th>Variance component for random effects</th>
<th>Test</th>
<th>p</th>
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<tr>
<td>L1 Error in predicting Caregiver Depressed Affect</td>
<td>$e_i$</td>
<td>20.51</td>
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<tr>
<td>Predicting $\pi_0$ (mean Caregiver Depressed Affect)</td>
<td>$\beta_{00}$</td>
<td>9.17 (.89)</td>
<td>$t[107] = 10.27$</td>
<td>&lt; .001</td>
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<td></td>
<td>$\beta_{01}$ (Race)</td>
<td>-1.35 (1.41)</td>
<td>$t[107] = -.96$</td>
<td>.338</td>
</tr>
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<td>$\beta_{02}$ (Education)</td>
<td>-1.24 (.36)</td>
<td>$t[107] = -3.41$</td>
<td>.001</td>
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<tr>
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<td>$\beta_{03}$ (Relationship)</td>
<td>4.64 (1.78)</td>
<td>$t[107] = 2.60$</td>
<td>.011</td>
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<tr>
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<td>$\beta_{04}$ (Social Support)</td>
<td>-.60 (.18)</td>
<td>$t[107] = -3.27$</td>
<td>.002</td>
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<td></td>
<td>$\beta_{05}$ (Activity Restriction)</td>
<td>.62 (.14)</td>
<td>$t[107] = 4.33$</td>
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<td></td>
<td>$\gamma_0i$</td>
<td>38.85</td>
<td>$\chi^2 [107] = 489.56$</td>
<td>&lt; .001</td>
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<tr>
<td>Predicting $\pi_1$ (effect of time on Caregiver Depressed Affect)</td>
<td>$\beta_{10}$</td>
<td>-.36 (.37)</td>
<td>$t[228] = -.98$</td>
<td>.329</td>
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<tr>
<td></td>
<td>$\beta_{11}$ (CG Age)</td>
<td>.08 (.04)</td>
<td>$t[228] = 2.11$</td>
<td>.035</td>
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</tbody>
</table>
Resentment.

Data analysis.

Using the results of the correlation analyses, the following predictors were included in the initial model (see Table 7): CR age, relationship (spouse/non-spouse), dementia diagnosis, CG education, ADL/IADL, social support, activity restriction, and pre-illness relationship quality. After following the steps described in the Research Methods section (see pp. 58-62), the following variables were included in the final model: social support, activity restriction, and pre-illness relationship quality. Race and time were included in the final model because they are essential to answer the research question.

Results.

Figure 6 presents the graph of changes in means of caregiver resentment over time to determine the appropriate level 1 model. Changes over time appear to be linear.
Figure 6. Caregiver Resentment Over Time

![Caregiver Resentment Over Time Graph]
Table 11 presents the final model and results of the HLM analysis for caregiver 
resentment. The results suggest that caregivers with greater activity restriction (β = .76, SE = .16, 
p<.01) reported higher levels of resentment. Caregivers who reported a better pre-illness 
relationship (β = -.60, SE = .18, p<.01) and more social support (β = -.70, SE = .23, p<.01) 
reported less resentment. There was a main effect of time (β = -.93, SE = .46, p<.05), such that 
resentment lessened in the later sessions. There was no significant main effect for race 
suggesting that there are no significant differences between African American and White male 
caregivers in their report of resentment over time. Random effects were significant (χ² [108] = 
747.67, p <.01) suggesting that there is still some variance unexplained by the variables in the 
model.
### Table 11

**Final HLM for Caregiver Resentment**

#### Model

Caregiver Resentment = \( \pi_{0i} + \pi_{1i} \) (Time) + \( e_i \)

\( \pi_0 = \beta_{00} + \beta_{01} \) (Race) + \( \beta_{02} \) (Social Support) + \( \beta_{03} \) (Activity Restriction) + \( \beta_{04} \) (Relationship Quality) + \( \gamma_0i \)

\( \pi_1 = \beta_{10} \)

#### Estimates and Variances

<table>
<thead>
<tr>
<th></th>
<th>Estimate (SE) for fixed effects</th>
<th>Variance component for random effects</th>
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<tr>
<td>( e_i )</td>
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<td></td>
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<td>( \beta_{00} )</td>
<td>28.95 (1.19)</td>
<td>t[108] = 24.26 &lt; .001</td>
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<tr>
<td>( \beta_{01} ) (Race)</td>
<td>-1.47 (1.85)</td>
<td>t[108] = -.79 0.429</td>
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<td>( \beta_{02} ) (Social Support)</td>
<td>-.70 (.23)</td>
<td>t[108] = -2.98 0.004</td>
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<tr>
<td>( \beta_{03} ) (Activity Restriction)</td>
<td>.76 (.16)</td>
<td>t[108] = 4.74 &lt; .001</td>
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<tr>
<td>( \beta_{04} ) (Relationship Quality)</td>
<td>-.60 (.18)</td>
<td>t[108] = -3.29 0.002</td>
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<td>( \gamma_0i )</td>
<td>78.46</td>
<td>( \chi^2 ) [108] = 747.67 &lt; .001</td>
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<td><strong>Predicting ( \pi_1 ) (effect of time on Caregiver Resentment)</strong></td>
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<td>( \beta_{10} )</td>
<td>-.93 (.46)</td>
<td>t[230] = -2.03 0.044</td>
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</table>
Self-perceived health.

Data analysis.

Using the results of the correlation analyses, the following predictors were included in the initial model (see Table 7): CG education, CG income, perceived income adequacy, activity restriction, and pre-illness relationship quality. After following the steps described in the Research Methods section (see pp. 58-62), the following variables were included in the final model: CG education, pre-illness relationship quality, and ADL/IADL. Race and time were included in the final model because they are essential to answer the research question.

Results.

Figure 7 presents the graph of changes in means of caregiver self-perceived health over time to determine the appropriate level 1 model. Changes over time appear to be linear.
Figure 7. Caregiver Self-Perceived Health Over Time
Table 12 presents the final model and the results of the HLM analysis for caregiver self-perceived health. The results suggest that caregivers with higher education ($\beta = .16$, SE = .05, p<.01) and a better pre-illness relationship ($\beta = .04$, SE = .01, p<.05) reported better health. There was no significant main effect of time suggesting that health remained relatively stable over time. There was no significant main effect for race suggesting that there are no significant differences between African American and White male caregivers in their report of health over time. Random effects were significant ($\chi^2 [66] = 178.00$, p <.01) suggesting that there is still some variance unexplained by the variables in the model.
Table 12

Final HLM for Caregiver Self-Perceived Health

Model

Caregiver Health = \pi_{0i} + \pi_{1i} (Time) + \pi_{2i} (ADL/IADL) + e_i

\pi_0 = \beta_{00} + \beta_{01} (Race) + \beta_{02} (Education) + \beta_{03} (Relationship Quality) + \gamma_{0i}

\pi_1 = \beta_{10}

\pi_2 = \beta_{20} + \gamma_{2i}

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<tr>
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<td>L1 Error in predicting</td>
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<td>Caregiver Health</td>
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<td>Predicting \pi_0 (mean</td>
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<td>\beta_{00}</td>
<td>3.18 (.01)</td>
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<td>t[109] = 32.13</td>
<td>&lt; .001</td>
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<td>\beta_{01} (Race)</td>
<td>-.20 (.17)</td>
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<td>t[109] = -1.20</td>
<td>0.231</td>
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<td>\beta_{02} (Education)</td>
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<td>t[109] = 3.61</td>
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<td>t[109] = 2.42</td>
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<td>\gamma_{0i}</td>
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<td>0.46</td>
<td>\chi^2 [66] = 178.00</td>
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<td>Predicting \pi_1 (effect of time on Caregiver Health)</td>
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<td>\beta_{10}</td>
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<td>\chi^2 [69] = 95.23</td>
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Summary of Findings by Research Question

Question 1.

*How do the emotional well-being and the self-perceived physical health of African American and White male caregivers of older adults change over a three-year period?*

Anger and resentment significantly lessened over time. Anxiety, depressed affect, and self-perceived health remained relatively stable over time.

Question 2.

*Are there differences between African American and White male elder caregivers in changes in emotional well-being and self-perceived physical health over time?*

No significant differences were found between African American and White male caregivers over time on any of the outcome variables.

Question 3.

*How do caregiver context variables, primary stressors, subjective stressors, and resources predict the trajectories of caregiver emotional well-being and self-perceived health over three years?*

*Context variables.*

There was an effect of caregiver age, such that, as caregivers aged, depressed affect increased. Relationship was a significant predictor of caregiver anger. Non-spousal caregivers reported significantly more anger compared to spouses. Education predicted several outcomes. Caregivers with less education reported more anxiety and depressed affect and worse self-perceived health. Finally, the quality of the pre-illness relationship was a significant predictor of every outcome except for anger. Caregivers who reported a higher quality pre-illness
relationship reported less anxiety, depressed affect, and resentment and better self-perceived health.

**Primary stressors.**

The primary stressor variables (care recipient functional impairment and cognitive status) had no significant effect on any of the outcome variables.

**Secondary stressors.**

Activity restriction (or social isolation) was a significant predictor of emotional well-being but not health. Caregivers who reported more activity restriction also reported more anger, anxiety, depressed affect, and resentment.

**Resources.**

Social support was a significant predictor of two emotional well-being outcomes. Caregivers who reported greater social support reported less depressed affect and resentment.
Interpretation and Conclusion

Discussion of Sample Characteristics and HLM Findings

Introduction.

Findings from this study suggest that African American and White male caregivers may be more alike than they are different and that emotional well-being and self-perceived health remain relatively stable over time. However, evidence from this study suggests that social aspects of the caregiving experience (social support, social isolation, and the quality of the relationship) of male caregivers may play a key role in contributing to emotional and physical well-being over time. This section begins with a discussion of the sample characteristics at baseline, including a discussion of differences and similarities of African American and White male caregivers at baseline, and then discusses findings from the HLM.

Sample characteristics at baseline.

The volunteer sample was recruited in and around the communities of Athens, GA, Pittsburgh, PA, and Tuscaloosa, AL by means of probability-based random digit dialing (RDD) and word-of-mouth advertising. Overall, male caregivers in this study tended to be older than the overall FRILL 2 sample (63 vs. 60) and caring for an older care recipient. A majority of the caregivers were also spouses who were providing care for their wife. Because most caregivers were spouses, it is not surprising they tended to be older adults. However, there were a
significant number of non-spouses in this study and most of them were sons. Most of the research on male caregivers has been on spousal caregivers (e.g. Kramer & Lambert, 1999); therefore findings from this study can add to the research literature on non-spousal male caregivers.

Although there was variation on the duration of caregiving, only 15 caregivers (4.7%) reported providing care for less than a year. Previous research has found that male caregivers report the most distress early in the caregiving career and that this distress decreases considerably over time as men adjust to the new role (Carpenter & Miller, 2002). Caregivers in this study reported an average of 7 years in the caregiving role, suggesting that they have had sufficient time to adapt to the role.

Another important consideration in the caregiving literature is the dementia status of the care recipient. Issues associated with caring for someone with dementia have been consistently linked to worse outcomes for the caregiver (Carpenter & Miller, 2002; Femiano & Coonerty-Femiano, 2002). Findings from this study suggest that caregivers who were caring for a care recipient with dementia provided more assistance with ADL/IADL, received more formal services, were more socially isolated, and received less social support. This mirrors the larger caregiving literature which suggests the demands of dementia caregiving may be socially isolating (Family Caregiver Alliance, 2006). Only 16% of the sample cared for a care recipient with a dementia diagnosis. Most of the research on older adult caregivers has been with dementia caregivers and this is particularly true for male caregivers (Carpenter & Miller, 2002). Findings from this study can thus add to the research on non-dementia caregivers.

The sample as a whole also tended to be fairly well-educated but lacking in financial resources. Over 75% of participants reported an annual household income of less than $40,000
and 40% reported $20,000 or less. Previous research by this author and colleagues found that the subjective appraisal of income is a better predictor of emotional distress than actual income (Sun, Hilgeman, Durkin, Allen, & Burgio, 2008). A substantial percentage rated their income as inadequate to meet their basic needs. Financial strain is thus a possible stressor for these caregivers. Financial strain has not received as much attention in the literature as other sources of stress; however previous studies suggest that financial strain can exacerbate an already difficult situation and contribute to an increase in negative outcomes for caregivers, including depression and anxiety (Pearlin, Mullan, Semple, & Skaff, 1990). In the United States, lower income and financial strain also have a clear relationship with physical health, especially among men (International Longevity Center, 2004). Finally, Kramer (1997b) states that concern about finances appears to be a key predictor of depression in male caregivers.

**Comparison of African Americans and Whites at baseline.**

**Differences.**

African American and White male caregivers were remarkably similar at baseline. Differences were found in relationship to the care recipient, education, income and the perception of income adequacy. Compared to Whites, African American male caregivers were younger by an average of seven years. This is partly explained by the fact that African American male caregivers in this study were much less likely to be a spouse than Whites. Approximately 75% of the White men were spouses but only slightly more than half of the African American men were spouses. Most of the non-spouses of both African American and White male caregivers were sons. Six of the African American male caregivers were grandchildren, while only one White caregiver was a grandchild. In the caregiving research overall, African American caregivers are more likely to be non-spousal caregivers than Whites (Dilworth-
Anderson, Williams, & Gibson, 2002); therefore this finding is consistent with the overall caregiving literature.

African American men in this study were significantly less well educated than Whites with slightly more than one third reporting less than a high school education. So, while men in this sample were relatively well-educated, a break-down by race provides a different picture. Slightly more than half of African American participants reported an annual household income below $20,000 compared to 31% of Whites. Almost half of African American men (47%) reported that their income was inadequate to meet their needs compared to 33% of Whites. Thus, financial strain may be particularly problematic for African American male caregivers. These findings mirror the overall caregiving literature which suggests that African American caregivers are less well educated, have lower incomes, and report greater financial strain than Whites (Dilworth-Anderson, Williams, & Gibson, 2002).

The only significant difference between African American participants and White participants on outcome measures at baseline was on self-perceived health; however, the difference is small and may not be clinically meaningful. Overall, both African American and White caregivers reported their health to be fair to good (as evidenced by averages close to 3 on a scale of 1-5). This is in contrast to most research on male caregivers, which suggests they may have serious negative health consequences due to caregiving (Kramer, 2002b) In the larger caregiving literature, however, African American caregivers consistently report worse physical health than Whites (Pinquart & Sörensen, 2005).

**Similarities.**

Although there were some differences between African American and White caregivers at baseline, what is remarkable is how similar they were. African American and White male
caregivers were similar on every other measure. A visual examination of Table 4 shows how remarkably similar they were. African American and White male caregivers appeared to be caring for care recipients who were very similar. There were no significant differences between African American and White participants on care recipient characteristics (care recipient age, sex, and dementia diagnosis) and on how much assistance they provided to the care recipient with ADLs and IADLs. Similar to findings in the overall caregiving literature (Family Caregiver Alliance, 2006), caregivers who provided more ADL/IADL assistance were more likely to be caring for care recipients who were older and had dementia. These caregivers were also more likely to use formal services, be socially isolated, and receive less social support.

In this sample, both African American and White caregivers utilized formal services at a low rate (on average, one service for African Americans and less than one for Whites) and this supports the literature on low service utilization rates among male caregivers in general (Kaye, 2002). In a meta-analysis on race/ethnicity, Dilworth-Anderson, Williams, and Gibson (2002) found that Whites utilized more social services than African Americans. This finding was not supported in this study.

Both African American and White caregivers reported the quality of the relationship with the care recipient prior to illness onset to be high. These caregivers were providing care to someone with whom they had had a good relationship in the past, whether it was a husband caring for his wife or a son caring for his parent. This was particularly true for husbands, who reported significantly higher pre-illness relationship quality than non-spouses in this study. Previous research suggests that the quality of the relationship prior to illness onset is a key predictor of well-being for caregivers (Williamson & Shaffer, 2001).
African American and White caregivers were also similar in their report of social support and activity restriction. Both reported high levels of social support and low levels of activity restriction. This suggests that these men may not be as socially isolated as the literature suggests. However, an observation of the ranges suggests there are men in this study who receive little social support and may be socially isolated. Both have been linked to negative outcomes among male caregivers (Family Caregiver Alliance, 2006).

African American male caregivers and White caregivers were remarkably similar on emotional well-being and other variables used in this study (see Table 4). In regards to emotional well-being, both African American and White male caregivers reported relatively low scores suggesting that, on average, caregivers in this study were not experiencing a great deal of distress. For example, White males reported an average score of 10 on the CES-D while African Americans reported an average score of 11. A look at the range of these scores, however, indicates that some of the men in the study were very distressed and experienced poor emotional well-being.

While African American and White male caregivers were remarkably similar at baseline, questions remain as to how the emotional well-being and self-perceived health of these caregivers changes over time, whether or not there were significant differences between African American and White caregivers in changes over time, and what influence variables suggested from the Pearlin SPM have on changes in emotional well-being and self-perceived health over time. The remainder of this section discusses these questions in the context of findings from the HLM analyses.
Question 1.

How do the emotional well-being and the self-perceived physical health of African American and White male caregivers of older adults change over a three-year period?

Anxiety and depression did not change significantly over the three years of the study for either White or African American caregivers. Anger and resentment significantly decreased over time suggesting that these feelings may lessen as men adapt to the caregiving role. Although longitudinal studies of male caregivers are rare, previous research suggests that male caregivers may vary over time in their response to the stresses of caregiving (Carpenter & Miller, 2002). For example, one longitudinal study found that depression increased over time among dementia spouse caregivers (Kramer and Lambert, 1999).

The present study’s findings that health remained relatively stable over time for both White and African American caregivers are somewhat surprising. Previous research indicates that men may be particularly at risk for physical health consequences as a result of caregiving (Adler, Patterson, & Grant, 2002). However, despite the findings of relative stability over time, the ranges of the outcome variables suggest that many men in the study were indeed distressed and in poor physical health.

The outcome variables were highly correlated with each other with the exception of anger and health. This suggests that caregivers experiencing distress were experiencing it in multiple domains and that negative emotional states and poor health in male caregivers are interrelated. The overall caregiving literature has consistently found a strong link between anxiety and depression (Mahoney, Regan, Katona, & Livingston, 2005) and, indeed, there was a high correlation between anxiety and depression in this study (.82). However, there is evidence that many caregivers may exhibit symptoms of anxiety but not depression and vice versa and that
interventions that target anxiety should be different than those that target depression (Mahoney, Regan, Katona, & Livingston, 2005); thus consideration of the variables separately is warranted.

**Question 2.**

*Are there differences between African American and White male elder caregivers in changes in emotional well-being and self-perceived physical health over time?*

Perhaps the most interesting finding of this study is that race/ethnicity was not a statistically significant predictor of any of the outcome variables. This finding suggests that, contrary to the evidence in the overall caregiving literature, African American and White male caregivers may be similar in their emotional and physical response to the demands of caregiving. However, African American male caregivers are rare in caregiving research and, when included, are often combined with African American women to compare to Whites or with White men to compare to women. The few studies that examine African American men as a separate category do so in the context of gender comparative studies (e.g. Haley et al., 2004). One study that directly compared African American and White male caregivers (Carpenter and Miller, 2002) found that African American men reported less depression than Whites. However, this study was cross-sectional and had a relatively low number of African American participants. The findings from the present study suggest that, in the context of the caregiving situation, being male may be more important than ethnicity or race.

**Question 3.**

*How do caregiver context variables, primary stressors, subjective stressors, and resources predict the trajectories of caregiver emotional well-being and self-perceived health over three years?*
This study used the Pearlin stress process model as a guide to examine the effect of the caregiving context, stressors, and resources on the emotional and physical well-being of male caregivers over time. Findings suggest there may be several factors contributing to the stability of caregiver outcomes over time. Previous research has found that male caregivers report higher distress early in the caregiving career but adapt to the role and report less stress over time (Carpenter & Miller, 2002). For the most part, caregivers in this study were experienced in the caregiving role. The average duration of caregiving was 7 years, and only 15 caregivers (4.7%) caregivers in the study reported caregiving for a year or less. Previous findings (e.g. Kramer, 1997b) suggesting that other background and contextual variables such as caregiver age, care recipient age, education, income, and perceived income adequacy affect caregiver outcomes were generally not supported. There was an effect of caregiver age, such that, as caregivers aged, depressed affect increased. Although caregivers in this study reported experiencing financial strain at baseline, the perception of the adequacy of income to meet basic needs did not have an effect on changes in emotional well-being or self-perceived health over time.

Previous studies suggest that filial caregivers generally report less negative and more positive outcomes than spouses (e.g. Berg-Weger, Rubio, & Tebb, 2000; Marks, Lambert, and Choi, 2002). These findings were generally not supported. This study found that relationship to the care recipient influenced changes in anger over time but had no relation to changes over time for the other outcome variables. This finding suggests that non-spousal male caregivers, particularly children, may experience more feelings of anger as they proceed through the caregiving career.

Education predicted change over time for several outcomes. Caregivers with less education reported more anxiety and depressed affect and worse self-perceived health over time.
This finding is consistent with previous findings. Caregivers with lower education may be of lower socioeconomic status (SES). There is a clear link between SES and health. For example, low SES is associated with lack of health insurance and earlier onset of chronic health conditions (International Longevity Center, 2004).

In an interesting finding, neither dementia diagnosis nor assistance with ADL/IADL was a significant predictor of changes in emotional well-being and health over time. A common finding in caregiving studies that use stress and coping models is that “objective” issues such as behavior problems or daily care need are not as predictive of caregiving outcomes as the caregiver’s subjective response to these issues (Zarit, 2006). It is also possible that the low incidence of dementia in this study is partly responsible for this finding. Dementia caregivers consistently report more distress than non-dementia caregivers (Family Caregiver Alliance, 2006).

In particular, findings related to the social context of the male caregivers may be of particular relevance. The quality of the pre-illness relationship was a significant predictor of change over time for every outcome except for anger. Caregivers who reported a higher quality pre-illness relationship reported less anxiety, depressed affect, and resentment and better self-perceived health over time. These findings suggest that positive feelings toward the care recipient earlier in life may mitigate the negative effects of caregiving on emotional and physical well-being. Perhaps caregivers feel better about providing care because of previous relationship rewards. Activity restriction was a significant predictor of changes in time for emotional well-being but not health. Caregivers who reported more activity restriction also reported more anger, anxiety, depressed affect, and resentment over time. Social support was a significant predictor of two emotional well-being outcomes. Caregivers who reported greater social support reported
less depressed affect and resentment over time. These findings support previous findings that an increased sense of social isolation and lack of support from family and friends contributes to negative emotional well-being. Further, the findings suggest that these deficits may have a cumulative effect over time for both African American and White male caregivers.

Strengths and Limitations

Strengths.

This study has several strengths. First, the FRILL 2 data contained a sufficient sample of African American male caregivers to make a meaningful comparison to White male caregivers. Research has called for the examination of male caregivers by subgroup; thus this study makes a meaningful contribution to the literature by examining male caregivers by racial/ethnic subgroup. Studies with a sufficient sample of African American male caregivers are rare and previous studies that do contain sufficient samples usually combine African American male caregivers into either racial or gender categories. A further strength of this study is its longitudinal design. Few studies have explored how the caregiving experience for male caregivers changes over time. This study provides a significant contribution to this crucial research issue. Several researchers have argued that gender comparisons are problematic. This study avoids the issues associated with gender comparisons by excluding female caregivers from the main study analyses. This study used a community-based sample of older adult caregivers that was not dementia-specific. Most caregiving studies contain large samples of dementia caregivers. Dementia caregiving has been found to be more demanding and more stressful than non-dementia caregiver so assumptions about the effects of caregiving in general may be exaggerated by this confound. However, the sample did contain a sufficient number of dementia caregivers to account for this in the analyses. Finally, the addition of two variables not commonly assessed in caregiving
research (anger and resentment) contributes to the research literature on these constructs. In addition, the inclusion of these variables may attend to potential gender bias in caregiver measurement by examining expressions of emotion that may be relevant to men.

Limitations.

Although there are many strengths to this study, there are several limitations. The volunteer sample was recruited in and around the communities of Athens, GA, Pittsburgh, PA, and Tuscaloosa, AL by means of probability-based random digit dialing (RDD) and word-of-mouth advertising. Although the sample is likely representative of a significant portion of caregivers of older adult caregivers in the United States, the extent to which the findings are generalizable to caregivers of older persons in other locations may be limited. In addition, African Americans were oversampled to ensure adequate numbers for comparison. One of the eligibility requirements for participation in the study was co-residence. Caregivers who do not reside with the care recipient may have different experiences. FRILL 2 was not designed to specifically examine male CGs; therefore interpretations of the findings from this study should consider the secondary nature of the data analyses. Sample does not include non-caregiving males. Because measures used in caregiving research have been normed on largely White, female populations, the instruments used in this study may not accurately capture the measured construct in other populations. Data were collected through interviews. Some research suggests that men may be less likely to downplay distress in paper-and-pencil assessments (Glicken, 2005). The measure of the outcome variable self-perceived physical health is a single item. Although the Pearlin SPM was used to guide the model used in this study, the FRILL 2 data does not contain many of the constructs contained in the model. For example, subjective stressor variables such as daily care bother or behavior bother were not included in the study. The
research consistently shows that the subjective appraisal of the caregiving context is a better predictor of caregiver outcomes than the objective circumstances. Simply put, caregivers in comparable caregiving situations (e.g. similar in ADL/IADL, behavior problems, etc.) will react differently depending on personality, coping style, resources, and other contributing factors. This may be particularly important for dementia caregivers where problem behavior is often an important consideration. The Pearlin model also suggests mediating and moderating influences. HLM does not account for mediating effects. Cognitive impairment was one-item dementia diagnosis. Care recipients may have been experiencing memory loss without the diagnosis. Although the longitudinal nature of this study is a strength, 36 months may not be long enough to assess changes over time. Finally, the baseline sample and longitudinal sample had some significant differences and this suggests caution in the interpretation of the HLM. Caregivers who dropped out of the study after baseline were older, more likely to be spouses, reported assistance with more ADL/IADLs, and reported higher depression and higher anxiety. However, the samples were similar in every other regard.

Implications

Practice implications.

The finding that African American and White male caregivers are more similar than they are different suggests that services and policies targeted toward male caregivers may be effective with male caregivers, regardless of race. Practice and policy implications will be discussed with this in mind.

Use of formal services.

In this study, both African American and White male caregivers reported a low use of formal services. Research suggests male caregivers may be particularly resistant to accepting
outside help, especially husband dementia caregivers (Kaye, 2002). Male caregivers are typically more concerned about the opinion of others, are more inclined to favor family independence in care, are more likely to reject government provision of services, and are less confident in these services (Kaye, 2002)

Kaye (2002) offers the following list of potential reasons that male caregivers may be reluctant to seek services: (1) their inability to leave the care recipient alone; (2) lack of familiarity with services and programs; (3) fear of appearing that they can't handle the situation; (4) reluctance to share personal experiences; (5) the lack of other men participating in services or programs; (6) inconvenient hours, meeting times, or locations; (7) lack of identification with other caregivers; (8) the lack of concrete benefits to be derived from certain programs; and (9) ongoing pressure to be strong and independent.

Developing creative programs that target male caregivers is necessary to meet the needs of male caregivers; however this may not be enough. Strategies are needed that encourage men to take the first step in reaching out for services (Kaye, 2002). One key entry point may be when the male caregiver takes the care recipient to the doctor or goes to the doctor himself. In one study help-seeking among male, spousal caregivers was precipitated by a change in health of either husband or wife (Brown, Chen, Mitchell, & Province, 2007). Social workers and other professionals working in the health care setting may have a unique opportunity to assess the needs of the caregiver and offer services that address the needs of both the caregiver and the care recipient. The Family Caregiver Alliance (2006) recommends that both caregiver and care recipient be viewed as a single unit, much as hospice programs target the family as the unit to receive services. However, assessments of family caregivers are not routinely carried out in order to determine what the caregiver may need that is distinct from, but related to, the needs of
the care recipient (Family Caregiver Alliance, 2006). A key recommendation for policy and practice is that a caregiver assessment should be an essential component when working with older adults (Zarit, 2006) and should be tailored according to the context, service setting, and program (Family Caregiver Alliance, 2006).

**Quality of pre-illness relationship.**

For both African American and White male caregivers in this study, the quality of the pre-illness relationship was significantly linked to emotional well-being and health at baseline and was a key predictor of changes over time. In previous research, the quality of the pre-illness relationship has been found to influence adaptation to the caregiver role and the quality of care provided, appears to initiate a process that can determine caregiver outcomes, and affects the current caregiving relationship (Neufeld & Harrison, 1998; Williamson & Shaffer, 2001). This suggests that social workers and other practitioners working with men may want to target relationship quality in interventions with men throughout the life course. Attention to the quality of family relationships may pay dividends in the long-run by strengthening interpersonal bonds that may buffer the effect of caregiving stressors on negative outcomes. This study also found that non-spousal caregivers had increases in feelings of anger over time compared to spouses. Practitioners working with sons caring for older adults may need to consider interventions that address these feelings.

**Isolation/social support.**

This study supports findings that male caregivers who feel isolated in the caregiving role have increases in depression as social support declines (Femiano & Coonerty-Femiano, 2002) and suggests that resentment may also increase. Activity restriction, viewed as a component of social isolation, also negatively contributed to changes in emotional well-being over time. Kaye
(2002) suggests that it is well advised for practitioners to attempt to expand informal support for male caregivers because these supports can be important mediating factors by providing information, encouragement, and instrumental assistance. It is also possible that increased participation in activities may be a positive coping strategy for some men (Thompson, 2002).

Practitioners should work to identify the informal support systems of male caregivers and to foster emotional social support since lack of support may cause the informal family care system to collapse (Brown, Chen, Mitchell, & Province, 2007; Femiano & Coonerty-Femiano, 2002). Many older men, in general, do not have large social networks (Wallsten, 2000). Practitioners should help men understand the important role of social support in their well-being and work with them to determine the best way to enhance social support resources. Previous studies have reported that friends formed a sub-unit of informal social support for male caregivers and that the interaction with this group was mostly positive (Brown, Chen, Mitchell, & Province, 2007). Practitioners working with male caregivers could encourage the strengthening of already existing networks of family and friends. They could also work with caregivers to create new support systems. For example, practitioners could provide linkages to connect with other caregivers through support groups (Femiano & Coonerty-Femiano, 2002).

Support groups encourage social participation and social support. However, as with other services, there are low utilization rates among male caregivers (Brown, Chen, Mitchell, & Province, 2007). Group interventions have been found to be important with any caregiving population and may be particularly helpful with men. Groups may serve as a support system where members might share their concerns, find acceptance of their feelings, learn coping skills, learn about resources, and gain practical skills. For men, information groups should be
distinguished from therapeutic groups because men are less likely to attend groups labeled as therapeutic (Femiano & Coonerty-Femiano, 2002).

Previous research suggests that all-male groups may be the most appropriate group intervention for male caregivers (Femiano & Coonerty-Femiano, 2002). These groups may be particularly helpful with older men because they may feel less pressure to maintain their façade. All-male groups also have the advantage of minimizing competitiveness and fostering mutuality as the men discover that other men have the same concerns and fears (Femiano & Coonerty-Femiano, 2002). In creating groups, Femiano and Coonerty-Femiano (2002) state that long-term groups are preferable and must allow for flexibility in attendance.

Marketing strategies are key to male caregiver participation in groups. In promoting a service, (Kaye, 2002) advises that practitioners should stress expert advice and concrete information using language that is acceptable to men. Pragmatism and tangible benefits should also be stressed. Kaye (2002) suggests the following techniques for increasing the appeal of a group to men: (1) include men in outreach; (2) have male participants contact other men; (3) focus on providing concrete information and competency acquisition; (4) utilize a credible male spokesperson; and (5) publicize the program in places were men congregate such as barbershops.

Kaye (2002) has also identified the following preferred features of male caregiver support programs: (1) being with people who have had similar experiences and feelings; (2) support from others; (3) resolving problems; (4) receiving information on services and resources; (5) learning caregiving skills; (6) learning how to deal with guilt, depression, and anger; (7) helping others; (8) relief from caregiving duties for a brief period of time; and (9) learning what to expect in the future. He further suggests that, for male caregivers, gender-neutral locations should be selected for mixed groups and male-oriented locations for all-male groups.
Religiosity/spirituality may also be a resource for intervention approaches with male caregivers that creates an informal social network for emotional support and provides activities to decrease social isolation (Femiano & Coonerty-Femiano, 2002). Previous research has found religious involvement may replenish social contact and emotional support and that that older men who entered the caregiving role tended to increase their religious participation (Stolley & Chohan, 2002). However, research has also found that caregivers who are caring for someone whose condition deteriorates progressively have fewer and fewer opportunities to participate in organized religious activity and are as likely to increase participation in non-organized, personal religious activities (Stolley & Chohan, 2002). Previous research also suggests that both men and women caregivers who use religious-spiritual coping tend to have healthier relationships with the care recipient and displayed less evidence of depression (Stolley & Chohan, 2002). Practitioners working with male caregivers should be aware of this potential resource for social support and activity.

Education and SES.

Finally, caregivers in this study with less education were more likely to report depressed affect and worse self-perceived health over time and this may be because of low SES. Practitioners and policymakers may want to target interventions to male caregivers with lower education and SES as they may be in more need of services.

Interventions.

Changes in health care policy that favor keeping older adults in the community for as long as possible increase pressure for men to participate in caregiving whether they are ready or not (Kaye, 2002). Social workers and other practitioners could aid in the transition by helping male caregivers adjust to their new role through strategic planning. Thompson (2002) asserts
that men’s approach to caregiving tends to be more managerial and businesslike in style so assisting men in planning may fit well with skills they already have.

Research on family caregiving overall suggests that caregivers do not fall into categories that lend themselves to a clearly targeted intervention and a one-size-fits-all intervention is unlikely to be effective (Schultz et al., 2003). Caregiving interventions often involve more than one treatment element, simultaneously addresses multiple problems, and must be tailored to meet the specific challenges of the individual. Burgio et al. (2001) found that interventions that are comprehensive, intensive, and individually tailored to individual needs are more likely to be effective. Therefore tailoring services to meet the expressed needs of male caregivers is essential for effectiveness.

According to Shultz et al. (2002), all caregivers are likely to benefit from knowledge about the care recipient health issues and the caregiving role, as well as knowledge of resources available to caregivers. Providing information may be particularly important for male caregivers because men are accustomed to obtaining facts and data before acting and may be more inclined to accept support services if they are well-informed about the services (Femiano & Coonerty-Femiano, 2002). Caregivers may also benefit from training in problem-solving skills and interventions (Shultz et al., 2002) and this may be particularly true for men. Research has consistently found that male caregivers are more likely to use a problem-solving approach in their response to caregiving stressors (Thompson, 2002)

In developing intervention strategies and treatment programs for male caregivers, the research indicates that researchers, practitioners, and policymakers should consider the individual needs and desires of the caregiver that are gender sensitive and fit into the context in which they live (Thomas et al., 2002; Yee & Schultz, 2000). Thus, gender influences and
traditional role expectations should be considered when planning interventions or offering
services (Brown, Chen, Mitchell, & Province, 2007). Since most caregiver interventions
caregivers have been developed with large samples of women, practitioners working with male
caregivers should look to tailor interventions with male development and male roles in mind
(Glicken, 2005). However, this may be challenging. There may be temptation for the
practitioner to attempt to adapt the male caregiver to the intervention rather than vice versa
(Glicken, 2005). In order for an intervention to be effective, it must be tailored to the needs of
the individual; therefore a better approach would be to adapt the intervention to the male
caregiver. Research suggests that an understanding of male development and socialization are
essential for practitioners to work effectively with men (Glicken, 2005); however, professionals
wishing to intervene with male caregivers must not act out of predetermined notions about men
(Femiano & Coonerty-Femiano, 2002). A key element in working with men is the practitioner’s
ability to help the client clearly communicate the nature the problem and the impact it has on his
life (Glicken, 2005); thus a thorough assessment that is gender-specific should lead to more
effective interventions.

According to the research, interventions for male caregivers will range widely, depending
on the stage of caregiving and the characteristics of the caregiver (Femiano & Coonerty-Femiano,
2002). The particular characteristics, values, motivations, and needs of the caregiver
also affect the choice of intervention (Femiano & Coonerty-Femiano, 2002).

Practitioners may need to work with some men to reconceptualize their self-concept
while understanding their male role in helping them accept new demands and changes in the
caregiving role (Femiano & Coonerty-Femiano, 2002). For other men, their concept of maleness
may be more contemporary and they will approach caregiving with a more complex perspective.
This will allow clinicians a wide range of interventions. However, male socialization will play a role regardless and the repercussions need to be taken into account (Femiano & Coonerty-Femiano, 2002).

In order for services to evolve to meet the needs of male caregivers, service providers and practitioners must be willing to abandon the stereotype that all men are willing to go at it alone and recognize that it takes a community to support elder caregivers (Kaye, 2002). Informal supports can be important mediating factors by providing information, encouragement, and instrumental assistance (Kaye, 2002). However, male caregivers may have access to fewer informal support systems due to the disintegration of traditional communities and neighborhoods, smaller family sizes, and other factors (Kaye, 2002). Caregivers, in general, are likely to benefit from an intervention that either frees up their time or provides emotional support (Sörensen, Pinquart, Dr, & Duberstein, 2002). The findings from this study suggest this may be particularly true for men.

**Policy implications.**

Several policy implications were mentioned in the previous section; however a broader examination of caregiving policy is warranted. Berkman, Gardner, Zodikoff, and Harootyan (2005) state that it is important that the social work profession continue to advocate for the equitable distribution of resources and to attend to issues of gender, race, ethnicity, and class. Although policies have been developed (e.g. National Family Caregiver Support Program) that acknowledge the role of the family caregiver and provide a mechanism for meeting their needs through programs and services, these policies are based on “caregiver” as a broad category. Due to the dominance of women in caregiving research, interventions, programs and services have been developed largely to serve the female caregiver population. Social workers will need to
advocate for the creation of or tailoring of programs to meet the needs of male caregivers. Findings from this study may contribute to the development of policy by determining what factors are related to outcomes (Kemper, 2003). For example, social support and social isolation were key predictors of caregiving outcomes in this study. Policies, services, and programs that target these factors may be of particular benefit to male caregivers.

**Research implications.**

The research on male caregivers, particularly longitudinal studies, is scarce. In particular, there has been little research on the experiences of culturally diverse subpopulations of male caregivers (Femiano & Coonerty-Femiano, 2002). Future research on male caregivers would benefit from the following: Larger samples of men in studies, with particular attention to subgroups of men; more studies with just male caregivers, especially qualitative studies that help us understand the process and comparisons with similar non-caregiving men; and mixed method studies that triangulate measures commonly used in the caregiving literature that could lead to the development of new measures for men or the tailoring of measures to be specific to men. This study also suggests several variables that may be important to examine with men in future research: the overall low rate of service utilization, the quality of the pre-illness relationship, activity restriction, and social support.

**Conclusions**

This dissertation study used variables selected using the Pearlin stress process model to examine changes in emotional well-being and self-perceived health over time in African American and White male caregivers of older adults. Findings suggest that male caregivers of both races report relatively low levels of negative emotional outcomes and perceive their health to be fair to good. Emotional well-being and health also appear to remain relatively stable over
time. Several factors were found to be influential; however, constructs related to the social context appear to be key to understanding the male caregiving experience and how it changes over time.

Femiano and Coonerty-Femiano (2002) state that the range of male caregiving is broad and that men approach caregiving tasks differently according to their understanding of the role, their sense of maleness, the expectation of others, and their relationships. Findings from this study support the notion that relationships appear to be an important consideration for both African American and White male caregivers. However, many questions remain unanswered.

Male caregivers in this study generally reported low levels of distress and stability of emotional and physical well-being over time; however Thompson’s (2002) questions as to why this is still remain. Is it that men’s style of caregiving is truly less distressing or is it that men’s true level of distress is poorly measured?

Masculinity theories suggest that it might be the latter. The social construction of masculinity affects men in many ways. According to Brooks (1998), for most men, masculinity is about displaying competence and fearlessness even though this is a difficult posture to maintain. Due to socialization, traditional men are committed to representing themselves as strong, independent, rational, competent, and fearless (Glicken, 2005). Men may feel challenged in expressing their feelings but may have a breadth of feelings and caring that is not always apparent to an outside observer (Femiano & Coonerty-Femiano, 2002).

Established measures, particularly those used in caregiving research, have been normed on female caregivers may not be sensitive to the caregiving experiences of men thus it is unclear whether reported gender differences represent true differences or the tendencies of men to underreport distress (Bookwala, Newman & Schulz, 2002). A large body of literature has
demonstrated that there are gender differences in self-reports of health, distress, and burden and this is especially true for interviews and questionnaires (Addis & Mahalik, 2003; Baker & Robertson, 2008). Data for this study were collected through face-to-face interviews. Men in this study might have felt socialized pressure to downplay negative emotions or exaggerate their health status in order to not be perceived as weak.

Although the larger caregiving literature consistently reports differences in African American and White caregivers, these findings were not supported in this study. Masculinity theories may also partly explain the lack of difference between African American and White males. In regards to caregiving men, it may be that being male is a more important consideration than being African American or White. In the U.S., the dominant male image involves physical strength, emotional control, self-sufficiency and virility (International Longevity Center, 2004). Thus, African American and White caregivers may be affected in similar ways.

However, it may be that the male caregiving experience is not distressing. Gender roles become less salient with age. Gender role late-life shift may provide an explanation for the low levels of distress. According to this perspective, as men age they desire more nurturing roles and become more concerned about the quality of relationships (Gutmann, 1994). The caregiving role, in this context, may fill a late-life need and be satisfying. The findings from this study on the quality of relationships also support this possibility. It may be that dissatisfaction with the quality of the relationship with the care recipient in the past and dissatisfaction with current social support contribute to male caregiver’s distress because of the importance of relationship quality in late-life. Social isolation may also lead to less opportunity for positive social interaction.
Femiano and Coonerty-Femiano (2002) state that the social construction of gender is a pervasive reality and that practice with male caregivers should account for this in attempting to understand the male caregiver experience. According to Glicken (2005), masculinity generates a “unique assumptive world” that appears to act as a barrier to men in many ways; thus it may be perceived as a different culture (Glicken, 2005). Brooks (1998) also mentions the possibility that working with men should be perceived as cross-cultural experience, particularly in the realm of therapy. In the context of practice with men, in this case male caregivers, Glicken (2005) argues that practitioners working with men should utilize a culturally-sensitive format. Given the dominance of the female perspective in caregiving research and practice, this idea deserves consideration. Culturally competent practice with male caregivers would involve an understanding of how men approach the world and the caregiving context through a masculine lens.

However, as noted earlier, because of the tremendous diversity in the male caregiving population, sociological and psychological theories such as the ones mentioned have limited explanatory power when applied to the caregiving experience. For practitioners working with male caregivers, the “why” may not be as important as the “how.” Conceptual models such as the Pearlin stress process model offer a framework for assessment that accounts for individual variation in caregiving context, stressors, resources, and outcomes.

This study makes a unique contribution to the male caregiving literature by using the Pearlin stress process model to examine differences and similarities between African American and White male caregivers of older adults in emotional well-being and self-perceived health.
This contribution is further strengthened by examining changes in these variables over time. Findings from this study can be used by researchers, practitioners, and policymakers to better understand the male caregiving experience.
References


Williamson, G.M., & Shaffer, D.R. (2001). Relationship quality and potentially harmful behaviors by spousal caregivers: How we were then, how we are now. *Psychology and Aging, 16*(2), 217-226.


Appendix A

Table 1
Sample Demographic Characteristics for Entire Sample and Men Only

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Mean (SD) / %</th>
<th>Mean (SD) / %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Entire Sample (n = 425)</td>
<td>Range</td>
</tr>
<tr>
<td>CR Age</td>
<td>75.5 (10.1)</td>
<td>48 - 102</td>
</tr>
<tr>
<td>CG Age</td>
<td>60.5 (14.5)</td>
<td>18 - 91</td>
</tr>
<tr>
<td>Years Caregiving</td>
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<td>.04 - 45</td>
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<tr>
<td>Race/Ethnicity</td>
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<tr>
<td>African American</td>
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<tr>
<td>White</td>
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<tr>
<td>Female (CG)</td>
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</tr>
<tr>
<td>Female (CR)</td>
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<td>Spouse</td>
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<td>Education a</td>
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<td>Trade School</td>
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</tr>
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<td>Adequate</td>
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<td>50.0%</td>
</tr>
<tr>
<td>Somewhat Inadequate</td>
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</tr>
<tr>
<td>Not at all Adequate</td>
<td>11.7%</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

Note. a For descriptive purposes, education, household income, and income adequacy are reported by category in this table. In further analyses, they were treated as continuous variables.
Table 2
Descriptive Results of Predictor and Outcome Variables at Baseline for Entire Sample and Men Only

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Mean (SD) / %</th>
<th>Range</th>
<th>Mean (SD) / %</th>
<th>Range</th>
</tr>
</thead>
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<td>ADL/IADL</td>
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<td>7.0 (4.7)</td>
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<tr>
<td>RBANS (CR)</td>
<td>76.0 (18.8)</td>
<td>0-126</td>
<td>80.3 (21.4)</td>
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<td>Formal Services</td>
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<td>0.8 (1.2)</td>
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<tr>
<td>Social Support</td>
<td>20.1 (3.6)</td>
<td>7-24</td>
<td>19.7 (4.0)</td>
<td>7-24</td>
</tr>
<tr>
<td>Activity Restriction</td>
<td>14.9 (7.0)</td>
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<td>13.7 (5.8)</td>
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<tr>
<td>Pre-Illness Rel. Quality</td>
<td>33.4 (5.7)</td>
<td>10-40</td>
<td>34.3 (5.3)</td>
<td>20-40</td>
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</table>

Outcome

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Mean (SD) / %</th>
<th>Range</th>
<th>Mean (SD) / %</th>
<th>Range</th>
</tr>
</thead>
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<tr>
<td>Self-rated Health</td>
<td>3.1 (1.0)</td>
<td>1-5</td>
<td>3.1 (1.0)</td>
<td>1-5</td>
</tr>
<tr>
<td>Anger</td>
<td>13.6 (4.4)</td>
<td>10-39</td>
<td>13.0 (4.0)</td>
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<tr>
<td>Anxiety</td>
<td>36.0 (10.2)</td>
<td>20-77</td>
<td>34.4 (10.5)</td>
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<tr>
<td>Depression</td>
<td>11.9 (9.8)</td>
<td>0-47</td>
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<tr>
<td>Resentment</td>
<td>32.8 (14.1)</td>
<td>17-77</td>
<td>28.8 (12.4)</td>
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Table 3
Means and Standard Deviations for Outcome Variables Across 3 Time Points for Entire Sample and Men Only

<table>
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<tr>
<th>Outcome</th>
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<th>Mean (SD) / %</th>
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<td>Self-rated Health</td>
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<tr>
<td>Depression</td>
<td>11.9 (9.2)</td>
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<td></td>
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<tr>
<td>Resentment</td>
<td>32.4 (13.6)</td>
<td>28.2 (11.5)</td>
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Table 4
Spearman and Pearson Correlations between Predictors

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<td>.22*</td>
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</table>

Note 1=CG Age, 2=CR Age, 3=Years Caregiving, 4=Spouse/Non-spouse, 5=Race, 6=Dementia Diagnosis, 7=Education, 8=Income, 9=Perceived Income Inadequacy, 10=ADL/IADL, 11=Formal Services, 12=Social Support, 13=Activity Restriction, 14=Pre-Illness Relationship Quality; **.01 level (2-tailed). *.05 level (2-tailed).
Appendix B
Results Including Caregiver Sex

Table 1
*Pearson Correlations between Means of Outcome Variables.*

<table>
<thead>
<tr>
<th></th>
<th>Anger</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Resentment</th>
<th>Self-perceived Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anger</td>
<td>1.00</td>
<td>.57**</td>
<td>.57**</td>
<td>.47**</td>
<td>-.21**</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1.00</td>
<td>.83**</td>
<td>.55**</td>
<td>-</td>
<td>-.39**</td>
</tr>
<tr>
<td>Depression</td>
<td>1.00</td>
<td>.56**</td>
<td>-</td>
<td>.39**</td>
<td></td>
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<tr>
<td>Resentment</td>
<td>1.00</td>
<td></td>
<td>-1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-perceived Health</td>
<td></td>
<td></td>
<td>-1.00</td>
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</table>

*Note.* **Correlation is significant at the .01 level (2-tailed). *Correlation is significant at the .05 level (2-tailed).
Table 2  
*Pearson Correlations between Predictors and Means of Outcome Variables.*

<table>
<thead>
<tr>
<th></th>
<th>Anger</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Resentment</th>
<th>Self-perceived Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR Age</td>
<td>.05</td>
<td>-.01</td>
<td>.02</td>
<td>.15**</td>
<td>.03</td>
</tr>
<tr>
<td>CG Age</td>
<td>-.26**</td>
<td>-.15**</td>
<td>-.19**</td>
<td>-.06</td>
<td>.01</td>
</tr>
<tr>
<td>Years Provided</td>
<td>&lt;-.01</td>
<td>&lt;.01</td>
<td>-.01</td>
<td>-.03</td>
<td>-.01</td>
</tr>
<tr>
<td>Care</td>
<td>Formal Services</td>
<td>.13**</td>
<td>.04</td>
<td>.08</td>
<td>.11*</td>
</tr>
<tr>
<td>Social Support</td>
<td>-.28**</td>
<td>-.33**</td>
<td>-.39**</td>
<td>-.31**</td>
<td>.12*</td>
</tr>
<tr>
<td>Activity</td>
<td>.21**</td>
<td>.27**</td>
<td>.37**</td>
<td>.44**</td>
<td>-.11*</td>
</tr>
<tr>
<td>Restriction</td>
<td>Pre-Illness Rel.</td>
<td>-.22**</td>
<td>-.17**</td>
<td>-.17**</td>
<td>-.37**</td>
</tr>
<tr>
<td>Quality</td>
<td>Note. ** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).</td>
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Table 3
Spearman Correlations between Predictors and Means of Outcome Variables.

<table>
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<tr>
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<th>Anxiety</th>
<th>Depression</th>
<th>Resentment</th>
<th>Self-perceived Health</th>
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<tbody>
<tr>
<td>CR Sex</td>
<td>.12*</td>
<td>-.11*</td>
<td>-.13**</td>
<td>-.22**</td>
<td>.01</td>
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<td>CG Race</td>
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<td>.05</td>
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<tr>
<td>Spouse/Non-spouse</td>
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<td>.01</td>
<td>.13**</td>
<td>.01</td>
<td>&lt;-.01</td>
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<td>Dementia Diagnosis</td>
<td>.11*</td>
<td>.01</td>
<td>.15**</td>
<td>.22**</td>
<td>-.06</td>
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<tr>
<td>CG Education</td>
<td>.07</td>
<td>-.15**</td>
<td>-.12*</td>
<td>.18**</td>
<td>.25**</td>
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<td>Income</td>
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<td>-.24**</td>
<td>-.22**</td>
<td>-.01</td>
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<tr>
<td>Income Inadequacy</td>
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<td>.25**</td>
<td>.22**</td>
<td>.05**</td>
<td>-.25**</td>
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</table>

Note. ** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).

Anger

Table 4 presents the final model and results of the HLM analysis for caregiver anger. The results suggest that less social support ($\beta = -.25$, SE = .06, $p<.01$) and lower pre-illness relationship quality ($\beta = -.11$, SE = .03, $p<.01$) reported more anger. There was a main effect of time ($\beta = -.32$, SE = .13, $p\leq.01$), such that anger lessened in the later sessions. There was no significant main effect for race or sex suggesting that there are no significant differences between African American and White or between male and female caregivers in their report of anger over time. Random effects were significant ($\chi^2 [208] = 1110.78$, $p <.01$) suggesting that there is still some variance unexplained by the variables in the model. There was also a main effect for ADL/IADL ($\beta = -.25$, SE = .06, $p<.01$) such that caregivers who reported more assistance with
ADL/IADL also reported more anger. Random effects for ADL/IADL were significant ($\chi^2 [212] = 273.27, p < .01$) suggesting that there is still some variance unexplained by ADL/IADL in the model.
Table 4

**Final HLM for Caregiver Anger**

Model

\[
\text{Caregiver Anger} = \pi_0 + \pi_{1i} \text{ (Time)} + \pi_{2i} \text{ (ADL/IADL)} + e_i
\]

\[
\pi_0 = \beta_{00} + \beta_{01} \text{ (Sex)} + \beta_{02} \text{ (Race)} + \beta_{03} \text{ (Social Support)} + \beta_{04} \text{ (Relationship Quality)} + \gamma_{0i}
\]

\[
\pi_1 = \beta_{10}
\]

\[
\pi_2 = \beta_{20} + \gamma_{2i}
\]

<table>
<thead>
<tr>
<th></th>
<th>Estimate (SE) for fixed effects</th>
<th>Variance component for random effects</th>
<th>Test</th>
<th>p</th>
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<tr>
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<tr>
<td>Caregiver Anger</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e_i)</td>
<td></td>
<td>6.58</td>
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<td></td>
</tr>
</tbody>
</table>

Predicting \(\pi_0\) (mean Caregiver Anger)

| \(\beta_{00}\) | 13.28 (.28) | t[365] = 46.89 | < .001    |
| \(\beta_{01}\) (Sex) | -.61 (.39) | t[365] = -1.55 | 0.12      |
| \(\beta_{02}\) (Race) | .62 (.37)  | t[365] = 1.66  | 0.1       |
| \(\beta_{03}\) (Social Support) | -.25 (.06) | t[365] = -4.21 | < .001    |
| \(\beta_{04}\) (Relationship Quality) | -.11 (.03) | t[365] = 3.23  | 0.002     |
| \(\gamma_{0i}\) | 10.68 | \(\chi^2\) [208] = 1110.78 | < .001    |

Predicting \(\pi_1\) (effect of time on Caregiver Anger)

| \(\beta_{10}\) | -.32 (.13) | t[715] = -2.47 | 0.01      |

Predicting \(\pi_2\) (effect of ADL/IADLs on Caregiver Anger)

| \(\beta_{20}\) | .25 (.06)  | t[369] = 4.54  | < .001    |
| \(\gamma_{2i}\) | 0.16 | \(\chi^2\) [212] = 273.27 | 0.003      |
Anxiety.

Table 5 presents the final model and results of the HLM analysis for caregiver anxiety. The results suggest that caregivers with less education ($\beta = -1.35$, SE = .25, p<.01), less social support ($\beta = -0.72$, SE = .14, p<.01), and greater activity restriction ($\beta = 0.37$, SE = .08, p<.01) reported higher levels of anxiety. Caregivers who reported a better pre-illness relationship ($\beta = -0.18$, SE = .08, p<.05) reported less anxiety. There was no significant main effect of time suggesting that anxiety levels remained relatively stable over time. There was no significant main effect for race suggesting that there are no significant differences between African American and White caregivers in their report of anxiety over time. However, there was a main effect for sex such that female caregivers ($\beta = -2.11$, SE = .96, p<.05) reported more anxiety over time. Random effects were significant ($\chi^2 [363] = 1559.62$, p <.01) suggesting that there is still some variance unexplained by the variables in the model. There was also a main effect for ADL/IADL ($\beta = 0.37$, SE = .11, p<.01) such that caregivers who reported more assistance with ADL/IADL also reported more anxiety.
Table 5  
*Final HLM for Caregiver Anxiety*

**Model**

\[
\text{Caregiver Anxiety} = \pi_0 + \pi_1 (\text{Time}) + \pi_2 (\text{ADL/IADL}) + e_i \\
\pi_0 = \beta_{00} + \beta_{01} (\text{Sex}) + \beta_{02} (\text{Race}) + \beta_{03} (\text{Education}) + \beta_{04} (\text{Social Support}) + \beta_{05} (\text{Activity Restriction}) + \beta_{06} (\text{Relationship Quality}) + \gamma_{0i} \\
\pi_1 = \beta_{10} \\
\pi_2 = \beta_{20} + \gamma_{2i}
\]

**Estimates and Variances**

<table>
<thead>
<tr>
<th></th>
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<th>Variance component for random effects</th>
<th>Test</th>
<th>p</th>
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<td>e_i</td>
<td>32.09</td>
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<tr>
<td>Predicting (\pi_0) (mean Caregiver Anxiety)</td>
<td>(\beta_{00})</td>
<td>36.11 (.67)</td>
<td>(t[363] = 54.01)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>(\beta_{01} \text{ (Sex)})</td>
<td>-2.11 (.96)</td>
<td>(t[363] = -2.21)</td>
<td>0.028</td>
</tr>
<tr>
<td></td>
<td>(\beta_{02} \text{ (Race)})</td>
<td>.55 (.93)</td>
<td>(t[363] = .60)</td>
<td>0.552</td>
</tr>
<tr>
<td></td>
<td>(\beta_{03} \text{ (Education)})</td>
<td>-1.35 (.25)</td>
<td>(t[363] = -5.35)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>(\beta_{04} \text{ (Social Support)})</td>
<td>-.72 (.14)</td>
<td>(t[363] = -5.33)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>(\beta_{05} \text{ (Activity Restriction)})</td>
<td>.37 (.08)</td>
<td>(t[363] = 4.86)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>(\beta_{06} \text{ (Relationship Quality)})</td>
<td>-.18 (.08)</td>
<td>(t[363] = -2.24)</td>
<td>0.026</td>
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<tr>
<td></td>
<td>(\gamma_{0i})</td>
<td>53.69</td>
<td>(\chi^2 [363] = 1559.62)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Predicting (\pi_1) (effect of time on Caregiver Anxiety)</td>
<td>(\beta_{10})</td>
<td>-.24 (.28)</td>
<td>(t[713] = -2.47)</td>
<td>0.405</td>
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<tr>
<td>Predicting (\pi_2) (effect of ADL/IADL on Caregiver Anxiety)</td>
<td>(\beta_{20})</td>
<td>.37 (.11)</td>
<td>(t[713] = 3.33)</td>
<td>0.001</td>
</tr>
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</table>
Depressed affect.

Table 6 presents the final model and results of the HLM analysis for caregiver depressed affect. The results suggest that caregivers with less education ($\beta = -.79$, SE = .25, $p<.01$), greater activity restriction ($\beta = .42$, SE = .07, $p<.01$), and a worse quality pre-illness relationship ($\beta = -.16$, SE = 1.78, $p<.05$) reported higher levels of depressed affect. Caregivers who reported more social support ($\beta = -.73$, SE = .13, $p<.01$) reported less depressed affect. There was also a significant main effect for perceived income adequacy ($\beta = 2.83$, SE = .91, $p<.01$) such that caregivers who reported higher financial strain reported more depression. There was no significant main effect of time suggesting that depressed affect levels remained relatively stable over time. There was no significant main effect for race suggesting that there are no significant differences between African American and White male caregivers in their report of depressed affect over time. However, there was a main effect for sex such that female caregivers ($\beta = -2.05$, SE = .84, $p<.05$) reported more depression over time. Random effects were significant ($\chi^2 [205] = 812.31$, $p <.01$) suggesting that there is still some variance unexplained by the variables in the model. There was also a main effect for ADL/IADL ($\beta = .42$, SE = .13, $p<.01$) such that caregivers who reported more assistance with ADL/IADL also reported more depression.
Table 6
Final HLM for Caregiver Depressed Affect

Model

Caregiver Depression = $\pi_0 + \pi_1 \text{ (Time)} + \pi_2 \text{ (ADL/IADL)} + e_i$
$\pi_0 = \beta_{00} + \beta_{01} \text{ (Sex)} + \beta_{02} \text{ (Race)} + \beta_{03} \text{ (Education)} + \beta_{04} \text{ (Income Adequacy)} + \beta_{05} \text{ (Social Support)} + \beta_{06} \text{ (Activity Restriction)} + \beta_{07} \text{ (Relationship Quality)} + \gamma_{0i}$

$\pi_1 = \beta_{10}$

$\pi_2 = \beta_{20} + \gamma_{2i}$

Estimates and Variances

<table>
<thead>
<tr>
<th></th>
<th>Estimate (SE) for fixed effects</th>
<th>Variance component for random effects</th>
<th>Test</th>
<th>p</th>
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<td>L1 Error in predicting Caregiver Depression</td>
<td></td>
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<tr>
<td>$e_i$</td>
<td></td>
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Predicting $\pi_0$ (mean Caregiver Depression)

<p>| | | | | |</p>
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<tr>
<td>$\beta_{00}$</td>
<td>11.98 (.60)</td>
<td>$t[362] = 19.91$</td>
<td>&lt;.001</td>
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<tr>
<td>$\beta_{01}$ (Sex)</td>
<td>-2.05 (.84)</td>
<td>$t[362] = -2.44$</td>
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<tr>
<td>$\beta_{02}$ (Race)</td>
<td>.63 (.86)</td>
<td>$t[362] = .72$</td>
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<td>$\beta_{03}$ (Education)</td>
<td>-.79 (.25)</td>
<td>$t[362] = -3.21$</td>
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<tr>
<td>$\beta_{04}$ (Income Adequacy)</td>
<td>2.83 (.91)</td>
<td>$t[362] = 3.12$</td>
<td>0.002</td>
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</tr>
<tr>
<td>$\beta_{05}$ (Social Support)</td>
<td>-.73 (.13)</td>
<td>$t[362] = -5.59$</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>$\beta_{06}$ (Activity Restriction)</td>
<td>.42 (.07)</td>
<td>$t[362] = 6.25$</td>
<td>&lt;.001</td>
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</tr>
<tr>
<td>$\beta_{07}$ (Relationship Quality)</td>
<td>-.16 (.07)</td>
<td>$t[362] = -2.16$</td>
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<td>$\gamma_{0i}$</td>
<td>37.75</td>
<td>$\chi^2[205] = 812.31$</td>
<td>&lt;.001</td>
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Predicting $\pi_1$ (effect of time on Caregiver Depression)

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<tr>
<td>$\beta_{10}$</td>
<td>-.25 (.30)</td>
<td>$t[712] = -.82$</td>
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Predicting $\pi_2$ (effect of ADL/IADLs on Caregiver Depression)

<p>| | | | | |</p>
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</thead>
<tbody>
<tr>
<td>$\beta_{20}$</td>
<td>.42 (.13)</td>
<td>$t[369] = 3.16$</td>
<td>0.002</td>
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</tr>
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<td>$\gamma_{2i}$</td>
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<td>$\chi^2[212] = 242.00$</td>
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Resentment.

Table 7 presents the final model and results of the HLM analysis for caregiver resentment. The results suggest that caregivers with greater activity restriction ($\beta = .69, \ SE = .10$, $p<.01$) reported higher levels of resentment. Caregivers who reported a better pre-illness relationship ($\beta = -.66, \ SE = .09, \ p<.01$) and more social support ($\beta = -.61, \ SE = .17, \ p<.01$) reported less resentment. There was a main effect of time ($\beta = -.4.33, \ SE = 1.85, \ p<.05$), such that resentment lessened in the later sessions. Change over time also demonstrated a significant quadratic pattern ($\beta = .93, \ SE = .48, \ p<.05$) suggesting a significant drop in resentment between Time 1 and Time 2. Random effects were significant for time ($\chi^2 [223] = 338.52, \ p <.01$) suggesting that there is still some variance unexplained by time in the model.

There was no significant main effect for race suggesting that there are no significant differences between African American and White caregivers in their report of resentment over time. However, there was a main effect for sex such that female caregivers ($\beta = -4.20, \ SE = 1.12, \ p<.01$) reported more depression over time. Random effects were significant ($\chi^2 [108] = 747.67, \ p <.01$) suggesting that there is still some variance unexplained by the variables in the model.
Table 7
Final HLM for Caregiver Resentment

Model

Caregiver Resentment = \pi_0 + \pi_1 \text{(Time)} + \pi_2 \text{(Time}^2) + \pi_3 \text{(ADL/IADL)} + e_i

\pi_0 = \beta_{00} + \beta_{01} \text{(Sex)} + \beta_{02} \text{(Race)} + \beta_{03} \text{(Social Support)} + \beta_{04} \text{(Activity Restriction)} + \beta_{05} \text{(Relationship Quality)}

\pi_1 = \beta_{10} + \gamma_{1i}

\pi_2 = \beta_{20}

\pi_3 = \beta_{30}

Estimates and Variances

<table>
<thead>
<tr>
<th></th>
<th>Estimate (SE)</th>
<th>Variance component for random effects</th>
<th>Test</th>
<th>p</th>
</tr>
</thead>
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<td>L1 Error in predicting</td>
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</tr>
<tr>
<td>Caregiver Resentment</td>
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<tr>
<td>e_i</td>
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</table>

Predicting \(\pi_0\) (mean Caregiver Resentment)

| \beta_{00}              | 34.23 (.85)   | t[364] = 40.05 < .001   |       |      |
| \beta_{01} \text{(Sex)} | -4.20 (1.12)  | t[364] = -3.75 < .001   |       |      |
| \beta_{02} \text{(Race)}| -1.57 (1.12)  | t[364] = -1.39 0.164    |       |      |
| \beta_{03} \text{(Social Support)} | -.61 (.17) | t[364] = -3.42 0.001   |       |      |
| \beta_{04} \text{(Activity Restriction)} | .69 (.10)  | t[364] = 7.06 < .001   |       |      |
| \beta_{05} \text{(Relationship Quality)} | -.66 (.09) | t[364] = -7.10 < .001 |       |      |
| \gamma_0                 | 98.95         | \chi^2 [218] = 1947.21 < .001 |       |      |

Predicting \(\pi_1\) (effect of time on Caregiver Resentment)

| \beta_{10}              | -4.33 (1.85)  | t[369] = -2.34 0.02 |       |      |
| \gamma_{1i}             | 8.7           | \chi^2 [223] = 338.52 < .001 |       |      |

Predicting \(\pi_1\) (effect of time\(^2\) on Caregiver Resentment)

| \beta_{20}              | .93 (.48)     | t[713] = 1.97 0.049 |       |      |

Predicting \(\pi_2\) (effect of ADL/IADLs on Caregiver Anger)

\(B_{30}\)
Self-perceived health.

Table 8 presents the final model and the results of the HLM analysis for caregiver self-perceived health. The results suggest that caregivers with higher education ($\beta = .10, \ SE = .03, \ p<.01$) and less financial strain ($\beta = -.35, \ SE = .09, \ p<.01$) reported better health. There was no significant main effect of time suggesting that health remained relatively stable over time. There was a significant main effect for race ($\beta = -.29, \ SE = .09, \ p<.01$) suggesting that African American caregivers report worse health than Whites over time. There were no significant effects for sex suggesting males and females do not differ on self-perceived health over time. Random effects were significant ($\chi^2 [66] = 178.00, \ p < .01$) suggesting that there is still some variance unexplained by the variables in the model.
Table 8

Final HLM for Caregiver Self-perceived Health

Model

\[ \text{Caregiver Health} = \pi_0 + \pi_1 (\text{Time}) + e_i \]
\[ \pi_0 = \beta_{00} + \beta_{01} (\text{Sex}) + \beta_{02} (\text{Race}) + \beta_{03} (\text{Education}) + \beta_{04} (\text{Income Adequacy}) + \beta_{05} (\text{Activity Restriction}) + \gamma_{0i} \]
\[ \pi_1 = \beta_{10} + \gamma_{1i} \]

Estimates and Variances

<table>
<thead>
<tr>
<th></th>
<th>Estimate (SE) for fixed effects</th>
<th>Variance component for random effects</th>
<th>Test</th>
<th>p</th>
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<tbody>
<tr>
<td>L1 Error in predicting</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Caregiver Health</td>
<td></td>
<td></td>
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<tr>
<td>( e_i )</td>
<td>0.24</td>
<td></td>
<td></td>
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<tr>
<td>Predicting ( \pi_0 ) (</td>
<td>( \beta_{00} )</td>
<td>3.14 (.07)</td>
<td>( t[364] = 45.93 )</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>mean Caregiver Health)</td>
<td>( \beta_{01} ) (Sex)</td>
<td>.04 (.10)</td>
<td>( t[364] = .43 )</td>
<td>0.668</td>
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<tr>
<td></td>
<td>( \beta_{02} ) (Race)</td>
<td>-.29 (.09)</td>
<td>( t[364] = -3.38 )</td>
<td>0.001</td>
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<tr>
<td></td>
<td>( \beta_{03} ) (Education)</td>
<td>.10 (.03)</td>
<td>( t[364] = 3.79 )</td>
<td>&lt; .001</td>
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<td></td>
<td>( \beta_{04} ) (Income Adequacy)</td>
<td>-.35 (.09)</td>
<td>( t[364] = -3.88 )</td>
<td>&lt; .001</td>
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<tr>
<td></td>
<td>( \beta_{05} ) (Activity Restriction)</td>
<td>-.02 (.01)</td>
<td>( t[364] = -3.02 )</td>
<td>0.003</td>
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<td>( \gamma_{0i} )</td>
<td>0.54</td>
<td>( \chi^2 [218] = 1515.28 )</td>
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<td>&lt; .001</td>
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<tr>
<td>Predicting ( \pi_1 ) (</td>
<td>( \beta_{10} )</td>
<td>-.25 (.30)</td>
<td>( t[712] = -.82 )</td>
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<td>effect of time on</td>
<td></td>
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<tr>
<td>Caregiver Health)</td>
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</tr>
<tr>
<td>( \gamma_{1i} )</td>
<td>0.09</td>
<td>( \chi^2 [223] = 338.05 )</td>
<td></td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>
Appendix C
Measures Used in Study

Caregiving Context

Demographic/general background information.
How old are you? _____
What is your relationship to (care recipient)?
1. Spouse or equivalent
2. Child
3. Sibling
4. In-law
5. Parent
6. Niece/nephew
7. Aunt/uncle
8. Grandchild
9. Other ____________

How long have you been providing care for (care recipient)?
How old is (care recipient)?
Gender of caregiver
1. Female
2. Male

How would you describe your race?
1. American Indian or Alaskan Native
2. Asian
3. Black or African American
4. Native Hawaiian or Other Pacific Islander
5. White
6. Other
Would you consider your ethnicity to be:

1. Hispanic or Latino
2. Not Hispanic or Latino

How much education have you had?
1. Less than 7 years
2. Jr. high (7-9 years)
3. Partial high school
4. High school graduate
5. Trade/technical school
6. Partial college
7. College graduate
8. Graduate/professional GED, or equivalent

If you don't mind, would you tell me your approximate annual household income before taxes?
1. Less than $5,000
2. $5,000 to $9,999
3. $10,000 to $14,999
4. $15,000 to $19,999
5. $20,000 to $29,999
6. $30,000 to $39,999
7. $40,000 to $49,999
8. $50,000 to $59,999
9. $60,000 to $69,999
10. $70,000 to $99,999
11. $100,000 or more

Mutual Communal Behavior Scale (quality of pre-illness relationship)

The following statements have to do with the type of interactions you had with (care recipient) BEFORE he/she became ill. For each statement, please indicate which response you feel most accurately describes how you and (care recipient) interacted BEFORE his/her illness began.

1. Never
2. Sometimes
3. Often
4. Always

1. If she/he was feeling bad, I tried to cheer her/him up.
2. She/he seemed to enjoy responding to my needs.
3. She/he did things just to please me.
4. When she/he had a need, she/he turned to me for help.
5. She/he went out of her/his way to help me.
6. She/he responded to my needs.
7. I enjoyed helping her/him.
8. I went out of my way to help her/him.
9. When making a decision, I considered her/his needs and feelings.
10. She/he would have done almost anything for me.

Primary Stressors

Dementia diagnosis
Has (care recipient) been diagnosed as having any condition that causes memory problems, such as Alzheimer’s disease or dementia?
0. No 1. Yes

ADL/IADL

0. No 1. Yes

[If 'Yes'] Did you help with this? O. No 1. Yes

1. During the past week, has (care recipient) needed any kind of help with bathing or showering?
2. During the past week, has (care recipient) needed any kind of help with dressing?
3. During the past week, has (care recipient) needed any kind of help eating?
4. During the past week, has (care recipient) needed any kind of help getting in or out of bed or chairs?
5. During the past week, has (care recipient) needed any kind of help using a wheelchair?
6. During the past week, has (care recipient) needed any help getting outside?
7. During the past week, has (care recipient) needed any help going to the bathroom or getting to the bathroom on time?
8. During the past week, has (care recipient) needed any kind of help with transportation to places outside walking distance?
9. During the past week, has (care recipient) needed help with personal grooming (washing face, brushing teeth)?
10. During the past week, has (care recipient) needed any help taking medicine?
11. During the past week, has (care recipient) needed any help with laundry?
12. During the past week, has (care recipient) needed any help preparing meals?
13. During the past week, has (care recipient) needed any help with shopping for items people usually shop for themselves (clothing, toiletries, etc.)?
14. During the past week, has (care recipient) needed any kind of help managing money (paying bills, etc.)?
15. During the past week, has (care recipient) needed any help taking care of personal business (insurance claims, taxes, etc.)?
16. During the past week, has (care recipient) needed any help using the telephone (dialing numbers, hanging up, etc.)?
17. During the past week, has (care recipient) needed any help doing heavy work (scrubbing floors, mowing lawn, etc.)?
18. During the past week, has (care recipient) needed any help doing light work (dishes, straightening up, etc.)?

Secondary Stressors

Perceived income adequacy.

How adequate is your income to meet basic needs such as food, housing, medical care, and heating?

1. Much more than adequate
2. More than adequate
3. Adequate
4. Somewhat inadequate
5. Not at all adequate

Activity restriction.

Now, I'd like to ask you some questions about the ways in which taking care of (care recipient) may have caused changes in your activities. Using the following responses, please tell me, in general, how much providing care has restricted your activities in each of the following areas since onset of (care recipient's) illness.

1. Never or seldom did this
2. Not restricted at all
3. Slightly restricted
4. Moderately restricted
5. Greatly restricted

1. Caring for yourself
2. Caring for or helping other people
3. Doing household chores
4. Going shopping
5. Visiting friends
6. Working on hobbies
7. Sports and recreation
8. Going to work
9. Maintaining friendships
10. Going to church or other religious activities

**Resources**

**Formal services.**

Has (care recipient) received any of the following services in the past month from an agency or from someone paid to provide this help?

- a. A paid homemaker service that helps with shopping, cleaning, laundry, preparing meals, etc.?
- b. A home health aid who comes to the home to help with personal care?
- c. Cooked meals delivered to the home or does he/she go to a center for low cost meals?
- d. A service that provides transportation to places outside the home (e.g., doctors, clinics, shopping)?
- e. A visiting nurse who comes to check medications, blood pressure, or other medical needs?
- f. Has he/she attended a senior day care or senior day health program?
- g. Does he/she attend any support group(s) on a regular basis?

**Social support.**

Some of the following statements may or may not be true about you. For each statement, please give the response that reflects your feelings.


1. When I feel lonely, there are several people I can talk to.
2. I often meet or talk with family or friends.
3. If I were sick, I could easily find someone to help me with my daily chores.

4. When I need suggestions on how to deal with a personal problem, I know someone I can turn to.

5. If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house/apartment (plants, pets, etc.).

6. There is at least one person I know whose advice I really trust.

**Outcomes**

**Anger.**

Please tell me how often you have felt each of the following ways during the past WEEK using the following answers.


1. Angry
2. Burned up
3. Like yelling at someone
4. Furious
5. Like swearing
6. Like hitting someone
7. Mad
8. Like banging on a table
9. Like breaking things
10. About to explode

**Anxiety.**

I'm going to read another set of statements that people have used to describe themselves. For each of these statements, indicate which of these responses best describes how you usually feel.


1. I feel pleasant.
2. I tire quickly.
3. I feel like crying.
4. I wish I could be as happy as others seem to be.
5. I am losing out on things because I can't make up my mind soon enough.
6. I feel rested.
7. I feel "calm, cool, and collected."
8. I feel that difficulties are piling up so high that I can't overcome them.
9. I worry too much over something that really doesn't matter.
10. I am happy.
11. I am inclined to take things hard.
12. I lack self-confidence.
13. I feel secure.
14. I try to avoid facing a crisis or difficulty.

Center for Epidemiological Studies – Depression (CES-D).

Now I’d like to ask some questions about how you've felt more recently. Please indicate the response for each statement, describing about how often you have felt that way during the past WEEK.

0. Rarely or none of the time (less than 1 day)
1. Some or a little of the time (1-2 days)
2. Occasionally or a moderate amount of the time (3-4 days)
3. Most or almost all the time

1. I was bothered by things that usually don't bother me.
2. I did not feel like eating, my appetite was poor.
3. I felt that I could not shake off the blues, even with help from family and friends.
4. I felt that I was just as good as other people.
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. I felt hopeful about the future.
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.

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12. I was happy.
13. I talked less than usual.
15. People were unfriendly.
16. I enjoyed life.
17. I had crying spells.
18. I felt sad.
19. I felt that people disliked me.
20. I could not “get going.”

**Resentment.**
The following statements describe situations that people sometimes resent when caring for someone who is ill. After I read each statement, please tell me how often you feel resentful of these situations.


1. Not having enough time for yourself
2. Feeling unappreciated
3. Having your needs come second
4. Not having the same social life as before
5. Having to give up plans for the future
6. How much longer things take to do
7. Any change in (care recipient's) personality
8. How difficult it is to go anyplace
9. Having to care for someone who has health problems
10. Feeling responsible for (care recipient's) well being

Using the same responses, tell me how often YOU have the following feelings.

11. (Care recipient) is overly dependent.
12. (Care recipient) makes requests of me that are over and above what he/she needs.
13. (Care recipient) expects me to take care of him/her as if I were the only person he/she could depend on.

14. I resent the time and effort I spend taking care of him/her.

15. (Care recipient) doesn't appreciate what I do for him/her as much as he/she should.

16. I feel trapped by my caregiving responsibilities.

17. I resent having to take on (care recipient's) responsibilities in addition to my own.

**Self-perceived health.**

How would you rate your overall health right now?