THE EFFECTS OF SUBJECTIVE AND OBJECTIVE CAREGIVER BURDEN ON THE DEPRESSIVE SYMPTOMATOLOGY OF A DISABLED OLDER ADULT CARE RECIPIENT

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MEDICAL SOCIOLOGY
ABSTRACT

Depression is a leading mental health issue effecting the aging population. The current body of research contends that stress, social disconnectedness, and disability are possible causes of depression. Research, however, widely neglects the study of caregiver burden as other probable causes of depression in this group. This study investigates subjective and objective caregiver burden as possible causes of adverse mental health for a non-institutionalized older adult care recipient. Additionally, the conditional effects of race/ethnic background of the care recipient are evaluated using the most recent wave of the National Long Term Care Study (NLTCS) and using both the life stress paradigm and the social exchange perspective as theoretical guides.

Using logistic regression analysis, I found that greater levels of objective caregiver burden were associated with an increased likelihood of the care recipients reporting depressive symptoms. Increased cognitive functioning of the care recipient reduced the negative effect that objective caregiver burden had on care recipient depressive symptoms. However, this mediating relationship did not vary by race. Providing helpful company to the caregiver was a weak moderator of the relationship between objective caregiver burden and care recipient depressive symptoms. However, when the conditional effects of race were considered, the effects of providing helpful company on the depressive symptoms of the care recipient, net of the effects of objective caregiver burden, were more pronounced. Results showed that the average predicted
probability for African American care recipients who exchanged helpful company with their caregiver was lower than for those who did not. Alternately, among non-black care recipients, individuals who exchanged social goods with their care recipient had a higher predicted probability of reporting any depressive symptoms than those who did not. This suggests that reasons other than an unbalanced care relationship are causing depressive symptoms in this group.

Future research should make use of longitudinal analytic methods to investigate caregiver burden’s effects on the mental health of the older adult care recipient. Additionally, other work should consider possible characteristics of the caregiver beyond burden that could potentially lead to depression in older adult care recipients.

Keywords: Depression, Care Recipient, Subjective Caregiver Burden, Objective Caregiver Burden, Social Exchange Perspective, Life Stress Paradigm
DEDICATION

I dedicate this work to my son, Noah Jeremiah. You inspire me to succeed.
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CHAPTER 1

INTRODUCTION

Statement of the Research Problem

The purpose of this study is to systematically evaluate subjective and objective caregiver burden as a possible cause of adverse mental health for a non-institutionalized older adult care recipient. The investigative method involves analyzing the association of caregiver subjective and objective burden level and care recipient depression using the most recent wave of the National Long Term Care Study (NLTCS) and using both the life stress paradigm and the social exchange perspective as theoretical guides. Finally, this study investigates the relationship between caregiver subjective and objective burden, racial/ethnic backgrounds of the care recipient, and care recipient depressive symptoms. First I will define two terms: older adult and disability. An “older adult” is an individual aged 65 or older\(^1\), and “disability” in this dissertation is having impairment on one or more activities of daily living (ADL) or instrumental activities of daily living (IADL).\(^2\)

Depression is a leading mental health issue that affects older adults around the world (Strine et al. 2008; Barkow et al. 2003). Although there is a great deal of research that discusses the possible causes of depression in non-institutionalized older adults, such as disability (Frasure-Smith and Lespérance 2005), being female, bereavement (Cole and

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\(^1\) This is based off the inclusion criteria of the NTLCS. All survey participants were Medicare recipients aged 65 years or older.

\(^2\) This definition comes from research published by Kenneth Manton, the principal investigator of the NTLCS.
Dendukuri 2003), pain (Jakobsson, Hallberg, and Westergren 2004; Andersson 2008), disengagement (Wrosh, Schultz, and Heckhausen 2004), social disconnectedness and social isolation (Cornwell and Waite 2009), the current body of research has failed to study how the mental health of an aging care recipient can be negatively or positively affected by his/her primary informal caregiver. This is an important issue because there are so many community-dwelling older adults who are dependent on informal care. In fact, there are approximately 15 to 25 million informal caregivers who provide about 31 hours per week of unpaid help to almost 11.7 million older adults in the United States (Neavaie-Waliser et al. 2002; LaPlante, Harrington, and Kang 2002).

The relationship between a caregiver and a care recipient is personal. It is a relationship built on dependence and commitment. Caregiving often requires intimate body work in which the caregiver must see the care recipient in their most vulnerable element, a state normally hidden from view. Care recipients may be totally dependent on their informal caregiver, even for the most private of tasks. Caregivers generally feel morally obligated to provide care for their older loved one. In addition to moral obligation, the decision to provide informal care is often a constrained choice based on family obligations and gender. Carework is socially considered the work of women. Women are expected to care for their loved ones, both young and old. Although the number of male caregivers is increasing, women, more often than men, are expected to take care of their older loved ones. Caregivers, who are often employed themselves, are not only responsible for providing care for their older loved ones; they may also be responsible for caring for their children and households, thus causing role strain. This role strain can negatively affect the mental and physical health of the primary caregiver,
which in turn could negatively affect the provision of care to the older adult care recipient. Feelings of burden, stress, and depression may arise for both the caregiver and the care recipient. This study seeks to understand the dynamics of this intimate relationship from the perspective of the old adult care recipient.

Since informal caregiving is so prevalent, caregiver burden is a matter of public concern. As such, there is a wide array of research on the subject. How burden is defined, however, has varied from researcher to researcher (Carretero et al. 2009). Despite the wealth of research in the area of caregiver burden, there still remains no unanimous definition for caregiver burden (Feinberg 2003). Some define burden as “a state resulting from the action of taking care of a dependent [older] person, a state which threatens the physical and mental health of the caregiver” (Zarit et al. 1980: 649). Others define burden as “the persistent difficulty to provide care and the physical, psychological, and emotional problems which caregivers or family members can experience when caring for a relative with a disability or some type of deterioration (George and Gwyther 1986:253). Although similar, these definitions are not synonymous.

Caregiving, and the resulting caregiving burden, are multidimensional and complex concepts. Montgomery and colleagues (1985) were the first to examine caregiver burden from a multidimensional perspective. Prior to this time, burden was studied as one construct. Montgomery et al. (1985) categorized burden in two ways: subjective and objective burden. Subjective burden was defined as the emotional reactions, attitudes, and perceptions of the caregiving experience. In contrast, objective burden was defined as “the extent of disruptions or changes in various aspects of the caregivers’ life and household” (Montgomery et al. 1985:21).

In previous work (Ejem, Drentea, and Clay 2014), Ejem and others only looked at the effects of emotional stress on care recipient’s mental health. Although that work was important, emotional stress is not burden, it is only part of the multifaceted concept. This present work is necessary to get a more complete understanding of the mental health effects of caregiving on a disabled care recipient. As a result, this study seeks to understand which form of burden (subjective or objective) has the more powerful effect on the care relationship. In other words, is the perceived stress of caregiving or the actual duties of the caregiver a more pervasive determinate of the mental well-being of the care recipient?

Some burden research asserts that caregiving can only be studied as subjective and objective, and not as a single concept, because one precedes the other (Carretero et al. 2009). Based on Pearlin and colleagues’ (1981) Stress Process Model, researchers assert that caregiving demands (objective burden) provokes negative reaction to the caregiving situation (subjective burden). In essence, objective burden is a primary stressor that results in subjective burden (i.e. secondary stressor). Thus, the next necessary step is to investigate the effects of these primary and secondary stressors on the mental health of a disabled care recipient. This work intends to empirically test the
relationship between caregiver burden and care recipient depression using both the life stress paradigm and the social exchange perspective as theoretical guides.

The life stress paradigm is a theoretical extension of Pearlin et al.’s Stress Process Model (1981). The life stress paradigm relates chronic and enduring life stressors to adverse mental health (Lin and Ensel 1989). According to this theoretical perspective, a burdened caregiver can be viewed as a chronic life stressor to the disabled care recipient. The life stressor (i.e. burdened caregiver) has a direct effect on the mental health (i.e. depressive symptomology) of the care recipient. Furthermore, the burdened caregiver also has an indirect effect on the mental health of the caregiver by negatively affecting the social and psychological resources that the care recipient has at his/her disposal.

Although some research has used the stress process model to study caregiver burden, most gerontological research makes use of the Social Exchange theory to study the relationship between caregiver-care recipient dyads. This perspective asserts that caregivers decide to enter a relationship because of the possible personal and interpersonal rewards they may receive for caring for an older loved one. However, if these rewards are not received, the caregiver may become burdened by the one-sided relationship (Call et al. 1999). Even among children and spouses, where the norm of obligation and reciprocity is usually strong, the needs of the care recipient may still “exceed the caregiver’s capacity for caring, which may result in a negative evaluation of the relationship” (Call et al. 1999:689). This negative evaluation can lead to distress and burden for the caregiver, and possible negative evaluation of the care relationship for the care recipient.
The research in this area, however, has produced widely inconsistent and inconclusive results regarding the effects of exchange on the mental health of older adults. Some research has found that providing support to adult children ameliorates the mental wellbeing of older adults care recipients (Lowenstein, Katz, and Gur-Yaish 2007; Wentkowski 1981; Dowd 1975, 1980). Additional research has found that support received from children increases well-being and helps to reduce the negative effect of stressful life events (Antonucci and Akiyama 1991; Silverstein and Bengtson 1994; Mutran and Reitzes 1984). Other studies have found that receiving aid increases distress among older adult care recipients (Ingersoll-Dayton, Morgan, and Antonucci 1997; Lee et al. 1995) Finally, there are studies that have found no relationship at all between the effects of exchange and the mental health of older persons (Umberson 1992; Dwyer, Lee, and Jankowski 1994; Lee and Ellithorpe 1982; McCulloch 1990) For this reason, this research will fill a substantial gap in gerontological literature by systematically studying the effects of caregiver objective and subjective burden on the mental health of a physically disabled older adult care recipient in the context of an exchange relationship.

Finally, the research intends to examine whether the racial/ethnic group of the care recipient has an effect on the relationship between caregiver burden and the depressive symptomology of the care recipient. Race has been found to affect the relationship between caregiver-care recipient dyads. Specifically, African Americans often report more positive feelings regarding providing care for older adult family members than their white counterparts (Roth et al. 2009). However, there is not much research that shows that older adult care recipients of color perceive the care relationship in the same way. Thus, this study uses both the life stress paradigm and the social
exchange perspective to investigate whether caregiver burden is less likely to lead to depression in care recipients of color than white care recipients.

In conclusion, this research will attempt to answer the following research questions: (1) does subjective burden or objective burden of a primary caregiver have a greater effect on the depressive symptomology of a disabled care recipient? (2) Are the effects of caregiver subjective and objective burden on care recipient depression conditional on the race of the care recipient? (3) To what extent do physical, psychological and social exchange goods effect care recipient depression net of caregiver burden, as indicated by social exchange theory? (4) To what extent do psychological and social resources mediate the effect of caregiver burden on care recipient depression, as indicated by the life stress paradigm? (5) To what extent are the effects of physical, psychological, and social exchange goods on care recipient depression net of caregiver burden, conditional on the race of the care recipient? (6) To what extent do psychological and social resources mediate the effect of caregiver burden on care recipient depression and furthermore are any mediation effects conditional on the race of the care recipient?

Understanding the side of the older adult care recipient could give us further insight in the delicate intricacies of geriatric depression. By answering the research question at hand, we have the potential to make great strides in depression care and management, and can improve the quality of life for millions of older adults who suffer from this condition.
CHAPTER 2

LITERATURE REVIEW

This chapter examines the issue of depression in older adults, reviews current aging demographics and the need for informal caregivers, and discusses the intimate bodywork involved in caregiving and the resulting burden and depression. In addition, subjective and objective burden is discussed, ending with a section on the racial and ethnic dynamics of caregiving.

Major Depressive Disorder Defined

Depression is a one of the leading mental health issues that affects older adults the world over (Strine et al. 2008; Barkow et al. 2003). It is estimated that the prevalence of geriatric depression ranges from 10 to 55 percent worldwide (Rajkumar et al. 2009). The World Health Organization (WHO) ranks depression as the most debilitating mental disease for the world’s older adults (WHO 2001). By the year 2031, the WHO projects that depression will be the second most burdensome mental health disease for older adults worldwide (WHO 2001).

With national projections estimating that older Americans (65 and older) are the fastest growing portion of the population, depression among older adults is a major public concern in the United States (Navaie-Waliser, Spriggs, and Feldman 2002; Scazuufca, Menezes, and Almeida 2002). It is estimated that between 1.9 and 2.3 percent of all older Americans suffer from major depression. Another 5 million suffer from subsyndromal depression (a disorder whose symptoms fall short of major depression) (Center for
Disease Control 2010; Alexopoulos 2000). Finally, another 8 to 16 percent of America’s older adults report having some depressive symptoms (Cole and Dendukuri 2003; Hybels and Blazer 2003).

Because depression is a widespread mental issue among America’s older adults, which leads to impaired social functioning and reduced quality of life, a great deal of research is devoted to the causes of depression in older adults (Strine et al. 2008). According to recent estimates from the CDC (2010), 6.5 to 7.3 percent of non-institutionalized older adults in the United States live with some form of depression. This estimate drastically increases to 11.5 percent of those who live in nursing homes, and 13.5 percent for those who receive home healthcare. Some studies on older adult depression suggest the factors such as being female, bereavement (Cole and Dendukuri 2003), disability (Frasure-Smith and LeSpérance 2005), disengagement (Wrosh, Schultz, and Heckhausen 2004), pain (Jakobsson, Hallberg, and Westergren 2004; Andersson 2008), social disconnectedness and social isolation (Cornwell and Waite 2009) are associated with depression in this group.

Major Depressive Disorder (MDD) is defined by the American Psychiatric Association *DSM-IV-TR* (2000:310) as one or more depressive episodes marked by feeling “depressed, sad, hopeless, discouraged, or ‘down in the dumps’” for a prolonged period of time. Specifically, a Major Depressive Episode includes:

1. Changes in appetite or weight
2. Changes in sleeping patterns
3. Psychomotor agitation or retardation
4. Decreased energy
5. Feelings of worthlessness and guilt
6. Difficulty with thinking, concentrating, or making decisions
7. Recurrent thoughts of death or suicidal ideation, plans, attempts
To be diagnosed with MDD or clinical depression, an individual’s symptoms must include loss of interest in nearly all activities or depressed mood, as well as at least four of the aforementioned symptoms. Also, the symptoms must be present most of the day, nearly every day for a minimum of two weeks (DSM-IV-TR 2000).

Much of the research on older adult depression does not focus on older adults. Instead, this research focuses on how providing care to older adults can cause adverse mental health (i.e. depression and anxiety) and physical health for caregiver (Roth et al. 2009; Pavalko and Woodbury 2000; Clay et al. 2008; Drentea and Goldner 2006). This research uses the social exchange theory to evaluate how the burden and distress of caregiving can affect the mental health of the individual providing the care (Lee, Netzer, and Coward 1995; Call et al. 1999). I will discuss this perspective in detail in the next chapter.

Current Aging Demographics and the Need for Informal Caregivers

According to 2010 estimates, there are about 40.4 million older adults (65 years and older) in the United States (Administration on Aging 2011). In fact, one in eight, or 13.1 percent of all Americans are aged 65 or older. This is an increase of 15.3 percent, or 5.4 million people since the year 2000. Estimates project that by the year 2020, there will be 55 million older Americans (Administration on Aging 2011). By 2030, when all baby boomers will have reached the age of 65, there will be about 72 million Americans aged 65 and older (Administration on Aging 2011). Between 2000 and 2030, the number of older Americans (individuals aged 65 or older) will increase
by 101 percent. This is an increase of about 2.3 percent each year (Administration on Aging 2011).

There is a great need for informal caregivers because of these population changes. Chronic conditions are common in later life, and often people need assistance. Individuals with chronic conditions are likely to have some physical limitations. It is estimated that 91 percent of all older adults have at least one chronic condition, and 73 percent have two or more (Robert Wood Johnson Foundation 2010). One in five individuals with two or more chronic conditions has some type of physical limitation (Robert Wood Johnson Foundation 2010). Thus, comorbid conditions coupled with physical limitations increase the likelihood of need of some form of assistance, whether formal or informal.

*Economic Impacts of Caregiving*

The need for assistance coupled with economic need highlights why informal caregivers are so important. The median income for older American women and men is $15,072 and $25,704 for men, respectively; the majority of this income results from Social Security benefits (Administration on Aging 2011). According to 2010 estimates, 9 percent of older American were living the below the poverty line, mainly as a result of out-of-pocket medical expenses (Administration on Aging 2011). These individuals are likely to be disabled and in need of formal or informal care (Administration on Aging 2011).

Many disabled older adults cannot afford the expensive cost of full-time or part-time formal care, causing millions of American to take up the duty of caring for their older loved ones (Roth et al. 2009). The economic value of caregiving was
estimated at about $450 billion in 2009, this is an increase of 20 percent, or $375 million, in 2007 (National Family and Caregivers Association & Family Caregiving Alliance 2012).¹

Currently, 43.8 million Americans provide informal care to someone 50 years old and older (National Family and Caregivers Association & Family Caregiving Alliance 2012). Of this 43.8 million, 15 to 25 million informal caregivers provide an average of 31 hours per week of unpaid help to nearly 11.7 million older adults in the United States (Neavaie-Waliser et al. 2002; LaPlante, Harrington, and Kang 2002).

Although caregivers represent all stages of the life course, the average informal caregiver is 48 years old and female. In fact, 60 percent of all informal caregivers are women (National Alliance of Caregiving and AARP 2009). Twenty percent of all whites and all blacks in the U.S. are caregivers. This percentage is slightly lower for Hispanics and Asians. Sixteen percent of all Hispanics and 18 percent of all Asians in the U.S. provide informal care (National Alliance for Caregiving and AARP 2009). It is estimated that 72 percent of caregivers provide care to a parent, including stepparents and in-laws (Gallup 2011).²

Caregivers invest many hours performing various tasks on the behalf of their care recipients; caregivers spend an equivalent 13 days a month doing tasks such as grocery shopping, transporting, giving medication, and preparing meals (Gallup 2011). In addition, caregivers also spend an equivalent 6 days taking care of the personal needs (i.e. bathing, grooming, and helping with toileting) of their care recipient (Gallup 2011). Finally, caregivers spend, on average, 13 hours a month
taking care of the financial matters and scheduling doctor’s appointments (Gallup 2011).

Research suggests that caring for a disabled family member results in diminished mental and physical health of the caregivers over time (Roth et al. 2009). As caregiving responsibilities increase, caregivers may not be prepared to “take on such responsibilities without putting their own health and well-being at risk” (Roth et al. 2009:679) As a result, caregivers often suffer from depression, have reduced levels of social participation, indicate a lower quality of life, and have higher mortality rates than individuals who are not caregivers (Roth et al. 2009; National Alliance for Caregiving and AARP 2011; Gallup 2011).

Intimate Bodywork and Caregiving

Bodywork is an integral part of caregiving. In addition to other duties a caregiver may perform, the caregiver also has to perform physical work with the body of the person they provide care for. The experience of giving and receiving bodywork can be stressful for both parties and lead to negative health effects for the caregiver and the care recipient. A discussion of the body and bodywork is warranted to properly understand the intricate and intimate relationship that exists between a care recipient and their caregiver.

As a society, we have been socialized to view age as a dichotomy; you are either young or old. The young are the dominant group, and the aged are the out group, or the “other” (Twigg 2004). Moreover, we have negative emotions and reactions about our own aging. Many view aging as a period of decline, marked with disability and pain, until death comes (Twigg 2004). The way that we view an aging body is also
socialized. As a culture, we look at older bodies with disgust, while youthfulness is idolized. This is especially true for older women. For women, sexual attraction is often tied to youthfulness. As a result, women find themselves in a constant “battle against time”. As Furman (1997) states in her study of older women at the beauty salon, aging women are constantly fighting a losing battle against trying not to look old. As women age, they become sexually undesirable to men, and as consequence become socially invisible. In contrast to women whose status resides in youthfulness and beauty, the power and status of men is tied to socioeconomic prowess and money. Consequently, physical aging for men is seen as a sign of authority and maturity (Twigg 2004).

The way an aging body is viewed can have a substantial impact on how the care recipient responds to the bodywork they receive from their care recipient. For women who view the aging body as shameful, allowing someone else to see them naked can be a reprehensible process. For men, whose aging as a sign of power, allowing a caregiver to see them naked can be seen a threat to their masculinity and a sign of vulnerability (Twigg 2004). So, although the aging body is viewed quite differently for men and women, the process of being subjected to bodywork is equally as stressful for male and female care recipients. As a result, care recipients may develop feelings of ambivalence, or contradictory negative and positive feelings, toward their caregiver because of the bodywork they receive (Wilson, Shuey, and Elder 2003).

“Bodywork entails working on or through the bodies of others, handling, manipulating, appraising bodies which become the object of the worker’s labor” (Twigg 2004:67). Bodywork, however, is less than glamorous. In fact, it “is
concerned with what can be termed negativities of the body—shit, vomit, sputum—and all the aspects of the unbounded body” (Twigg 2004:68). Caregiving is dirty work that defies the “norms of body management” (Twigg et al. 2011:172). Personal hygiene and grooming is something to be done personally. However, physical limitations may not permit the care recipient to perform these tasks on their own.

Bodywork, and all carework, is gendered work. The term “care” refers to an emotional connection and compassion; all characteristics associated with women. Women disproportionately work in fields such as nursing, massage therapy, cosmetology, and sex work which require carework; caregiving is no different (Twigg 2000). Male caregivers are less likely to provide help with personal care. On average, only 24 percent of men, compared to 28 percent of women, provide the care recipient with help dressing. Only 16 percent of male caregivers reported helping their care recipient to bathe, in comparison to 30 percent of female caregivers (National Alliance for Caregiving and AARP 2009). Male caregivers are more likely to pay someone else, likely a woman, to provide their care recipient with help with their personal needs. On average, 40 percent of male caregivers acquired paid assistance to help with bathing and dressing of their disabled loved ones (National Alliance for Caregiving and AARP 2009).

Bodywork is often devalued work because it involves the “unbounded body”, a body not in control of its functions. As a result, caregiving often is seen as demeaning and disgusting for the person who is obligated to provide the care (Twigg et al. 2011; Twigg 2004; England and Dyck 2011; Gimlin 2007). Bodywork is powerfully intimate. Caregivers and care recipients must physically touch, and the “access to
nakedness and the sharing of bodily processes are all powerful mediators of intimacy, containing a capacity to create closeness and dissolve boundaries between people” (Twigg 2000:402-403). This closeness may not be something that either party wants, however. Often, care recipients are reluctant to enter a care relationship in which they must accept unwelcomed bodywork (Twigg 2011). Caregivers may find the physical and emotional commitment required in caregiving overwhelming. Thus, the bodywork required in caregiving can be a source of great stress and burden in a caregiving relationship.

Caregiver Burden

Caregiving has the potential to affect every facet of the life of the informal caregiver, from finances to personal life and intimate relationships. Work life especially, is affected by caregiving. One in six American workers (this includes both full-time and part-time) are also caregivers (Gallup 2011). Of the working caregivers, 70 percent report suffering negative affects at work because of their caregiving responsibilities (National Alliance for Caregivers and AARP 2009). Caregiving often stunts the career growth of the caregiver. Caregivers are more likely to turn down promotions, retire early, or quit paid employment to fulfill their caregiving duties (National Alliance for Caregivers and AARP 2009). In 2007, 37 percent of working caregivers reduced their hours or quit to cope with caregiving duties (Houser and Gibson 2008). Those who choose to remain in the work force may experience a loss of wages and job benefits, such as health insurance, social security, pensions, and retirement savings due to the demand of their caregiving roles (Houser and Gibson 2008). It is estimated that working caregivers over the age of 50 have lost about $3
trillion dollars due to caregiving responsibilities (AARP Public Policy Institute 2008). Individually, women lose much more, on average, than men. Women have lost an estimated $324,044 as a result of lost wages and early termination of employment caused by caregiving. Men on the other hand, have lost $283,716 (Metlife Mature Market Institute 2011).

Caregiving has pronounced physical and emotional effects on the individual providing care. Although most caregivers report being in good health (57 percent), the length of care duration directly affects health outcomes for the care provider (National Alliance for Caregivers and AARP 2009). Twenty-four percent of long-term caregivers (individuals who have provided care for five years or more), compared to 14 percent of short-term caregivers (caregivers of less than 5 years), reported declines in health (National Alliance for Caregivers and AARP 2009). Thirty-one percent of caregivers report that they are emotionally stressed by caregiving, and the majority of caregivers report that they have to sacrifice time with friends and family to maintain their caregiving responsibilities (National Alliance for Caregivers and AARP 2009). In addition, 28 percent of caregivers who report high levels of burden also report worsening health. It is possible that emotional stress and burden can lead to negative mental health outcomes for caregivers (Lee, Netzer, and Coward 1995; Call et al. 1999). Thirty-two percent of caregivers report having some type of mental or emotional health problem (National Alliance for Caregivers and AARP 2009). A decline in physical and mental health does not only affect the caregiver, it can also affect the quality of care received by the care recipient. This
study seeks to evaluate how caregiver burden affects the mental health of an older adult care recipient

*Subjective and Objective Caregiver Burden*

In this section, I take an in-depth look at the concept of burden. Specifically, I discuss Montgomery and colleagues’ perspective on subjective and objective burden. Previously in gerontological literature, the consequences associated with caregiving were called caregiver stress, burden, adverse effects, and problems. However, the conceptualization of these consequences has been given little attention in the relevant literature. Researchers made no distinction between subjective and objective burden. As previously mentioned, Montgomery et al. (1985) was the first to conceptualize and operationalize objective and subjective caregiver burden separately. Objective burden is concerned with the tasks that caregivers are called to perform. Furthermore, objective burden is the extent to which caregiving has changed the life of the individuals called to provide care. This includes changes in the amount of time, freedom, and privacy of the caregiver since they began to provide care (Montgomery et al. 1985). Conversely, subjective burden is attitudinal in nature. Specifically, Montgomery et al. (1985:21) defines subjective burden as “the attitudes toward or emotional reactions to the caregiving experience.” In a scale that Montgomery and colleagues’ (1985) devised, the researchers were able to evaluate the amount of strain, depression, unappreciation, nervousness, and displeasure that caregivers experienced while caregiving.

Although subjective and objective burden are correlated, each has a distinct set of predictor correlates, indicating that the factors that cause subjective burden do not
necessarily cause objective burden (Montgomery et al. 1985). Montgomery and colleagues (1985) found that older age was associated with lower subjective caregiver burden levels, while higher income was associated with higher levels of subjective caregiver burden. Caregivers who are younger and employed “have demands that conflict with [their caregiving roles]” and are more likely to experience burden than older caregivers (Montgomery et al. 1985:22). For objective burden, the type of tasks that the caregiver must perform predicts burden levels. Specifically, tasks which involved bathing, dressing, transportation, and running errands were associated with greater objective caregiver burden (Montgomery et al. 1985). Thus, depending on the characteristics of the caregiver and the tasks the caregiver must perform, a caregiver can experience low levels of objective burden and high levels of subjective burden simultaneously, and vice versa. As a result, the two concepts must be studied as two separate constructs. This is what this study intends to do.

Since the work of Montgomery and associates (1985), researchers have used this method to study caregiver burden (Call et al. 1999; van Exel et al. 2005; Brouwer et al. 2005; Savundranayagam, Hummert, and Montgomery 2005; Jeglic et al. 2005; Braun et al. 2007; Green 2007; Liu, Lambert, and Lambert 2007; Exel, de Graaf, and Brouwer 2007; Exel, de Graaf, and Brouwer 2008; Grandón, Jenaro, and Lemos 2008; Rigby, Gubitz, and Phillips 2009). In general, this research finds that subjective and objective burden are highly correlated with the health of the caregiver (van Exel et al. 2005; Kim et al. 2007; Braun et al. 2007). Caregiver burden (both subjective and objective) has a pronounced negative effect on the physical and mental well-being of the caregiver. Caregivers often report significantly higher levels of subjective
burden than objective caregiver burden (van Exel et al. 2005; Braun et al. 2007; Gonyea et al. 2005). Research has also found a relationship between the care recipient’s mental and physical health and level of caregiver burden (van Exel et al. 2005; Ostacher et al. 2008; Chou et al. 2011; Nelson et al. 2008; Rigby, Gubitz, and Phillips 2009). Specifically, a decline in mental and physical functioning of the care recipient results in increased levels of objective caregiver burden. As the physical and mental functioning of the care recipient decreases, the help that the caregiver must provide increases, resulting in increased levels of objective burden for the caregiver. This research fails, however, to examine the relationship between caregiver objective and subjective burden and care recipient depression. This research will evaluate whether subjective or objective burden has a greater effect on the depressive symptomology of an older adult care recipient.

Based on Pearlin’s (1981) Stress Process Model, caregiving burden researchers postulate that actual demands of caregiving (objective burden) lead to negative reactions to the caregiving situation (subjective burden). In essence, objective burden is a primary stressor that causes subjective burden (i.e. secondary stressor) as a result. The next necessary step is to investigate the effects of these primary and secondary stressors on the mental health of a disabled care recipient. In the next chapter, I use the life stress paradigm (an extension of the Stress Process Model) as a theoretical foundation to explain the effect of subjective and objective burden on care recipient mental health.

Racial and Ethnic Dynamics of Caregiving
An additional dimension of this research is to investigate the racial elements of the caregiving relationship. This project seeks to discover whether the race/ethnicity of the care recipient affects the relationship between caregiver burden and the depressive level of the care recipient. This study will investigate if caregiver burden is less likely to lead to depression in care recipients of color than their white counterparts. Past research suggests that race has an effect on the attitudes of caregivers toward caregiving. In general, African American caregivers report more positive attitudes toward providing care for an older loved one than white caregivers (Roth et al. 2009; Rimer 1998; Wells-Wilbon and Simpson 2009). However, research on whether attitudes about the receipt of informal care differ by race and ethnicity is sparse.

The rate of growth of racial and ethnic minority populations in the United States is out-pacing that of their white counterparts, especially in the 85 and over group (Dilworth-Anderson, Williams, and Cooper 1999). The older minority population has increased from 16.3 percent (5.7 million) of the total older adult population in 2000, to 20 percent (8.1 million) in 2010 (Administration on Aging 2011). Of the 20 percent, 8.4 percent were African American, 6.9 percent were of Hispanic origin, 3.5 percent were Asian or Pacific Islander, and less than 1 percent were Native Alaskan or American Indian; less than 0.8 percent of the 20 percent identify as two or more races (Administration on Aging 2011).

Minority older adults are disproportionately impoverished. Based on the 2010 poverty level, 18 percent of older African Americans and Hispanics, and 14.6 percent of Asians are poor (Administration on Aging 2011). This is in comparison to 6.8
percent of whites. Furthermore, black and Hispanic women are the more likely to live in poverty than another other race and gender group (Administration on Aging 2011).

Racial and ethnic minorities are more likely to report being in worse health than their white counterparts (Dressler 1993; Hill, Ross, and Angel 2005; Gee and Payne-Sturges 2004; Gabbidon and Peterson 2006; Read and Emerson 2005; Dilworth-Anderson, Pierre, and Hilliard 2012; Thoits 2010). Although four out of five, or 80 percent of older adults suffer from at least one chronic condition, ethnic and racial minorities are disproportionately burdened by comorbid conditions (AARP 2009). It is estimated that for women aged 65 and over, 66.5 percent of blacks, 61.9 percent of whites, and 50.4 of Asians suffer from two or more chronic conditions. For older men, 67.7 percent of blacks, 63.1 percent of whites, and 60.6 percent of Asians suffer from two or more chronic conditions (Ward and Schiller 2010). Furthermore, according to recent estimates, 84 percent of black older adults suffer from hypertension, 53 percent suffer from arthritis, and 29 percent suffer from diabetes in contrast to all older adults (34, 50, and 19 percent respectively) (Administration on Aging 2011).

There are reasons why poverty creates and perpetuates the disproportionate negative mental and physical health outcomes among African Americans. First, institutional racism and discrimination have historically and systematically deprived African Americans of resources such as a quality education, suitable living environments, nutritious foods, and adequate health care (Angel and Angel 2006; Perry, Harp, and Oser 2013; Dressler 1993; Williams and Collins 1995; Yuan 2007). This can result in increased negative mental and physical health outcomes and
increased mortality rates for African Americans compared to whites (Gabbidon and Peterson 2006; Read and Emerson 2005; Gee and Payne-Sturges 2004; McFadyen 2009).

It is thought that a “culture of poverty” has contributed to a lack of resources and the subsequent health disparities that minorities face (Wilson 1985). Moreover, “chronic poverty leads individuals to develop a set of orientations and behaviors that are incompatible with social mobility and economic success or effective involvement with social organizations” (Angel and Angel 2006:1153). Thus, individuals who are raised poor are often not socialized to participate in health-seeking behaviors (a key characteristic of the middle and upper classes). African Americans do not “happily” choose to engage in negative lifestyle behaviors; such behavior is a constrained choice (Bird and Rieker 2008). African Americans are often relegated to neighborhoods where there is little or no access to nutritious foods (Adler and Stewart 2009; Gee and Payne-Sturges 2004). Furthermore, African American neighborhoods are often not walkable. They also lack parks that would promote physical activity (Sallis and Glanz 2009; Adler and Steward 2009; Dressler 1993; Gee and Payne-Sturges 2004). This lack of resources drastically affects African Americans throughout the life course. As a result, both African American caregivers and care recipients are at higher risk for developing chronic diseases such as hypertension, diabetes, and heart disease (Schnittker and McLeod 2005; Gabbidon and Peterson 2006).

African American caregivers are most often single women with children (National Alliance for Caregiving and AARP 2009; Pickard et al. 2011). Furthermore, African
American caregivers, on average, provide more help with activities of daily living (ADLs) than caregivers of other races (Alzheimer’s Association 2011). Studies have shown, however, that African Americans are less likely to report feelings of distress as a result of caregiving than their white counterparts (Dilworth-Anderson et al. 1999). In fact, 21 percent of African Americans, compared to 32 percent of whites and 35 percent of Hispanic caregivers, report that caregiving is highly stressful (National Alliance for Caregivers and AARP 2009). This seems counterintuitive when we consider that research also states that older African Americans are more likely to be impoverished and suffer from more chronic health conditions than their white counterparts (Dressler 1993; Hill, Ross, and Angel 2005; Gee and Payne-Sturges 2004; Gabbidon and Peterson 2006; Read and Emerson 2005; Dilworth-Anderson, Pierre, and Hilliard 2012).

Research in minority caregiving finds that the sociocultural context of caregiving is salient in deciding whether to provide older adult care (Dilworth-Anderson et al. 1999; Rimer 1998; Wells-Wilbon and Simpson 2009). The sociocultural context refers to “the cultural beliefs and attitudes of caregivers, such as beliefs about providing care to dependent family members” (Dilworth-Anderson et al. 1999:391). Cultural beliefs shape how caregivers respond to feelings of burden and intrusion that result from being a caregiver. African Americans often view caregiving as a “labor of love” and feel morally obligated to provide care to aging parents who sacrificed a great deal to raise them (Rimer 1998; Drentea and Goldner 2006).

It must be stated that although this past history has worked to increase the importance of kinship ties and filial responsibility, it has also produced structural
factors that continue to keep African Americans in social, economic, and physical isolation. Furthermore, this isolation has manifested itself into feelings of medical mistrust and distrust, fatalism, and nihilism (Armstrong et al. 2013; Powe and Johnson 1995; Dilworth-Anderson and Williams 2004). Thus, African Americans are more likely to take care of older loved ones because services are often not accessible and available to them. When the services are available, they are often subpar and of low quality (Davis and Waites 2008).

African Americans are four times more likely than whites to be relegated to resource-deficient assisted living facilities and nursing homes (Davis and Waites 2008; Howard et al. 2002). In these institutions, African American older adults are significantly less like to receive treatment for pain than whites in these institutions. In addition, assisted living facilities and nursing homes with high concentrations of African American residents are also more likely to undergo frequent changes in management, and often receive lower ratings for cleanliness, maintenance, and adequate lightning (Grabowski 2004; Howard et al. 2002). Furthermore, language barriers often exist between nursing home staff and older minority residents (Davis and Waites 2008). As a result, older minority care recipients, and their families, may feel apprehension about receiving formal long-term from assisted living facilities and nursing homes. This is a pivotal reason for African Americans’ heavy reliance on informal older adult care.

*Social Exchange Perspective, Life Stress Paradigm, and Race*

Both the social exchange perspective and the life stress paradigm can be useful in understanding the dynamics of informal caregiving of the African American older
adults. First, caregivers often report feeling morally obligated to provide care for their older loved ones as a repayment for the care that they received as young children (Rimer 1998). This is what Antonucci (1991) terms as the Support Bank theory. This is a life-long exchange relationship where parents make early investments by caring for their child in hopes that in their old age the favor will be returned. In adulthood, children feel an obligation to return the favor in-kind to their aging parent(s). This dissertation research intends to examine if these moral obligations are enough to maintain the care relationship for African Americans, or must there be a constant and reflexive exchange of resources, even in old age, to stabilize the exchange relationship.

The stress process model, alternately, is concerned with the effects of stressors and resources on an individual’s mental and physical health (Lin and Ensel 1989; Ensel and Lin 1991; Pearlin 1989; Pearlin and Schooler 1978; Pearlin et al. 1981). It is especially useful in understanding the effects of caregiving on well-being (Goldner and Drentea 2009). This theoretical perspective posits that a caregiver’s level of burden, and subsequently their mental health, is affected by the demands of caregiving, coping mechanisms, social support, and economic resources (Goldner and Drentea 2009). The demands of caregiving are life stressors that directly and indirectly affect the mental and physical health of the caregiver. Resources help to buffer the negative effects that come as a result of caregiving. This is important because although black care recipients often lack sufficient financial resources, the familial resources that they do possess are invaluable. My research will allow us to see how important social and psychological resources, as opposed to financial
resources, are in the relationship of African American care dyads. Furthermore, I will investigate the effects of the resources on the mental health of the disabled care recipient.

Conclusion

This chapter began by defining depression, subjective and objective caregiver burden, provided estimates that illustrate the scope of older adults who require informal care, and then discussed the relevant literature concerning race, ethnicity, and caregiving. The next chapter will discuss the social exchange perspective and the life stress paradigm extensively. The social exchange perspective views the caregiving relationship as a series of exchanges, filled with costs and rewards. If the costs of caregiving outweigh the rewards received from providing care, the caregiver may view the relationship as unbalanced. This leads to negative evaluations of the relationship, burden, and possible detrimental effects on mental and physical health. Although this perspective does shed light on this stressful relationship, past research in this area has failed to provide conclusive and consistent results (Roth et al. 2009). Furthermore, this research does not investigate the possible relationship between caregiver burden and care recipient depression.

Finally, past studies have largely failed to use the life stress paradigm as a possible theoretical foundation that links caregiver burden to care recipient depression. The life stress paradigm framework provides a theoretical link between one’s daily encounters (i.e. dealing with a burdened caregiver) to one’s health outcome (i.e. depression of the care recipient). This framework is pivotal in
understanding the intricate relationship between caregiver burden and care recipient depression.
CHAPTER 3
THEORETICAL FRAMEWORK

In this chapter, I will discuss the origins and basic concepts of the social exchange perspective, and then relate it back to the caregiving relationship. I then discuss the life stress paradigm in detail and explain its relevance to care recipient depression. This chapter ends with hypotheses.

The Social Exchange Perspective

As discussed in Chapter 2, the social exchange perspective is widely used in caregiving research to understand the interpersonal relationship between the caregiver-care recipient dyads. The results of this research, however, have yielded largely inconclusive and inconsistent results when it comes to the effects of an exchange relationship on the mental health of a care recipient (See Chapter 2). Furthermore, these studies have failed to use the exchange perspective to measure the relationship between caregiver burden and care recipient depression specifically. I systematically evaluate this theoretical perspective and compare it to the life stress paradigm, a theoretical perspective that has widely been neglected by caregiving researchers.

The Philosophical Roots of the Social Exchange Perspective

Although the social exchange perspective began in utilitarian economics through the work of Adam Smith, Jeremy Bentham, and John Stuart Mill, in sociology, Homans was the first to propose social exchange as a theoretical perspective in his 1961 manuscript entitled Social Behavior: Its Elementary Forms. It defines social exchange as “an
exchange of activity, tangible or intangible, and more or less rewarding or costly, between at least two persons” (Homans 1961:13). Although he only studied dyads and small groups, his goal was to elucidate the rudimentary processes of social behavior; specifically, he wanted to explain concepts such as justice, leadership, power, and conformity, (Molm and Cook 1995).

The most distinct and debated postulate of Homans’ perspective is his idea that with all behavior there is “nothing that emerges in social groups that ‘cannot be explained by propositions about individuals, together with the given condition that they happen to be interacting’ (Homans 1974:12)” (Molm and Cook 1995: 213). He believed that behavior is a product of payoffs (i.e. punishment and reinforcement). He also believed these payoffs could be provided by both humans and nonhumans (the environment). Finally, he thought that social interaction forms social institutions through reinforcing behavior; actor A’s behavior is reinforced by the behavior of actor B’s, and conversely actor B’s behavior is reinforced by actor A’s behavior. This reflexive movement of reinforcing behavior, Homan postulated, creates social structure over time (Molm and Cook 1995).

Homans’ work, however, was heavily criticized by sociologists for downplaying the function of social structure on individual behavior. To him, social structure emerged from interaction, as opposed to individual interaction being guided by these social institutions and structures. His work, nevertheless, is novel because he was one of the first to realize that exchange processes take place in the most rudimentary of social interactions (Homans 1961).

Thibaut and Kelley (1959) also devised a psychological theory of group behavior, very similar to that of Homans’ exchange perspective. Arguably more sociological in
nature than Homans’ work, Thibaut and Kelley (1959) realized that the characteristics of
the social relations (i.e. social structure) have a more profound effect on social
interactions than just the behavior of the other social actor (Molm and Cook 1995).

Thibaut and Kelley’s work made three important contributions to the field of social
exchange. The first is their discussion of dependence and power (Molm and Cook 1995).
Second, they introduced the constructs of comparison level (CL) and comparison level
for alternatives (CLalt), as well as the “standards for evaluating outcomes within (CL)
and between (CLalt) relations” (Molm and Cook 1995:213). CL is defined as the “general
level of expectation based on recently experienced outcomes” (Molm and Cook
1995:213). Individuals evaluate relationship outcomes with other social actors based on
their CL. Individuals then decide whether to remain in their current relationships by
comparing those relationships to their CLalt. CLalt are defined as “expected outcomes and
in their ‘best alternatives’” (Molm and Cook 1995:213). Third, Thibaut and Kelley
(1959) introduced an outcome matrix to visually illustrate interdependence patterns in
empirical research (Molm and Cook 1995). Although this work focused heavily on the
dyadic relationship, as Homans did, it set the groundwork for more sophisticated social
exchange research.

Influenced by the work of Homans and Thibaut and Kelley, Blau (1964)
conceptualized the relationship of social exchange and power (Molm and Cook 1995).
His approach was an eclectic integration of ideas from conflict, structural functionalist,
and interactionist perspectives (Molm and Cook 1995). His perspective began much like
his predecessors, with an analysis of dyadic relationships. He agreed with Thibaut and
Kelley’s assertion that actors interact with each other in order to attain goals, evaluating
costs and benefits along the way (Molm and Cook 1995). Blau’s main interest diverges, however, into a more complex evaluation of social exchange in institutions and organizations. Unlike Homans, Blau asserted that social structure was not merely a product of human interaction but that it had its own unique emergent properties: “Emergent properties are essentially relationships between elements and structure. The relationships are not contained in the elements, though they could not exist without them, and they define the structure” (Blau 1964:3). Blau’s intention was to bring together rudimentary social exchange processes and the emergent social structure. To do this, he introduced constructs such as values and norms “which emerge to regulate patterns of indirect exchange in more complex systems” (Molm and Cook 1995:214). Norms and values serve the social structure by regulating even the most intimate of human interactions.

The Advent of Contemporary Social Exchange: Emerson’s Perspective

Inspired by Blau’s discussion of power in exchange relationships, Emerson wanted to use the exchange perspective to broaden his own theory of power dependence. Through his work, Emerson realized that he could make some important extensions to the social exchange perspective. He felt that this could be done in two ways. First, Emerson thought that social exchange would be best explained using the psychological theory of operant behavior. He realized that operant behavior involved exchange processes between an individual and the environment; this is compared to other psychological theories that take an individualistic approach. Operant behavior makes no assumption about the rationality of the social agent. This allows individuals to make conscious calculations of their actions (Molm and Cook 1995). The use of operant behavior as a
foundation of social exchange was important because it “avoided the pitfalls of tautology, reductionism, and rationality that had plagued Homans” (Molm and Cook 1995:215). Previously, Homans argued that social interactions create social institutions, in turn, social institutions produce social interactions. Using operant behavior allows for the consideration of discriminative stimulus and reinforcing behavior, which creates the bases of social relations between actors over time (Molm and Cook 1995; Emerson 1976). Social relation between actors, instead of each individual actor, becomes the basic unit of analysis (Emerson 1976).

Secondly, and most importantly, Emerson wanted to use the exchange perspective to explain how social institutions and structures form and change. This was also an aim of Blau’s work; however, Emerson employed a much different strategy. Instead of using values and norms to explain the emergent properties of social structure, Emerson postulated that social networks and social relations were the foundation of social structures and institutions. Furthermore, these relations and networks function at different units of analysis, from individuals to corporate groups represented by agents (Molm and Cook 1995).

*Basic Concepts of the Social Exchange Perspective*

Before a discussion on the contemporary social exchange perspective, it is necessary to define key constructs used in this perspective: actors, outcomes, resources, primacy, value, alternatives, and exchange domain.

*Actors* (referred to as A, B, C, D… N) are individuals or agents acting on behalf of a group. *Outcomes* are the cost or reward received during the exchange. These outcomes can be positive (i.e. reward or benefits) or negative (i.e. cost or punishment).
Resources are goods, whether behavioral, psychological, or physical, that one actor possesses and that other actors value. It is important to mention here that the value of resources changes based on the social actors involved. Thus a mom’s approval of her son is only valuable to her son and no one else’s son (Molm and Cook 1995).

Equivalent outcomes are said to belong to the same class or exchange domain. For example, a pen and pencil are in the same exchange domain of “writing utensils”. Therefore, if an individual needs a writing utensil and is given a pen, the value for a pencil diminishes and vice versa. “The primacy of an exchange relation refers to the number of exchange domains the relation mediates” (Molm and Cook 1995:216). For example, family relations have the potential to mediate a number of exchange domains, and therefore have relatively high primacy. On the other hand, economic transactions mediate only one domain (currency exchange), and as a result, have low primacy.

“The value of an exchange relation and the alternatives actors have to a particular exchange relation are directly involved in determining the major dynamics of exchange relations” (Molm and Cook 1995:216). The value of an exchange relation varies both within and across relationships. Within a single exchange domain, “value refers to the magnitude of outcomes that an actor potentially can receive in the relation” (Molm and Cook 1995:216). This could be the potential to receive goods such as money, friendship, or status via the exchange relationship. “Across different exchange domains, value refers to an actor’s preference ordering of those domains” (Molm and Cook 1995:216). In other words, value is the social actor’s relative preference for goods such as money, friendship, or status. Finally, alternatives “connect actors to a variety of possible exchange relations in a single exchange domain” (Molm and Cook 1995:216). In efforts to receive a desired
outcome, actor A may choose among the different exchange relationships afforded to them. Thus, to achieve the outcome of money, an actor must choose among other available social actors (i.e. family, friends, or co-workers) and decide which exchange relation is most likely to bring about the desired outcome of monetary attainment.

**Dependence and Power**

Dependence is the most pivotal concept of the social exchange perspective. “An actor is dependent on another to the extent that outcomes valued by the actor are contingent on the exchange with the other. Dependence is a function of both value and alternatives” (Molm and Cook 1995:216). So, as actor A’s dependence on actor B increases, the value of the exchange goods that actor B possesses increases. Furthermore, the more dependent actor A becomes on actor B, the less desirable are actor A’s alternatives (Molm and Cook 1995). Finally, exchange relations with relatively high primacy (i.e. family relations) and few alternatives are likely to increase dependence of the social actor.

The dependent nature of the exchange relation allows social actors to have power over each other. Put differently, actor A’s dependence on actor B ($P_{AB}$) is equal to and a function of actor B’s dependence on actor A ($D_{BA}$), where P equals power and D equals dependence:

$$P_{AB} = D_{BA}$$

When an exchange relationship is balanced, both actors are equally dependent on each other, or $D_{BA} = D_{AB}$. An exchange relationship is unbalanced when the power/dependence ratio is unequal. The less dependent actor wields the most power.

“Power use is the behavioral exercise of this potential to obtain favorable exchange
outcomes for the user” (Molm and Cook 1995: 217). Cohesion is the average of the social actors’ power dependencies \((D_{BA} + D_{AB})/2\). This is a measure of the absolute power that the exchange relation yields. This is important because although the exchange relationship may be imbalanced, if the absolute power of the exchange relation (i.e. cohesion) is high, the less likely the relationship is to dissolve.

**Core Assumptions of Contemporary Social Exchange Perspective**

Contemporary social exchange “theory” is a general framework consisting of separate but interrelated perspectives. All of these perspectives share a set of concepts: transactions, alternatives, resources, value, opportunity, cost, and reward (Molm and Cook 1995). All social exchange perspectives are based, implicitly or explicitly, on four main assumptions. These assumptions are:

1. **Exchange relations develop within structures of mutual dependence between actors.** Although actors do not have to be completely dependent on each other for all things of value, there must be some level of dependence among social actors. Actors may depend on each other for psychological gratification, social resources, or valued material services or goods (Molm and Cook 1995).

2. **Actors behave in ways that increase outcomes they positively value and decrease outcomes they negatively value.** This assumption makes use of the concepts “operant behavior” and “rational action”. Actors must rationally consider the
potential rewards and costs of their actions with alternative actors (Molm and Cook 1995). An actor may also base choices off past experiences, without consideration of alternatives. It must also be stated, that individuals’ actions are not necessarily egocentric. This perspective does not differentiate what actors value, it just says that actors behave in ways that will potentially produce the things they value via the exchange relationship. Thus, an actor who values wealth will act in a way that will produce it. Alternately, an actor who values helping the homeless will produce the specific behavior that will help bring about that goal (Molm and Cook 1995).

3. **Actors engage in recurring, mutually contingent exchanges with specific partners over time.** This assumption is the essence of the exchange perspective. “Social relations are formed and maintained because actors provide reciprocal benefits to one another over time (Molm and Cook 1995: 211). Benefits must be reciprocated in order for the relation to be maintained. Benefits of actions between social actors, however, do not necessarily have to be immediate or equal in nature for the relationship to persist (Molm and Cook 1995). Conversely, this contingency of exchange effects both within and across exchange relationships. That is, benefits exchanged by an actor are dependent on benefits received (within exchange relationships), and subsequent exchange relationships are affected by earlier exchanges (across exchange relationships) (Molm and Cook 1995).

4. **All outcomes of value obey a principle of satiation (in psychological terms) or diminishing marginal utility (in economic terms).** This assumption is concerned with defining the various classes of possible benefits. “Two outcomes are
members of the same class if acquisition of one reduces the value of the other” (Molm and Cook 1995:211). For instance, if a person is hungry, acquisition of either of bread or apples will be of the same value to the person because bread and apples are in the same exchange domain of “food”. Thus, as the person eats the apples and becomes full, the value of the bread becomes diminished and vice versa; once satiation is reached the value of the entire food class is reduced because there is no longer a need for it (Molm and Cook 1995). The value of some benefits, like money, diminish less gradually than others because the benefit has both “use value” and “exchange value”. In other words, money is a valued good because it can be used to exchange for other goods (Molm and Cook 1995).

Types of Social Exchange

Exchange relationships take several different forms; the most important forms, however, are direct and indirect relationships.

A direct exchange relationship involves the exchange of benefits between two social actors. As figure 1(a) illustrates, actor A gives benefits to actor B, in turn B gives benefits back to actor A. An indirect (generalized) exchange relationship, illustrated by figure 1(b), takes place among three or more actors. In this exchange relationship,
benefits are not reciprocated directly between actors, but indirectly among actors. For instance, actor A gives benefits to actor B, actor B does not reciprocate but does give benefits to actor C. In turn, actor C gives benefits to actor A. All indirect exchange patterns do not take this circular form. For instance, donating money to charity, giving gifts at a baby shower, or agreeing to review a journal manuscript, are not order specific (Molm and Cook 1995). Actors engage in this giving behavior not necessarily expecting the benefiting actor to immediately reciprocate, but with the expectation that some other actor, someday, will return the favor in-kind. Social norms arise in this kind of exchange relationship in order to “foster the fulfillment of obligation” among social actors (Molm and Cook 1995:211).

For this research, direct social exchange is most important. According to Emerson (1981), there are three different kinds of direct exchange relationships: negotiated direct exchange, productive direct exchange, and reciprocal direct exchange. “Negotiated direct exchange involves a joint decision process, such as bargaining, to determine the terms of exchange” (Molm and Cook 1995:211). The exchange between actors is called a transaction. Both parties agree upon the terms of the relationship. Although exchange of benefits does not have to occur at the same time, an agreement must be reached in order for the exchange to take place. This form of direct exchange takes place most often in economic exchanges; however, it can take place in social exchanges (i.e. husband agrees to go shopping for curtains and sconces with his wife this weekend, while the wife agrees to go to the car and bike show with her husband next weekend).

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The second form of direct exchange is productive direct exchange. This is defined as “a distinct form of exchange in which both (or all) parties contribute to, and benefit from, a single socially produced event” (Molm and Cook 1995:212). It is not possible to receive separated benefits in this form of direct exchange; additionally, if either party fails to cooperate, neither will benefit (Molm and Cook 1995). This type of exchange is seen in athletics and academia in activities such as team sports and coauthoring manuscripts.

The final, and most pertinent for this research, form of the direct exchange relationship is reciprocal direct exchange. In this relationship, exchanges are not negotiated and are performed separately (Molm and Cook 1995). Actor A starts the relationship by providing small help to actor B, without any expectation of reciprocation by actor B. Thus, this exchange relationship is based on contingency and reciprocity, and not discrete transactions as is the other two direct exchange relationships. This form of exchange occurs most often in intimate relationship such as among family and friends, as such the explicit bargaining component of social exchange is curtailed. The expectation of reciprocity is, thus, implicit. Each party is supposed to help the other without being told.

*Molm’s Affective Social Exchange Perspective*

Commitment and emotion are the most pervasive components of the social exchange between a caregiver and a disabled care recipient. Cook and Emerson (1978: 734) define commitment in an exchange relation as “an interpersonal attachment leading persons to exchange repeatedly with the same partners.” Emotion is the product, or outcome, of the exchange relationship. This emotional response is driven by structural
cues; it results from the type of exchange, whether negotiated or reciprocal, and the level of commitment of the actors (Cook and Rice 2003).

Molm (2003) argues that there are two type of commitment: behavioral and affective. Behavioral commitment is a product of the structure of the exchange relation. If the relation is imbalanced, the level of commitment will be low. Vice versa, if the power is balanced in the exchange relation, the behavioral commitment will be high. Affective commitment, on the other hand, is a product of the level behavioral commitment and the structure of the exchange relation. In reciprocal exchanges, such as caregiving relationships, reciprocation of exchange goods is not obligatory; thus social actors must develop trust and other positive affection in order for the exchange relation to be successful. Additionally, the more behavioral commitment there is between social actors in an exchange relation, the more affective commitment there will also be (Molm 2003; Cook and Rice 2003).

Social Exchange Perspective in Previous Research

The social exchange perspective has been used widely in previous caregiving research. In large part, research in this area has focused on unidirectional giving, with the caregiver providing all of the help and the care recipient reaping the benefits. However, there is research that investigates exchange relationships in which care recipients engage in exchanging goods. Dowd (1975, 1980) was among the first to make a practical application of the social exchange perspective among older persons. He argued that decreasing resources of older adults cause unbalanced exchange relationships between an older parent and their child. The unbalanced relationship and the inability to exchange goods cause older persons to become powerless and dependent on others, and as a result
develop feelings of demoralization (Dowd 1975, 1980; Lee et al. 1995). His work, however, did not investigate whether the burden that may arise from an unbalanced care relationship might affect the mental health of the care recipient.

Like Dowd (1975, 1980), Lee et al. (1995) also investigated the effects of intergenerational exchange on the mental well-being (i.e. depressive level) of an older parent. Different from Dowd (1975, 1980), Lee et al. (1995) argued that this relationship was mediated by the older parents expectation of assistance. Lee and colleagues (1995) theorized if an older parent’s expectation of assistance and filial responsibility were high, they were less likely to be depressed when they could not equally exchange goods with his/her children. Alternatively, if the older parent’s expectation of assistance and filial responsibility were low, then they would be more likely to become depressed when they could not equally exchange goods. Aid given and received was measured by whether each party had received “advice, financial assistance, gifts other than money, help with household tasks, and transportation” from the other in past month (Lee et al. 1995:826). Different from my work, Lee et al. (1995) did not consider if caregiver burden also affected the level of depression of a care recipient in an exchange relationship.

More recently, Raschick and Ingersoll-Dayton (2004) investigated the relationship between the interaction of gender and relationship (i.e. spousal or parent-child caregiving dyads) on the rewards and cost of caregiving. Specifically, Raschick and Ingersoll-Dayton used the National Long Term Care Survey (NLTCS), to empirically investigate the cost and benefits of caregiving. Caregiving costs were measured by things such as how often the caregiver goes to bed exhausted from caregiving. Caregiving rewards were measured as the level of life satisfaction the caregiving produces (Raschick
and Ingersoll-Dayton 2004). Raschick and Ingersoll-Dayton (2004) found that the cost and rewards of caregiving varied by gender and by relationship to the care recipient. Unlike my research, however, they did not evaluate the effects of the costs and benefits on the mental health of the care recipient.

Similar to the perspective that this study considers, Call et al. (1999) viewed unbalanced care relationships as the cause of caregiver burden. The level of burden, Call et al. (1999) argued, is affected by the context of the exchange and the role relationship of the relation members (i.e. child-parent dyads, spousal dyads, nonfamily and extended family dyads). Thus, levels of burden were affected by who provided the care (son, daughter, spouse, extended family and non-kin) and the level of need for care (measured by self-rated health, subjective, and objective functional status of the care recipient) (Call et al. 1999). Call and colleagues (1999) asserted that the level of need of the care recipient, living arrangement of the care recipient, and the timing of care in the life course affected the exchange relationship, and as a result the level of caregiver burden. However, this study did not consider the effect of caregiver burden on the mental state of the care recipient.

*Social Exchange Perspective Applied to the Present Research*

Caregivers may decide to enter a relationship because of possible personal and interpersonal rewards (i.e. psychological, physical, or behavioral goods) they may receive for caring for an older loved one. In turn, care recipients expect to receive adequate care from their informal caregiver. When the behavioral commitment is high, that is, when each party is exchanging goods as expected, the affective commitment is also high for both parties. However, if the caregiver finds him/herself providing more care than
rewards he/she has received, the caregiver may become burdened by the one-sided relationship (Call et al. 1999). Even when the norm of obligation and reciprocity is strong, as it is for children and spouses, the needs of the care recipient may still “exceed the caregiver’s capacity for caring, which may result in a negative evaluation of the relationship” (Call et al. 1999:689). This unbalanced relationship leaves the caregiver in power, and the care recipient trying to reduce this power differential. To do this, the caregiver tries to balance power by reducing the level of care (i.e. exchange good) that they provide to dependent caregiver. This tends to lead to a decrease of affective commitment, or positive evaluation of the care relationship, for the care recipient. The dependent care recipient, lacking options of alternative actors (i.e. other options for primary caregivers), may also try to balance the relationship by increasing the exchange of goods with the caregiver. This may be done by providing the caregiver with things such as financial help, help with household chores, and valuable advice. However, when the care recipient is unable to increase exchanges goods because of decreased cognitive and physical functioning, the negative emotions about the care relationship will arise for the care recipient, subsequently leading to depressive symptoms for the older adult.

Life Stress Paradigm

*The Stress Process*

Lin and Ensel’s (1989, 1991) life stress paradigm is a theoretical perspective which asserts that life stressors have a negative effect on one’s well-being. Resources, both social and psychological, can mediate the effect that these life stressors have on health (Lin and Ensel 1989), so that one’s social and psychological resources can reduce the negative effect that life stressors have on mental and physical health outcomes (Lin
and Ensel 1989). The life stress paradigm is useful in evaluating the effects of depression of a caregiver on the mental health of the older adult who receives his/her care because it provides a general theoretical link between one’s daily encounters and one’s health outcome. Lin and Ensel’s perspective, however, was heavily influenced by Pearlin et al.’s (1981) Stress Process model.

Pearlin et al. (1981:338) assert that stress is produced from two sources: “the occurrence of discrete events and the presence of relatively continuous problems”. These sources can act alone, or in tandem. Pearlin et al. (1981) notes, in addition, that life events and chronic and reoccurring strain can converge in two ways. First, “life events can function to bring into focus the unfavorable implications of life problems, and it is the new meaning of old problems that create distress (Pearlin et al. 1981:339). Trivial life events can adversely alter chronic life strains and bring about stress and depression (Pearlin et al. 1981). Second, “life events may create new strains or intensify preexisting strains and it is these new or intensified strains, in turn, that eventuate stress” (Pearlin et al. 1981:339). For example, assuming the role of caregiver in addition to other responsibilities can result in role strain, and subsequently stress.

Pearlin et al. (1981) argue that the onset of negative life events and reoccurring life circumstances result in stress because they cause “the diminishment of self”, specifically in the areas of self-esteem and mastery (340). Pearlin and colleagues (1981:341) define mastery as “the extent to which people see themselves as being in control of the forces that importantly affect their lives. Self-esteem is “the judgments one makes about their self-worth”(Pearlin et al. 1981:340) Persistent life strains and
traumatic life events confront individuals with their inadequacy and failures, and illustrate their inability to control what goes on in their lives.

It is important to note that Pearlin and colleagues (1981) assert that individuals do not passively accept negative life circumstances. Instead, individuals make use of certain strategies to buffer the negative ramifications of these life circumstances and events. Pearlin et al. (1981) postulate that these buffering mechanisms take two forms: social support and coping. Pearlin et al. (1981:340) view social support in this way:

If one possesses family, friends, and a circle of associates, one is not necessarily the automatic beneficiary of support in times of trouble…The degree to which people can draw on social relations for support depends on more than either the extensiveness of the relations or the frequency of interaction. Support comes when people’s engagement with one another extends to a level of involvement and concern, not when they merely touch the surface of each other’s lives.

Thus, social support is not mere social contact; it involves an intimate connection and “presence of solidarity and trust” (Pearlin et al. 1981). Church membership, for example, is thought to be a very important source of social support that positively impacts mental and physical health outcomes, especially for this group (Drentea and Goldner 2006; Kramer et al. 2007; Krause et al. 2001; Pearce 2005; Broyles and Drenovsky 1992). Research has found that individuals who are more religious tend to have better health outcomes than their less religious counterparts. Some researchers suggest that this is due, in part, to “social relationships that flourish in church settings” (Krause et al. 2001:637). Therefore, individuals who are heavily involved in church have a great wealth of church-based social ties at their disposal (Krause et al. 2001). Thus, an individual can use church attendance and participation in religious organizations as a buffer to help them deal with stressful life situations.
The coping mechanism, the second buffering method, is defined as “behavior that protects people from being psychologically harmed by problematic social experience, a behavior that importantly mediates the impact that societies have on their members” (Pearlin and Schooler 1978:2). Coping is hypothesized to intervene in three ways: first, it is thought to modify or eliminate conditions giving rise to stressful situations. Second, coping can alter the manner in which problems are viewed such that the stress that arises from the problems is reduced. Third, coping helps individuals to deal with their emotional response to stress (Pearlin and Schooler 1978; Pearlin et al. 1981). Pearlin and Schooler (1978) argue that although social resources are important in stress management, individual psychological resources are most useful in coping strategies. Pearlin and Schooler (1978) specifically mention self-esteem, self-denigration, and mastery in their work as important psychological resources in coping. It is important to point out that negative life events work to “diminish the self” of the individual faced with the problem, specifically in the areas of self-esteem and mastery. However, individuals also draw on these same resources to cope with the negative life events and circumstances. Thus, negative life events cause distress, which often manifests itself as depression. These life events and circumstances also negatively affect the psychological resources that an individual has at their disposal to deal with stress.

The Life Stress Paradigm

As previously stated, Ensel and Lin’s (1991) life stress paradigm is an extension of Pearlin et al.’s (1981) stress process model. Like Pearlin and colleagues (1981), Ensel and Lin (1991; Lin and Ensel 1989) agreed that life stressors come in two forms: negative life events and reoccurring life circumstances. Furthermore, these life stressors can lead
to distress, often in the form of depressive symptomology. They also agreed that social
and psychological resources are used by individuals to buffer the negative effects of
stressful life events and reoccurring circumstances. However, Ensel and Lin (1991)
extend their theoretical perspective to include the effects of life stressors on physical, as
well as mental health. Additionally, and most importantly, they create an integrative
model in which they investigate social and psychological resources as both coping and
deterring elements (Ensel and Lin 1991).

Social Support, Psychological Resources, and Chronic Life Stress

To create this integrative approach, Ensel and Lin (1991:323) define
psychological resources as “elements in the internal and external environments which can
either directly deter distress (or…enhance well-being) or mediate or counter the potential
adverse consequences of stressful conditions or situations.” Psychological resources
reside within the individual, where as social resources are “embedded in one’s social
network” (Ensel and Lin 1991:323). The presence of resources allows individuals to
maintain self-identity and self-esteem, as well as social and psychological equilibrium.
Furthermore, the presence of resources also reduces the likelihood that problems will
occur, since problems often occur as a result of insufficient resources. Finally social and
psychological resources help an individual to cope if a problem should arise (Ensel and

In agreement with Pearlin et al. (1981), Lin and Ensel (1989) stress the
importance of social support as a social resource to deal with negative life situations.
Social support is defined as “the process by which resources in the social structure are
brought to bear to meet the functional needs (e.g., instrumental and expressive) in routine
and crisis situations” (Lin and Ensel 1989: 383). Social support functions at three levels: “the community, the social network, and intimate and confiding relationships” (Lin, Dean, and Ensel 1986:18). The community represents the most general form of social support. It simply reflects sense of integration and belonging to the greater social structure. Voluntary participation in groups such as civic organizations, church groups, and recreational activities are often seen as impersonal, however, membership produces a valued sense of social embeddedness and belonging. The social network involves direct and indirect relations with a large number of people (Lin et al. 1986). More important than social belonging, relationships derived from one’s social network produce a sense of bonding. “Bonding relations represent actual linkages of the individual with others, even though some the linkages may be indirect” (Lin et al. 1986:19). Social networks are created from kinship ties, friendship, and work relationships. From social networks, weak ties and strong ties are created which are important in resource attainment (Lin et al. 1986). Finally, the confiding partner, the innermost layer, consists of binding relationships. In this relationship, “reciprocal and mutual exchanges are expected, and responsibility for one another’s well-being is understood and shared by the partners” (Lin et al. 1986: 20). This is reminiscent of the social exchange perspective discussed earlier.

Intimate relationships, it has been argued, have the most pervasive effect on an individual’s mental and physical health. Having someone to confide in and receive advice from can improve one’s health and ability to potential counter the negative effects of life stressors (Clay et al. 2008; Drentea et al. 2006).

Lin et al. (1979) hypothesize two ways by which social support affects disease and illness: first, social groups control the “norms regarding preventive health behavior
and [the social group’s] ability to exert pressure to conform to these norms” (Lin et al. 1979:109). Second, “interaction patterns may provide information of practical utility, such as how to prevent disease” (Lin et al. 1979:109). Thus, the presence of social support can deter illness from occurring via ascribing to social norms that prevent disease. Social support can also be used to cope with disease via health information one can obtain from social networks.

Lin and Ensel (1989) views social support as an external method of coping. Psychological resources, on the other hand, are viewed as means to cope internally. Pearlin and Schooler (1978:5) first defined psychological resources as “personality characteristics that people draw upon to help them withstand threats posed by events and objects in their environment.” Psychosocial resources such as feelings of locus of control personal competence, hardiness, self-esteem, and mastery have a buffering effect on the mental and physical detriment caused by life stressors (Lin and Ensel 1989). It is believed that these resources “affect the ability and effort of individuals to recognize the stressful social stimuli (i.e., life event) and trigger a response reaction to the stimuli in an attempt to prevent or eliminate potential distress” (Lin and Ensel 1989:383-384). Therefore, an individual who reports high levels of internal resources such as personal competence, mastery, and self-esteem is better equipped to cope with negative life circumstances, such as the burden of caregiving, and as a result have better mental and physical health outcomes.

*Deterring Models of the Stress Process*

As previously stated, the life stress paradigm is an extension of the stress process model with a very important addition. In this perspective, resources are seen as having
both a deterring and a coping effect mental and physical health outcomes caused by life stressors (Ensel and Lin 1991). Ensel and Lin (1991) construct six models of the stress process (three deterring models and three coping models). I will discuss the three deterring models first. Then I will discuss the coping models. The last coping model, the deterioration model, is the most important for this research.

\[ T1 \quad T2 \quad T3 \]

\[ \text{STRESSORS} \quad \rightarrow \quad \text{DISTRESS} \]

\[ \text{RESOURCES} \quad \rightarrow \quad \text{DISTRESS} \]

2.1 Independent Model

\[ \text{RESOURCES} \quad \rightarrow \quad \text{STRESSORS} \quad \rightarrow \quad \text{DISTRESS} \]

2.2 Stress-Suppressing Model

\[ \text{RESOURCES} \quad \rightarrow \quad \text{DISTRESS} \quad \rightarrow \quad \text{STRESSORS} \]

2.3 Stress-Conditioning Model
In general, all the resources in the deterring model directly inhibit distress. This direct and negative relationship between resources and distress exists regardless of the presence of a relationship between resources and life stressors. For example in the independent model (Figure 2.1), resources protect individuals against distress even when stressors do not exist. Furthermore, this model assumes that there is no relationship between the stressors and the resources (Ensel and Lin 1991). So, for instance, having a friend in whom you can confide is a resource. This resource will maintain its value even when a negative life event occurs, such as losing one’s home in an electrical fire. Since there is no relationship between an individual’s friendship with another and an accidental house fire, the friendship will persist even after the unfortunate event.

In the stress-suppressing model, a direct relationship now exists between resources and stressors such that resources “decrease the probability of experiencing a stressful event” (Lin and Ensel 1991:325). For example, having sufficient financial resources reduces the likelihood of having difficulty paying bills (a life stressor) as well as being distressed.

In the third deterring model, the stress-conditioning model, the effects of resources on distress is mediated by the presences of life stressors. Thus, low levels of resources, or no resources at all, coupled with a stressful life situation results in higher levels of distress. On the other hand, if one has a great deal of resources at their disposal, the onset of life stressors will not have a great of an effect (Ensel and Lin 1991).

*Coping Models of the Stress Process*
The coping models of the stress process differ from the deterring models in two ways. First, life stressors act as stimuli triggering a response from the resources that one has at their disposal. Second, life stressors are seen as “causally preceding ‘responses’ from resources” (Ensel and Lin 1991:325). In the first coping model, the counteractive
model, resources offset the negative impact that life stressors have on distress (Ensel and Lin 1991). Although life stressors have a positive impact on distress, they also have a positive impact on resources, increasing them. It is thought that in stressful life events, such as the death of a loved one, individuals mobilize social support systems in order to cope with the stressful life event. Thus, this coping strategy is also called the “mobilization model” because in a crisis situation, such as the loss of a loved one, family and friends rally around the distressed individual, resulting in high levels of social support.

The buffering model of coping states that stressors only affect distress when there are no resources present. Thus, distress is high when resources are low and stressors are high (Ensel and Lin 1991). However, distress is theorized not to be affected in any other condition. Therefore, (a) when both stressors and resources are high, (b) when resources are high and stressors are low, or (c) both resources and stressors are low, the level of distress is unaffected (Ensel and Lin 1991). This model is very similar to the stress-conditioning model (Figure 2.3), the difference is that stressors causally precede resources in the buffering model.

In the last coping model, the deterioration model, resources are said to have an intervening relationship between life stressors and distress. Thus, the negative impacts of life stressors on mental and physical health are mediated by the presences of social and psychological resources. This model is the most important for this study’s research question, and thus will be the analytical focus. Much research finds strong evidence that a temporal link between life stressors and resource availability exists (Ensel and Lin 1991; Clair et al. 1995). “Causally, life experiences precede resources. That is, resources
become meaningful only after an individual has experienced stressful conditions or situations” (Ensel and Lin 1991:325). In other words, life stressors directly affect resources. Thus, the presence of life stressors diminishes the amount of resources available to an individual. Furthermore, life stressors have a direct and positive impact on distress. Also, life stressors have an indirect effect on distress by way of diminishment of social and psychological resources.

As it relates to the research question, a recurring negative life experience, such as dealing with a burdened caregiver, becomes a chronic life stressor for the care recipient. This life stressor, in turn, has a direct and negative effect on the physical and mental health of the older adult care recipient. The burdened caregiver directly affects the depressive symptomology of the care recipient. Additionally, the negative life stressor (caregiver subjective and objective burden) has an indirect and negative effect on the mental health of the care recipient by negatively affecting the resources, both social and psychological, that the care recipient has at his/her disposal. Moreover, the social resources (e.g., social support) and the psychological resources (e.g., mastery, self-esteem, and hardiness) work to lessen the negative effects of the chronic life stressor (caregiver subjective and objective) on the mental health of the caregiver. So, the presence of resources reduces the depressive symptomology of the care recipient.

**Physiological Resources and Distress**

Although not a part of the life stress paradigm, Lin and Ensel (1989) highlight the importance of physiological resources on stress in other work. Physiological stress such as clinically-diagnosed illnesses and physical symptoms such as disabilities with activities of daily living (ADLs), and instrumental activities of daily living (IADLs) have
a negative effect on well-being. Physiological resources, such as diet, exercise, and healthy lifestyle practices such as refraining from alcohol, tobacco, and drugs positively affect well-being (Lin and Ensel 1989). As a result, in my study, I will take into consideration the functional capabilities and health status of the care recipient in my analysis of the relationship between caregiver burden and care recipient depression.

_Race, the Social Exchange Perspective, and the Life Stress Paradigm_

In addition to determining the effects of a burdened caregiver on the mental health of a disabled care recipient, this research is interested in investigating the racial effects of burden on the depressive symptomatology of the care recipient using the social exchange perspective and the life stress paradigm. Past research has shown that although African Americans caregivers report having the lower levels of financial resources, in addition to providing more care to their care recipients than their white counterparts, they also often report lower levels of burden and distress (National Alliance for Caregivers and AARP 2009; Dilworth-Anderson et al.1999). It is hypothesized that things such as strong familial obligation and kinship ties, and coping mechanism such as prayer are reasons why caregiving is not seen the same way for African Americans as it is for whites (Goldner and Drentea 2009; Hill-Collins 2000; Dilworth-Anderson et al.1999). However, how this translates to the mental health of the care recipient is not widely discussed. The social exchange perspective and the life stress paradigm will be useful in explaining this relationship.

As earlier discussed, the social exchange perspective views social relations as a series of costs and rewards; individuals enter exchange relationships based on the rewards (physical, social, and psychological) that they may receive. The exchange relationship
between a caregiver and a care recipient is also characterized by dependence. “An actor is dependent on another to the extent that outcomes valued by the actor are contingent on the exchange with the other” (Molm and Cook 1995:216). Thus, caregivers and care recipients depend on each other to reciprocate goods. Each person is supposed to help the other without being told. The exchange relationship is considered balanced when there is an equal exchange of goods between social actors. However, when the exchange of goods is not equal and the exchange relationship is unbalanced, a negative reaction to the exchange relationship results.

African American caregivers often report feeling a moral obligation to provide care for their older loved ones as a way to repay them for the care that they received as young children (Rimer 1998). Parents care for their children with hopes that in their old age the favor will be returned. In adulthood, children feel an obligation to return the favor in-kind to their aging parent(s). In addition, the socioeconomic status of African American caregivers often requires them to share resources. African American caregivers are often single mothers of low socioeconomic status (National Alliance for Caregiving and AARP 2009; Pickard et al. 2011). Thus, an exchange relationship in which care of an older loved one is exchanged for care of children can be quite beneficial. As a result, depressive symptomology will be less likely to result from a caregiving situation for care recipients of color than for white care recipients.

In the life stress paradigm, life stressors directly and indirectly (by way of resource diminishment) effect distress. As it relates to African American care dyads, the counteractive model of life stress paradigm may be the most useful in explaining the relationship between caregiver burden and care recipient depression. In the counteractive
model, the negative impact of life stressors on distress is offset by the presence of resources (Ensel and Lin 1991). Resources, especially social resources, become critically important in a crisis situation, such as having a burdened caregiver. African Americans often have very strong kinship and social support networks (Goldner and Drentea 2009). In addition, African American older adults often have larger and more supportive social networks than their white counterparts (Burton et al. 1995). As a result, family and friends rally around the distressed individual, the depressed care recipient, and provide social and emotional support. It must be noted that not only is this help for the care recipient, this also helps to reduce burden for the caregiver as well.

Hypotheses

This research aims to answer the following questions: (1) does subjective burden or objective burden of a primary caregiver have a greater effect on the depressive symptomology of a disabled care recipient? (2) Are the effects of caregiver subjective and objective burden on care recipient depression conditional on the race of the care recipient? (3) To what extent do physical, psychological, and social exchange goods affect care recipient depression net of caregiver burden, as indicated by social exchange theory? (4) To what extent do psychological and social resources mediate the effect of caregiver burden on care recipient depression, as indicated by the life stress paradigm? (5) To what extent are the effects of physical, psychological, and social exchange goods on care recipient depression, net of caregiver burden, conditional on the race of the care recipient? 6) To what extent do psychological and social resources mediate the effect of caregiver burden on care recipient depression and furthermore are any mediation effects conditional on the race of the care recipient?
**Subjective and Objective Burden**

Much of the research on caregiver burden categorizes it in two ways: subjective and objective (Call et al. 1999). Subjective burden is the emotional reactions, attitudes, and perceptions of the caregiving experience. In contrast, objective burden “is concerned with concrete events and the disruption of activities that result from caring for another” (Call et al. 1999:692). Although, subjective and objective burden are correlated, each have a distinct set of predictor correlates, indicating that the factors that cause subjective burden do not necessarily cause objective burden (Montgomery et al. 1985). Thus, a caregiver can experience low levels of objective burden and high levels of subjective burden, simultaneously. As a result, a non-directional hypothesis has been proposed:

1. Subjective and objective burden experienced by the caregiver will have an effect on the depressive symptomology of the older adult care recipient.
Figure 4 is the conceptual diagram of the effects of caregiver burden (subjective and objective) on the depressive symptomology of a care recipient applied to the social exchange perspective. This perspective views social exchange relationships, such as caregiving, as a series of costs and rewards. The caregiving relationship, however, is unique because it is characterized by imbalance. This imbalance leaves the caregiver in control; as a result, the care recipient may try to reduce the power differential. The subjective and objective burden that the caregiver experiences is indicative of the
inherent imbalance in this relationship. More specifically, using the exchange perspective, I consider caregiver burden as a latent measure of social goods, in the form of care, which the caregiver exchanges with the care recipient. Thus, the more care that the caregiver provides to the care recipient, the more burdened the caregiver will become. Greater caregiver burden signifies greater input into the exchange from the side of the caregiver, and greater relationship imbalance. Greater relationship imbalance leads to a negative emotional response to the care relationship by the individual who is most dependent, in this case, the care recipient (Molm 2003; Cook and Rice 2003). This study argues that this negative emotional response will manifest itself into depressive symptoms for the care recipient.

The care recipient may try to reciprocate the exchange of goods in efforts to reduce the imbalance of the care relationship. The care recipient may decide to exchange physical goods (e.g., help with household chores, babysitting, giving money and gifts), social goods (e.g., providing helpful company to the caregiver), and psychological goods (e.g., making the caregiver feel useful and needed) with the caregiver. This exchange of goods will reduce the negative emotional response that care recipient experiences because of the imbalance, thus reducing the level of depression that the care recipient feels. Accordingly, the following hypotheses have been derived consistent with Molm and Cook’s (1995) Social Exchange Perspective:

2. Subjective and objective burden experienced by the caregiver will increase the depressive level of the older care recipient.
3. There will be a negative relationship among the physical, psychological, and social exchange goods that the care recipient provides to the caregiver and the care recipient’s depressive level.

*The Life Stress Paradigm*

![Conceptual Diagram of the Life Stress Paradigm Applied to the Study’s Research Question](image)

Figure 5. Conceptual Diagram of the Life Stress Paradigm Applied to the Study’s Research Question

Figure 5 is the conceptual diagram of the effects of caregiver burden (subjective and objective) on the depressive symptomology of a care recipient applied to the life stress paradigm. The life stress paradigm relates chronic and enduring life stressors to adverse mental health (Ensel and Lin 1991). According to the deterioration model (Figure
3.3) of this perspective, chronic life stressors, such as a burdened caregiver, can have a direct negative effect on the mental health of a care recipient. Moreover, life stressors can have an indirect effect on mental health by way of diminishing resources. Life stressors directly reduce the amount of the social and psychological resources that one has at his/her disposal to deal with the chronic life stressors.

As it relates to the research question, a recurring negative life experience, such as dealing with a burdened caregiver, becomes a chronic life stressor of the individual who is under their care. The life stressor (caregiver subjective and objective burden), in turn, has a direct and negative effect on the mental health (i.e., the depressive level) of the older adult care recipient. Additionally, the negative life stressor (caregiver subjective and objective burden) has an indirect and negative effect on the depressive level of the care recipient by negatively affecting the resources, both social and psychological, that the care recipient possesses. The once independent care recipient must now rely on another individual—who has become burdened as a result of caregiving—for help with tasks, such as bathing and dressing. This heavy dependence on a burdened caregiver can cause the care recipient to develop feelings of ambivalence toward the care relationship. This dependence can also potentially lead to a decrease in the self-esteem, mastery, and locus of control (i.e., social and psychological resources) of the care recipient. This diminishment of social and psychological resources puts the care recipient at risk for developing depressive symptoms.

Finally, social resources (e.g., social support) and psychological resources (e.g., mastery, self-esteem, cognitive functioning) work to lessen the negative effects of the chronic life stressor (caregiver subjective and objective burden) on the mental health of
the caregiver. So, the presence of resources has a negative effect on the depressive symptomology of the care recipient. Accordingly, the following hypotheses have been derived consistent with the life stress paradigm:

4. Subjective and objective burden experienced by the caregiver will increase the depressive level of the older care recipient.

5. The level of subjective and objective burden of the caregiver will decrease the amount of social and psychological resources that the care recipient possesses.

6. The social and psychological resources that the care recipient possesses will decrease the level of depression of the care recipient.

**Social Exchange Perspective, Life Stress Paradigm, and Race**

Studies have shown that minorities are less likely to report feelings of distress as a result of caregiving than their white counterparts (Dilworth-Anderson et al. 1999). Research in minority caregiving finds that the sociocultural context of caregiving is salient in deciding whether to provide care. African Americans, especially, find the process of caregiving more normative than any other groups, largely because of a historical background of oppression, racism, and limited resource availability. The process of “caring for one’s own” is thus expected and accepted.

As it relates to social exchange perspective, specifically Antonucci’s (1991) Support Bank Theory, the relationship between minority parents and children is characterized by life-long exchanges. Parents make early investments by caring for their children in hopes that in their old age the favor will be returned. In adulthood, children feel an obligation to return the favor in-kind by caring for their aging parent(s). As a result, minority care recipients are not likely to view the exchange relationship as
unbalanced. Consequently, a negative emotional response to the exchange relationship is less likely to result, as it would if the relationship was perceived as unbalanced. Thus, African American care recipients are less likely to develop depressive symptoms from the caregiving relationship.

For the life stress paradigm, specifically the Mobilization/Counteractive model, resources offset the negative impact that life stressors have on distress (Ensel and Lin 1991). Although life stressors positively impact distress, they also positively impact resources by increasing them. In this perspective, it is thought that when stressful life events occur, individuals mobilize social support systems in order to cope. Resources, especially social resources, become pivotal. Although it is plausible that distress can cause the mobilization of resources for a care recipient of any color, African Americans often have stronger kinship ties and social support networks than whites (Goldner and Drentea 2009; Pruchno, Patrick, and Burant 1997). Thus, in stressful life circumstances, such as having a burdened caregiver, family and friends are likely to rally around the distress individual (the disabled caregiver) and provide emotional and social support. The social and emotional support will lead to lower levels of distress (i.e., depression) for the minority older adult care recipient. Therefore, consistent with the Support Bank Theory and the Mobilization/Counteractive model of the life stress paradigm, the following hypothesis has been derived:

7. Caregiver subjective and objective burden is less likely to lead to depression in African American care recipients than in white care recipients.
CHAPTER 4
RESEARCH DESIGN
Data and Sampling

To evaluate the effects of subjective and objective caregiver burden on the depressive symptomology of a disabled care recipient, the most recent wave (2004) of the National Long Term Care Survey (NLTCS) was used. The NLTCS is a nationally-representative longitudinal study used to identify frail and disabled older adults living in the United States. Specifically, the target population of the study was Medicare recipients age 65 or older who are disabled and living in the community, and disabled and living in an institution, such as a nursing home or an assisted living facility. The NLTCS was first collected in 1982; thereafter, five other waves were collected (1984, 1989, 1994, 1999, and 2004). This project uses a stratified, two-stage clustered design (Duke University CDS 2006). The first stage involved the selection of the primary sampling units (PSUs). The PSUs were randomly selected counties or groups of counties within the 50 states and the District of Columbia. A total of 375 PSUs were initially selected, and then were collapsed into 173 NLTCS strata based on their estimated population of Medicare enrollees age 65 or older from 1978. One PSU was selected for inclusion in the study based on each NLTCS first-stage stratum (Duke University CDS 2006).

Disability is defined as having impairment on one or more activities of daily living (ADL) or instrumental activities of daily living (IADL).
The second stage of sampling involved the selection of Medicare enrollees from list frames constructed for each sampled PSU (Duke University CDS 2006). The initial sample in 1982 was selected based on Medicare enrollees age 65 and older as of April 1, 1982. In each wave thereafter, a sample of new cohorts entering the target population was selected along with a subsample of old cohorts selected from previous cycles (Duke University CDS 2006). The selection was based on study groups which were second-stage strata defined by the enrollee’s age and their assignment, or lack of assignment, to institutional and community interviews in the previous cycle. In 1982, a sample of 35,789 was drawn from the national Medicare enrollment files of the 173 PSUs of that year. In the waves that followed, the original sample was augmented to 20,000 respondents (the combination of a subsample of the original surveying sample and a newly eligible sample). In the 2004 wave, the initial sample included a total of 20,474 respondents. The response rate ranged from 87.7 percent to 97.6 percent over the five waves of the survey (Freedman et al. 2004; Murtaugh and Litke 2002; Manton and Gu 2001).

The NLTCS was administered through scheduled-structured telephone and in-home interviews in which respondents (the care recipients) were asked about physical disabilities, medical conditions, family support, active life expectancy, activities of daily living (ADLs), instrumental activities of daily living (IADLs), cognitive functioning, and the use of formal and informal caregiving (Duke University CDS 2006).

In 1982, 1989, 1999, and 2004, informal caregivers were identified based on information provided by the NLTCS respondents. An eligible caregiver is one who provides unpaid help with at least one activity of daily living (ADL) or instrumental activity of daily living (IADL) for at least one hour in the week prior to the NLTCS
community survey (Boaz 1996, Wolff and Kasper 2006). When there was more than one individual who met the caregiver criteria, a primary caregiver was elected based on the individual who spent the most time providing help (Wolff and Kasper 2006). This caregiver was surveyed three months after being initially identified by the NLTCS via the supplemental National Informal Caregivers Survey (NICS). In this survey, caregivers were asked about the type of help that they provide for the care recipient, as well as questions on physical, emotional, and financial hardship caused by the caregiving relationship (Wolff and Kasper 2006). The NLTCS is a matched dataset. Information obtained from the caregiver in the NICS was matched by case id to the care recipient’s responses in the NLTCS, as such there is no need for linking variables.

The 2004 wave used to investigate the effects of a subjective and objective caregiver burden and the depressive symptomology of the care recipient. The initial 2004 wave included a total of 20,474 respondents. To obtain the analytic sample, the sample was filtered by four inclusionary criteria. First, this sample was restricted to care recipients whose caregivers responded to the caregiver supplemental survey. This reduced the analytic sample to 4,272 respondents. Second, the sample was restricted to care recipients whose caregiver received no remuneration for the care they provide. This reduced the sample further to 1,837 respondents. Third, the sample was restricted to care recipients who were mentally competent to answer all depression questions, reducing the sample to 1,289. Finally, all care recipients must have answered all three depression questions, resulting in an analytic sample of 1,279 respondents.

Missing values were imputed on all variables except for the dependent variable using the linear interpolation method in SPSS. Linear interpolation uses ordinary least
square regression to predict missing values and impute them. Only a small percentage of the data are missing for caregiver subjective and objective burden, care receiver education, ADLs, IADLs, self-rated health, caregiver education, life stress paradigm and social exchange perspective measures. The percentage of missing values for all variables ranges from less than one percent to five percent.

Measurement

**Dependent Variable**

The outcome of interest, *depressive symptomology of the care recipient*, was measured by an abbreviated version of the CES-D scale provided by the NLTCS (Radloff 1977). This scale is a three-item scale in which the NLTCS respondents were asked questions about recent depressed mood. Specifically, the older adult respondent was asked: “During the last two weeks, have you felt so sad, blue, or depressed that you, a) did not feel like doing things you usually do, b) could not sleep like you usually do, c) lost your appetite or could not eat like you usually do?” The responses were yes (coded as 1) and no (coded as 0). The scores of the scale range from 0 to 3, with a value of 0 representing no depressive symptoms, and a value of 3 representing three depressive symptoms. The Cronbach’s alpha for this scale was .706. The majority (75.1 percent) of the sample expressed no depressive symptoms. As a result, depressive symptoms were dichotomized. Individuals who reported no depressive symptoms were given a score of 0, while anyone who reported any depressive symptoms was given a score of 1.

**Independent variables**

In this study, there are two main predictor variables: *objective and subjective burden*. Objective caregiver burden was measured by a modified version of the Screen
for Caregiver Burden index provided by the NLTCS (See Appendix A) (Vitaliano et al. 1991). The original Screen for Caregiver Burden (SCB) is a 25-item scale used to evaluate the occurrence of stressful events of caregiving and the severity of distress suffered by the caregiver (Vitaliano et al. 1991; Hirschman et al. 2004). The scale in the NLTCS contains 15 items, and does not include the measures that cover caregiver distress. In this survey, respondents were asked how many times in the past week were they tasked with dealing with behavioral issues of the care recipient. For example, caregivers were asked, “In the past week, on how many days did you personally have to deal with the following behavior of [the care recipient]? How many days did [he/she] keep you up at night?” Possible response options include no days (coded as 0), 1 to 2 days (coded 1), 3 to 4 days (coded as 2), and 5 or more days (coded as 3). Scores range from 0 to 45. A score of 0 represents low objective burden and 45 represents high objective burden. The internal consistency measure coefficient for this scale was $\alpha=.814$, suggesting good internal consistency.

To measure subjective burden, a modified version of the Zarit Burden Interview provided by the NLTCS was used (See Appendix B) (Zarit, Reever, and Bach-Peterson 1980). The Zarit Burden Interview is a 22-item scale originally used to measure burden among informal caregivers of dementia patients. Since its creation, the reliability, validity, and comparability of this inventory has been upheld over a variety of caregiving populations. Additionally, it has been used to “measure change over time, resulting from the progression of the care recipient’s condition” (Bedard et al. 2011:652). This study features a three-item scale in which respondents are asked about the emotional stress, strain, and hardship that they experience from being a caregiver. For example the
caregiver was asked, “Using a scale from 1 to 5, where 1 is not at all stressful and 5 is very stressful, how emotionally stressful would you say that caring for [the care recipient] is for you? Response options include not stressful at all (coded as 0), a little stressful (coded as 1), moderately stressful (coded as 2), pretty stressful (coded as 3), and very stressful (coded as 4). Scale scores range from 0 to 12, with 0 representing no subjective burden and 12 represent high levels of subjective burden. The Cronbach’s alpha for this scale was .771, suggesting adequate internal consistency, but not the recommended α = .80.

Social Exchange Perspective Measures. In the social exchange perspective, caregiver burden and care recipient depression is negatively affected by the exchange of social, psychological, and physical goods by the care recipient. Social exchange goods were measured by asking the caregiver if the care recipient provided helpful company to the caregiver. Possible response options were no (coded as 0) and yes (coded as 1). To measure psychological goods the caregivers were asked if the care recipient has made them feel useful and needed. Possible response options were also no (coded as 0) and yes (coded as 1). Finally to measure physical exchange goods, the caregivers were asked if the care recipient helped with household chores, babysitting, and buying them things or giving them money. Possible response options were no (coded as 0) and yes (coded as 1) for each of the three items. The Cronbach’s alpha for this scale is .514, suggesting low internal consistency. Because of the low internal consistency of the scale, and in an effort to keep the measurement of physical exchange constant with the other exchange measures, physical exchange was dichotomized such that care recipients who provided no physical exchange goods to the caregiver were given the score of 0. If the care recipients
provided any or all of the three exchange goods to the caregiver, they were given the score of 1.

*Life Stress Paradigm Measures.* In the life stress paradigm, social and psychological resources that the care recipient has at his/her disposal help to buffer the negative effect of a burden caregiver on their depressive symptomology. In this study, social resources were measured by the amount of social contact that the care recipient receives. Social contact was measured by two scales (See Appendix C). Both scales were provided by the NLTCS and come from the RAND Social Health Battery (Donald et al. 1978). The first scale is based on questions that ask about frequency of contact with family in the past month; the second is based on frequency of contact with friends in the past month. For example, the respondents were asked: “In the past month, how often did you speak with your friends on the telephone?” Response options for this scale were none (coded as 0), once or twice (coded as 1), three to five times (coded as 2), six to ten times (coded as 3), eleven to twenty-nine times (coded as 4), and thirty or more times (coded as 5). Both scales are two item scales, with scores ranging from 0 to 10. A score of 0 represents no contact with friends or family, and a score of 10 represents daily contact with friends or family. The correlation coefficient of the two items making up the family contact scale was .505. The correlation coefficient of the two items making up the friend contact scale was .511.⁴

In addition to social contact, engagement and religious and civic activities were measured. To measure civic engagement, two questions were asked about participation in civic organizations and religious service attendance. For civic participation, the care recipient was asked, “In the past month did you attend a meeting of civic, religious,

⁴ Both correlation coefficients significant at the α = .01 level in a two tailed test.
professional, or recreational club or organization?” For religious service attendance, the respondents were asked, “In the past month did you go to a religious service?” Response options for both questions were yes (coded as 1) and no (coded as 0).

Cognitive functioning, a psychological resource, was measured using the Short Portable Mental Status Questionnaire (SPMSQ) (Pfeiffer 1975). Specifically, care recipients were asked questions such as, “What day of the week is it?” and “What is the date today?” Incorrect responses were scored as 0 and correct responses were scored as 1. This scale is a ten-item scale, with scores ranging from 0 to 10, where 0 represents the lowest level of cognitive functioning and 10 represents the highest level of cognitive functioning (Appendix D). The Cronbach’s alpha for this scale is .741, suggesting adequate internal consistency.

Control variables

Important descriptive covariates including the age of the care recipient, sex of the caregiver and care recipient (female = 1, male = 0), race of the care recipient (non-black = 0, black = 1), education level of both the caregiver and care recipient, and self-rated health of the care recipient (ordinal measure ranging from poor health = 1 to excellent health = 4). The relationship of the caregiver to the care recipient (the spouse category was the reference group) was also controlled. ix

Finally, physical functioning was controlled for by determining the number of ADLs and IADLs of the older adult respondent. This is measured based on Katz and Akpom’s (1976) index of Activities of Daily Living and Lawton and Brody’s (1969) Instrumental Activities of Daily Living. The Katz and Akpom’s (1976) index of ADLs includes seven questions in which the respondent is asked questions such as, “Do you
have problems getting in and out of chairs without help?” Respondents were given the score of 1 if they do experience difficulty performing the activity, and 0 if they do not. The item-scale scores ranged from 0 to 7; 0 representing that the respondent was not disabled for any ADLs, and 7 representing that the respondent was disabled for all ADLs. The Cronbach’s alpha for Katz and Akpom’s (1976) index of ADLs in this study was .775, suggesting adequate internal consistency.

The modified version of Lawton and Brody’s (1969) instrumental activities of daily living used in this study included seven questions in which the respondents were asked questions such as, “Are you able to take medicine without help?” Respondents were given the score of 1 if they do experience difficulty performing an activity, and 0 if they do not. The scores for this scale range from 0 to 7; 0 representing that the respondent was not disabled with any IADLs, and 7 representing that the respondent was disabled with all IADLs. The Cronbach’s alpha of Lawton and Brody’s (1969) IADLs scale is .828, suggesting good internal consistency.

Analytic Procedure

This study empirically evaluated the effects of subjective and objective burden on the depressive level of a disable care recipient using both the social exchange perspective and the life stress paradigm as its theoretical foundation. In the end, I investigated (1) which predictor variable (subjective or objective burden) has the greatest effect on the outcome variable (depression of the care recipient). (2) This research also evaluated if the effects of caregiver subjective and objective burden on care recipient depression were conditional on the race of the care recipient. (3) In addition, this research examined to what extent physical, psychological, and social exchange goods effect care recipient
depression net of caregiver burden, as indicated by social exchange theory. And, (4) to what extent do psychological and social resources mediated the effect of caregiver burden on care recipient depression, as indicated by the life stress paradigm. (5) Furthermore, I investigated to what extent are the effects of physical, psychological, and social exchange goods on care recipient depression conditional on the race of the care recipient. Finally, (6) my last research objective was to evaluate whether psychological and social resources mediated the effect of caregiver burden on care recipient depression and furthermore whether any mediation effects were conditional on the race of the care recipient.

To investigate which predictor variable has the greater effect on the outcome variable (research objective 1), I made use of logistic regression analysis using the most recent wave (2004) of the NLTCS to evaluate the effects of burden on care recipient depression. Specifically, the outcome variable (depression of the care recipient) was regressed on each of the predictor variables (subjective and objective burden). Additionally, covariates such as age, race, self-rate health, educational attainment, number of IADLs and ADLs were controlled. Also, the sex and educational attainment of the caregiver, as well as the relationship of the caregiver to the care recipient were controlled. The resulting equation is as follows:

\[
logit(Pr(CR \ dep = 1))_i = \alpha + \beta_1(CG \ obj \ bur)_i + \beta_2(CG \ subj \ bur)_i + \beta'_3x_i. \quad (1)
\]

To assess the second research objective evaluating whether the effects of caregiver subjective and objective burden on care recipient depression are conditional on race, much of the previously stated techniques were used. The equation is as follows:

\[
logit(p_i) = \alpha + \beta_1(CGOB)_i + \beta_2(CGSB)_i + \beta_3black_i + \beta_4(CGOB \ast \ black)_i + \beta_5(CGSB \ast \ black)_i + \beta'_6x_i, \quad (2)
\]
where $p_i$ refers to the probability that care recipient depression at time is equal to 1, CGOB refers to caregiver objective burden, and CGSB refers to caregiver subjective burden. This is very similar to equation (1) except that it measures the main effects of race as well as the interaction effects of race and burden.

The third research objective seeks to evaluate to what extent do physical exchange goods, psychological exchange goods, and social exchange goods effect care recipient depression net of caregiver burden, as indicated by social exchange theory. To estimate these effects, standard logistic regression was used. The resulting equation is as follows:

$$ logit(p_i) = \alpha + \beta_1(CG\ obj\ bur)_i + \beta_2(CG\ subj\ bur)_i + \beta_3(CG\ phys\ exch)_i + \beta_4(CG\ soc\ exch)_i + \beta_5(CG\ psych\ exch)_i + \beta_6 $$

(3)

This equation is an extension of equation (1) which includes key covariates of the social exchange perspective: physical exchange goods, social exchange goods, and psychological exchange goods.

In addition, I also considered how the inclusion of these measures influences the estimate of caregiver burden on care recipient depression. Such that, caregiver burden mediates the relationship between the exchange of goods and the depression of the care recipient. Thus caregiver burden signifies an unbalanced exchange relationship on the part of the care recipient, leading to the increased likelihood of the care recipient reporting depressive symptoms.

Objective 4, which seeks to investigate to what extent psychological and social resources mediate the effect of caregiver burden on care recipient depression, as indicated by the life stress paradigm, I adopted appropriate procedures as outline by MacKinnon
and Dwyer (1993) for assessing mediation with a dichotomous outcome variable. The investigation of this objective produces the following equation:

$logit(p_i) = \alpha + \beta_1(CG obj bur)_i + \beta_2(CG subj bur)_i + \beta_3(CG soc res)_i + \beta_4(CG psych res)_i + \beta'_5x_i. (4)$

This equation is, again, an extension of equation (1) which includes key covariates of the life stress paradigm: social resources and psychological resources.

The fifth research objective seeks to evaluate to what extent physical exchange goods, psychological exchange goods, and social exchange goods effect care recipient depression net of caregiver burden, as indicated by social exchange theory, conditional on the race of the care recipient. The following equation results:

$logit(p_i) =
\alpha + \beta_1(CGOB)_i + \beta_2(CGSB)_i + \beta_3(CG phys exch)_i + \beta_4(CG soc exch)_i + \beta_5(CG psych exch)_i + \beta_6(CG phys exch * black)_i + \beta_7(CG soc exch * black)_i + \beta_8(CG psych exch * black)_i + \beta'_5x_i. (5)$

This equation is an extension of equation (3) which includes an estimation of the interaction of race with each of the exchange goods (social, psychological, and physical).

Finally, the last research objective was to investigate whether psychological and social resources mediate the effect of caregiver burden on care recipient depression and whether any mediation effect is conditional on race. Both components of this object, testing for mediation and testing for whether any mediation effect is conditional on race, can be accomplished simultaneously with a moderated mediation analysis (Preacher et al. 2007). In general, moderated mediation models allow for an indirect effect from a variable X to an outcome Y via an intermediate variable M to vary across different
subgroups. This is similar to a standard analysis of an interaction, except that rather than
testing whether a main effect varies (e.g., the effect of X on Y) one tests whether an
indirect effect varies (e.g., the indirect effect of X on Y via M). In the analysis, the
indirect effect of interest is the effect of caregiver subjective and objective burden (X) on
care recipient depression (Y) via social and psychological resources (M). Additional
analyses test whether this indirect effect varies across different racial/ethnic groups of the
care recipient.
CHAPTER 5

RESULTS

In this chapter, results of descriptive statistics, bivariate and logistic regression analyses of the study sample will be presented. Table 1 follows with a comparison of care recipients with and without depressive symptoms for subjective and objective burden measures, caregiver and care recipient demographics, life stress paradigm measures, and social exchange perspective measures.

Table 1. Test of Comparison of Caregiver Subjective and Objective Burden Measures, Caregiver and Care Recipient Demographics, Life Stress Paradigm and Social Exchange Measures for Care Recipients with and without Depressive Symptoms, National Long Term Care Survey, 2004

<table>
<thead>
<tr>
<th></th>
<th>No Depressive Symptoms (n=961)</th>
<th>Depressive Symptoms (n=318)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean(SD)</td>
<td>N(%)</td>
</tr>
<tr>
<td><strong>Caregiver Burden Measures</strong></td>
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<tr>
<td>Subjective Caregiver Burden</td>
<td>1.892(2.58)</td>
<td>2.683(3.16)</td>
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<tr>
<td>Objective Caregiver Burden</td>
<td>2.868(4.35)</td>
<td>5.089(6.06)</td>
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<td><strong>Care Recipient Demographics</strong></td>
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<tr>
<td>Age of Care Recipient</td>
<td>81.716(8.97)</td>
<td>80.142(9.14)</td>
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<tr>
<td>Sex of Care Recipient</td>
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</tr>
<tr>
<td>Male</td>
<td>332(34.55)</td>
<td>93(29.25)</td>
</tr>
<tr>
<td>Female</td>
<td>629(65.45)</td>
<td>225(70.75)</td>
</tr>
<tr>
<td>Race of Care Recipient</td>
<td>No Depressive Symptoms (n=961)</td>
<td>Depressive Symptoms (n=318)</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------</td>
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</tr>
<tr>
<td>White</td>
<td>Mean(SD) 877(91.26)</td>
<td>Mean(SD) 295(92.77)</td>
</tr>
<tr>
<td>Black</td>
<td>84(8.74)</td>
<td>23(7.23)</td>
</tr>
<tr>
<td>Education of Care Recipient</td>
<td>8.016(3.48)</td>
<td>7.308(3.38)</td>
</tr>
<tr>
<td>Caregiver Demographics</td>
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<tr>
<td>Sex of Caregiver</td>
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</tr>
<tr>
<td>Male</td>
<td>338(35.17)</td>
<td>121(38.05)</td>
</tr>
<tr>
<td>Female</td>
<td>623(64.83)</td>
<td>197(61.95)</td>
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<tr>
<td>Education of Caregiver</td>
<td>9.745(3.14)</td>
<td>9.392(3.07)</td>
</tr>
<tr>
<td>Relationship to the Care Recipient</td>
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<tr>
<td>Spouse</td>
<td>337(35.07)</td>
<td>122(38.36)</td>
</tr>
<tr>
<td>Son/Daughter</td>
<td>461(47.97)</td>
<td>154(48.43)</td>
</tr>
<tr>
<td>Brother/Sister</td>
<td>38(3.95)</td>
<td>11(3.46)</td>
</tr>
<tr>
<td>All Other Relationships</td>
<td>125(13.01)</td>
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<tr>
<td>Functional Limitations of Care Recipient</td>
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<tr>
<td>Number of ADLs</td>
<td>.945(1.51)</td>
<td>1.273(1.67)</td>
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<tr>
<td>Number of IADLs</td>
<td>4.703(2.20)</td>
<td>4.252(2.17)</td>
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<td>Self-Rated Health Score</td>
<td>2.558(0.85)</td>
<td>2.305(0.89)</td>
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<td>Life Stress Paradigm Measures</td>
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<tr>
<td>Social Contact</td>
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<tr>
<td>Frequency of Contact with Family</td>
<td>6.162(2.91)</td>
<td>6.274(2.94)</td>
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<tr>
<td>Frequency of Contact with Friends</td>
<td>4.195(2.95)</td>
<td>3.939(2.92)</td>
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Table 1. Test of Comparison of Caregiver Subjective and Objective Burden Measures, Caregiver and Care Recipient Demographics, Life Stress Paradigm and Social Exchange Measures for Care Recipients with and without Depressive Symptoms, National Long Term Care Survey, 2004 (continued)

<table>
<thead>
<tr>
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<th>No Depressive Symptoms (n=961)</th>
<th>Depressive Symptoms (n=318)</th>
<th>p-value</th>
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<tr>
<td></td>
<td>Mean(SD)</td>
<td>N(%)</td>
<td>Mean(SD)</td>
</tr>
<tr>
<td><strong>Recent Civic Organization Participation</strong></td>
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<tr>
<td>Has not recently participated</td>
<td>807(83.98)</td>
<td>269(84.59)</td>
<td>.794</td>
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<tr>
<td>Has recent participation</td>
<td>154(16.02)</td>
<td>49(15.41)</td>
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<tr>
<td>** Recent Church Attendance**</td>
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<tr>
<td>Has not recently attended church</td>
<td>566(58.90)</td>
<td>182(57.23)</td>
<td>.602</td>
</tr>
<tr>
<td>Has recently attended church</td>
<td>395(41.10)</td>
<td>136(42.77)</td>
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<tr>
<td><strong>SPMSQ score</strong></td>
<td>8.762(1.66)</td>
<td>8.277(1.98)</td>
<td>.000</td>
</tr>
<tr>
<td><strong>Social Exchange Perspective Measures</strong></td>
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<tr>
<td>Physical Exchange Good</td>
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</tr>
<tr>
<td>No</td>
<td>306(31.84)</td>
<td>91(28.62)</td>
<td>.281</td>
</tr>
<tr>
<td>Yes</td>
<td>655(68.16)</td>
<td>227(71.38)</td>
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<tr>
<td>Social Exchange Good</td>
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<td></td>
</tr>
<tr>
<td>No</td>
<td>188(19.56)</td>
<td>46(14.47)</td>
<td>.381</td>
</tr>
<tr>
<td>Yes</td>
<td>773(80.44)</td>
<td>272(85.53)</td>
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<tr>
<td>Psychological Exchange Good</td>
<td></td>
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<tr>
<td>No</td>
<td>114(11.86)</td>
<td>39(12.26)</td>
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<td>Yes</td>
<td>847(88.14)</td>
<td>279(87.74)</td>
<td></td>
</tr>
<tr>
<td><strong>N=1279</strong></td>
<td></td>
<td></td>
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</table>
Table 1 compares means and proportions for all covariates in this study for care recipients with and without depressive symptoms. There was a statistically significant difference in the means for both subjective and objective caregiver burden ($p = .000$) for care recipients with and without depressive symptoms. Caregivers of care recipients who did not report depressive symptoms, on average, reported lower levels of subjective burden than caregivers of care recipients who did. Specifically, the average subjective burden score for caregivers of care recipients without depressive symptoms was 1.892 ($\pm 2.58$), compared to 2.683 ($\pm 3.16$) for caregivers of care recipients who reported depressive symptoms. Caregivers of care recipients who did not report depressive symptoms, on average, also reported significantly lower levels of objective burden than caregivers of care recipients who did report depressive symptoms. The average objective burden score for caregivers of care recipients without depressive symptoms was 2.868 ($\pm 4.35$). For caregivers of care recipients with depressive symptoms, the average objective burden score was 5.089 ($\pm 6.06$). Care recipients who did not report depressive symptoms were also significantly older (81.72 ($\pm 8.97$) vs. 80.14 ($\pm 9.14$) years old), more educated ($12^{\text{th}}$ grade with no diploma vs. $11^{\text{th}}$ grade), reported fewer ADLs (.95 ($\pm 1.51$) vs. 1.27 ($\pm 1.67$) on a 7-point scale) and more IADLs (4.70 ($\pm 2.20$) vs. 4.25 ($\pm 2.17$) on a 7-point scale), and had better cognitive functioning (8.76 ($\pm 1.66$) vs. 8.28 ($\pm 1.98$) on the 10-point SPMSQ scale) than care recipients who did report depressive symptoms.

There was no statistical difference in the sex of the caregiver and care recipient, race of the care recipient, relationship of the caregiver to the care recipient, the education level of the caregiver, the frequency of recent contact with family and friends, recent
participation in civic organization and religious service attendance, and physical, social, and psychological exchange for care recipients with and without depressive symptoms.

Table 2 presents the correlation between subjective and objective caregiver burden and covariates important to the social exchange perspective and the life stress paradigm.
## Table 2. Correlations between Subjective and Objective Caregiver Burden, Life Stress Paradigm Measures, and Social Exchange Theory Measures: National Long Term Care Survey, 2004

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
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<td>1.</td>
<td>Subjective Caregiver Burden Score</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2.</td>
<td>Objective Caregiver Burden Score</td>
<td>.563**</td>
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</tr>
<tr>
<td>3.</td>
<td>Frequency of Contact with Family</td>
<td>-.038</td>
<td>-.079**</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4.</td>
<td>Frequency of Contact with Friends</td>
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<td>-.123**</td>
<td>.232**</td>
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<tr>
<td>5.</td>
<td>Recent Organization Participation</td>
<td>-.042</td>
<td>.006</td>
<td>.006</td>
<td>.226**</td>
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<td></td>
</tr>
<tr>
<td>6.</td>
<td>Recent Religious Service Attendance</td>
<td>-.070*</td>
<td>-.041</td>
<td>.054</td>
<td>.211**</td>
<td>.290**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>SPMSQ Score</td>
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<td>-.309**</td>
<td>.105**</td>
<td>.167**</td>
<td>.086**</td>
<td>.046</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Physical Exchange Good</td>
<td>-.125**</td>
<td>-.067*</td>
<td>.035</td>
<td>.084**</td>
<td>.065*</td>
<td>.068*</td>
<td>.125**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Social Exchange Good</td>
<td>-.069*</td>
<td>-.024</td>
<td>.039</td>
<td>.004</td>
<td>.045</td>
<td>.032</td>
<td>.022</td>
<td>.414**</td>
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<tr>
<td>10.</td>
<td>Psychological Exchange Good</td>
<td>-.061*</td>
<td>-.057*</td>
<td>.084**</td>
<td>.054</td>
<td>.005</td>
<td>.038</td>
<td>.021</td>
<td>.334**</td>
<td>.561**</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)
The subjective caregiver burden score was positively correlated, at the .01 level, to the objective burden score. Thus, greater levels of subjective burden were associated with greater levels of objective caregiver burden, which is congruent with findings of Montgomery and colleagues (1985). In addition, subjective caregiver burden was negatively correlated, at the .01 level of significance, with recent contact with friends, SPMSQ score, and physical exchange good. The direction of the correlations for SPMSQ score and recent contact with friends was as expected. Based on the deterioration model of the life stress paradigm (Figure 3.3), increased levels of burden should be associated with decreased cognitive functioning and contact with family and friends of the care recipient. Alternately, the correlation of subjective burden with physical, social, and psychological exchange goods were not as expected. According to the social exchange perspective, increased caregiver burden should be associated with increased physical, social, and psychological exchange by the care recipient. However, greater caregiver subjective burden was significantly associated with a decrease in physical, social, psychological exchange goods. Subjective caregiver burden was also negatively correlated, at the .05 level, with recent religious service attendance, social and psychological exchange goods. However, the direction of the correlation for recent religious service attendance was as expected based on the deterioration model of the life stress paradigm.

The objective burden score was negatively correlated, at the .01 level, with recent contact with family and friends, and the SPMSQ score, which was expected. Objective burden was negatively correlated, at the .05 level, with physical and psychological
exchange goods, which was not expected. It is expected that greater levels of objective burden would be associated with greater levels of exchange by the care recipient.

**Subjective Burden, Objective Burden, and Depression**

In this section, the research objectives, and the associated statistical analyses concerning the relationship between subjective and objective caregiver burden and care recipient depressive symptoms will be discussed.

The first research objective of this project was to investigate which predictor variable (subjective or objective burden) has a greater effect on the depressive symptomology of a disabled older adult care recipient. Initially, a logistic regression analysis of care recipient depressive symptoms regressed on subjective and objective care burden and the descriptive covariates produced a significant and negative coefficient for the relationship between objective burden and depression when socio-demographic characteristics were controlled (OR = 1.080, p = .000). However, the relationship between subjective and depression was far from significant (OR = .998, p = .941), which does not support the hypothesis 1 which states that subjective and objective burden will have an effect on the depressive level of the care recipient.\(^5\)

Table 3, model 1 presents the logistic regression analysis of caregiver subjective and objective caregiver burden, socio-demographic characteristics, and functional limitations as predictors of care recipient depressive symptoms.\(^5\) In models 2 and 3 the interaction of subjective and objective burden and race are presented.

---

\(^5\) In all tables, model 1 presents the main regression, while further models show different interactions.
Table 3. Odds Ratio of Care Recipient Depression Score by Caregiver Subjective Burden, Objective Burden, Socio-demographic Characteristics, Functional Limitations, and Race: National Long Term Care Survey, 2004 (N=1279)

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective Caregiver Burden Score</td>
<td>.998</td>
<td>.996</td>
<td>.998</td>
</tr>
<tr>
<td>Objective Caregiver Burden Score</td>
<td>1.080**</td>
<td>1.080**</td>
<td>1.074**</td>
</tr>
<tr>
<td>Age of Care Recipient</td>
<td>.989</td>
<td>.989</td>
<td>.989</td>
</tr>
<tr>
<td>Sex of Care Recipient (male = reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.396†</td>
<td>1.398†</td>
<td>1.396†</td>
</tr>
<tr>
<td>Race of the Care Recipient (non-black = reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>.637†</td>
<td>.601</td>
<td>.467*</td>
</tr>
<tr>
<td>Education of Care Recipient</td>
<td>.943*</td>
<td>.944*</td>
<td>.944*</td>
</tr>
<tr>
<td>Sex of Caregiver (male = reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.925</td>
<td>.927</td>
<td>.927</td>
</tr>
<tr>
<td>Education of Caregiver</td>
<td>.998</td>
<td>.998</td>
<td>.996</td>
</tr>
<tr>
<td>Relationship to the Care Recipient (spouse = reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Son/Daughter</td>
<td>.910</td>
<td>.912</td>
<td>.920</td>
</tr>
<tr>
<td>Brother/Sister</td>
<td>.875</td>
<td>.875</td>
<td>.887</td>
</tr>
<tr>
<td>All Other Relationships</td>
<td>.778</td>
<td>.780</td>
<td>.789</td>
</tr>
<tr>
<td>Number of ADLs</td>
<td>1.056</td>
<td>1.056</td>
<td>1.057</td>
</tr>
<tr>
<td>Number of IADLs</td>
<td>.982</td>
<td>.982</td>
<td>.982</td>
</tr>
<tr>
<td>Self-Rated Health Score</td>
<td>.791**</td>
<td>.791**</td>
<td>.788**</td>
</tr>
<tr>
<td>Black * Subjective Burden</td>
<td></td>
<td>1.022</td>
<td></td>
</tr>
<tr>
<td>Black * Objective Burden</td>
<td></td>
<td></td>
<td>1.059</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>.092</td>
<td>.092</td>
<td>.094</td>
</tr>
</tbody>
</table>
**. Coefficient is significant at the 0.01 level (2-tailed)
*. Coefficient is significant at the 0.05 level (2-tailed)
†. Coefficient is significant at the 0.1 level (2-tailed)

In model 1, objective caregiver burden score and care recipient depressive level has a significant and positive relationship (p < .01). When all other variables were controlled for, every one-unit increase in the objective burden score of the caregiver results in an 8 percent \(((1.080 - 1) \times 100 = 8)\) increase in the odds of the care recipient reporting a depressive symptom. There was a significant (p < .01) and negative relationship between self-rated health score and care recipient depressive symptoms. Care recipients who reported better health were less likely to report any depressive symptoms. Education of the care recipient also had a significant (p < .05) and negative relationship with depressive symptoms. When all other variables were controlled, every one-unit increase in education of the care recipient corresponded in a 5.7 percent \(((0.943 - 1) \times 100 = 5.7)\) decrease in the odds of the care recipient reporting any depressive symptoms.

The trend relationship (i.e., coefficients significant at the 0.10 level in a two-tailed test) between race and depression is also worth noting. Although the relationship between race and depressive symptoms is not statistically significant in a two-tailed test with \(\alpha = .05\), it is expected that in a one-tailed test the relationship would be significant in the expected direction. Blacks would be 36.3 percent less likely to report depressive symptoms than all other races.

The second research objective was to investigate whether the effects of caregiver subjective and objective burden on care recipient depression are conditional on race. In table 3, models 2 and 3, the interaction effects of subjective and objective burden and race are presented.\textsuperscript{xii}
In model 2, the interaction effects of care recipient race and subjective burden were tested. Although the interaction term of race by subjective burden was not significant, the objective caregiver burden score maintained a positive relationship with depressive symptoms. Education and the self-rated health score of the care recipient maintained a negative relationship with care recipient depressive symptoms, as well.

In model 3, the interaction effects of care recipient race and objective burden was measured. As in the models before, objective burden was associated with an increased likelihood of reporting depressive symptoms when race was held at reference (OR = 1.074, p < .01). Alternately, being black was associated with a decreased likelihood of the care recipient reporting any depressive symptoms when objective burden was held at the average (OR = .467, p < .05). This finding supports past literature that states African American, in general, were less likely than other races to report depressive symptoms (Keyes, Barnes, and Bates 2011). There was no difference in the association between objective burden score and depressive level by race (i.e., the interaction between race and objective burden was not significant).

Social Exchange Perspective

In this section, the research objectives, and the associated statistical analyses concerning the relationship between subjective and objective caregiver burden and care recipient depression (as outlined by the social exchange perspective) will be discussed. Table 4 follows with logistic regression analyses of care recipient depression score by subjective and objective burden and social exchange perspective measures.

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective Caregiver Burden Score</td>
<td>1.006</td>
<td>1.006</td>
<td>1.010</td>
<td>1.009</td>
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<tr>
<td>Objective Caregiver Burden Score</td>
<td>1.078**</td>
<td>1.077**</td>
<td>1.077**</td>
<td>1.079**</td>
</tr>
<tr>
<td>Age of Care Recipient</td>
<td>.991</td>
<td>.991</td>
<td>.991</td>
<td>.991</td>
</tr>
<tr>
<td>Sex of Care Recipient (male = reference)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.991</td>
<td>.991</td>
<td>.991</td>
<td>.991</td>
</tr>
<tr>
<td>Race of the Care Recipient (non-black = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>.627†</td>
<td>.866</td>
<td>2.106</td>
<td>1.882</td>
</tr>
<tr>
<td>Education of Care Recipient</td>
<td>.944*</td>
<td>.944*</td>
<td>.943**</td>
<td>.944*</td>
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<tr>
<td>Sex of Caregiver (male = reference)</td>
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<td></td>
<td></td>
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<tr>
<td>Female</td>
<td>.925</td>
<td>.923</td>
<td>.919</td>
<td>.918</td>
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<td>Education of Caregiver</td>
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<td>1.001</td>
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<td>Son/Daughter</td>
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<td>.964</td>
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<td>Brother/Sister</td>
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<td>.93</td>
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<td>.900</td>
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<td>All Other Relationships</td>
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<td>.866</td>
<td>.864</td>
<td>.869</td>
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<tr>
<td>Number of ADLs</td>
<td>1.062</td>
<td>1.063</td>
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<td>1.060</td>
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<td>Number of IADLs</td>
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<td>.974</td>
<td>.974</td>
<td>.975</td>
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<tr>
<td>Self-Rated Health Score</td>
<td>.786**</td>
<td>.789**</td>
<td>.788**</td>
<td>.787**</td>
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</table>
Table 4. Odds Ratio of Care Recipient Depression Score Regressed on Caregiver Subjective Burden, Objective Burden, Socio-demographic Characteristics, Functional Limitations, Social Exchange Perspective Measures, and Race: National Long Term Care Survey, 2004 (N=1279) (continued)

<table>
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<tr>
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<th>Model 3</th>
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</tr>
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<td>1.265</td>
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<td>1.567†</td>
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<tr>
<td>Black *Social Exchange Good</td>
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<td></td>
</tr>
<tr>
<td>Black *Psychological Exchange Good</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>.100</td>
<td>.101</td>
<td>.105</td>
<td>.103</td>
</tr>
</tbody>
</table>

**. Coefficient is significant at the 0.01 level (2-tailed)
*. Coefficient is significant at the 0.05 level (2-tailed)
†. Coefficient is significant at the 0.1 level (2-tailed)
The third research objective of this project was to evaluate to what extent physical, social, and psychological exchange goods effect care recipient depression net of caregiver burden. Table 4, model 1 presents the results of this analysis. Greater objective caregiver burden scores were associated with an increased likelihood of the care recipient reporting depressive symptoms (OR = 1.078, p < .01). Care recipient education and self-rated health score both had a negative relationship with depressive symptoms (OR = .944, p < .05; OR = .786, p < .01, respectively). In other words, care recipients who were more educated and reported being in good health were less likely to report depressive symptoms. For social exchange perspective measures, only social exchange good had a marginally significant relationship with depressive symptoms (OR = 1.570, p < .10). However, this relationship was not in the expected direction. Providing helpful company to caregiver was associated with an increased likelihood of the care recipient reporting depressive symptoms.

Another objective of this study was to examine to what extent physical, social, and psychological exchange goods effect care recipient depression net of caregiver burden, as indicated by the social exchange perspective, are conditional on the race of the care recipient. Table 4, models 2, 3, and 4 present the result of these analyses.

In model 2, the interaction effects of race and physical exchange good were measured. As in the previous model, greater objective caregiver burden score was associated with a greater likelihood of the care recipient reporting depressive symptoms (OR = 1.077, p < .01). Also, care recipients who were more educated and report being in good health were less likely to report depressive symptoms (OR = .944, p < .05; OR = .789, p < .01, respectively). No social exchange measures were significant.
In model 3, the interaction effects of race and social exchange good were measured. There was little changed in the main variables of the analysis from previous models. Once again, greater objective caregiver burden was associated with an increased likelihood of the care recipient depressive symptoms reporting (OR = 1.077, p < .01). Care recipient education and self-rated health score again had a negative relationship with depressive symptoms (OR = .943, p < .05; OR = .788, p < .01, respectively). Care recipients who were educated and reported better health were less likely than care recipients who were not educated and reported poorer health to report depressive symptoms. Exchanging helpful company with the caregiver (the main effect of social exchange goods) was again associated with an increased likelihood of the care recipient reporting depressive symptoms (OR = 1.754, p < .05). Among non-black care recipients, those who provided helpful company to the caregiver (the social exchange good) had a 75.4 percent increase in the odds of reporting depressive symptoms than care recipients who did not provide helpful company to the caregiver. This is a surprising finding since the theoretical perspective postulates that exchanging goods should decrease the odds of the care recipient reporting depressive symptoms.

For a more in-depth investigation of the unexpected interaction effects of race on social exchange goods, it is best to look at predicted probabilities. Table 5 presents the average predicted probabilities of depression for interaction between race and social exchange goods.
Table 5. Average Predicted Probabilities of Care Recipient Depression for Interaction between Race and Social Exchange Goods: National Long Term Care Survey, 2004 (N=1279)

<table>
<thead>
<tr>
<th>Social Good Exchanged?</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>0.40</td>
<td>0.18</td>
</tr>
<tr>
<td>Non-black</td>
<td>0.18</td>
<td>0.26</td>
</tr>
</tbody>
</table>

For blacks, having exchanged the social good of helpful company with his/her caregiver substantially reduced the predicted probability of reporting depressive symptoms for the care recipient (0.18 vs. 0.40). Whereas for non-blacks, having exchanged the social good of helpful company with his/her caregiver slightly increases the predicted probability of reporting any depressive symptoms for the care recipient (0.18 vs. 0.26). This is an interesting finding. It suggests that reasons above and beyond an unbalanced relationship cause depression for non-black informal care recipients. Among care recipients who did not exchange social goods with their caregivers, blacks were more likely to be depressed than non-blacks (0.40 vs. 0.18). Among care recipients who did exchange social goods, blacks were less likely to be depressed than non-blacks (0.18 vs. 0.26).

In model 4 of Table 4, the interaction effects of race and psychological exchange good were measured. The model produced results similar to the three previous models. Care recipients who provide helpful company to the caregiver had a 61.4 percent increase in the odds of reporting depressive symptoms than care recipients who do not provide helpful company to their caregiver. The interaction of race and psychological exchange goods, however, was not significant.
In addition, the researcher considered how the inclusion of the social exchange measures influenced the estimate of caregiver burden on care recipient depression. Such that, caregiver burden mediates the relationship between the exchange of goods and the depression of the care recipient. Thus increased caregiver burden signifies an unbalanced exchange on the part of the care recipient which leads to care recipient depression. In an OLS regression analysis of social, psychological, physical exchange goods as predictors of subjective burden (not shown), only social exchange good had a negative trend relationship with subjective caregiver burden when descriptive covariates and functional limitations were controlled (p < .10). In an OLS regression analysis of social, psychological, physical exchange goods as predictors of objective caregiver burden (not shown), none of the exchange measures had a significant association with caregiver burden. In general, caregiver burden did not mediate the relationship between exchange goods and depressive level of the care recipient.

Life Stress Paradigm

In this section, the research objectives, and associated statistical analyses, concerning the relationship between subjective and objective caregiver burden and care recipient depression as outlined by the life stress paradigm will be discussed. The fifth research objective of this project was to evaluate to what extent social and psychological resources mediate the effect of caregiver burden on care recipient depression. Table 7 presents the results of this analysis.

Prior to the construction of table 7, each of the life stress paradigm measures were regressed on subjective and objective caregiver burden in a series of OLS and logistic regression analyses. In order to show mediating effects, possible mediators (i.e., the life stress paradigm measures) must have a significant relationship with both the predictor
variable (i.e., subjective and objective caregiver burden) and the outcome variable (i.e., care recipient depressive symptoms) (Preacher et al. 2007). Table 6 follows with the regression estimates of subjective and objective caregiver burden as predictors of the life stress paradigm measures.

<table>
<thead>
<tr>
<th></th>
<th>Recent Family Contact&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Recent Contact with Friends&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Organization Participation&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Religious Service Attendance&lt;sup&gt;2&lt;/sup&gt;</th>
<th>SPMSQ Score&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective Caregiver Burden</td>
<td>.028</td>
<td>-.039</td>
<td>.964</td>
<td>.976</td>
<td>.062*</td>
</tr>
<tr>
<td>Objective Caregiver Burden</td>
<td>-.045</td>
<td>-.026</td>
<td>1.050*</td>
<td>.996</td>
<td>-.274**</td>
</tr>
<tr>
<td>Age of the Care Recipient</td>
<td>-.013</td>
<td>-.048</td>
<td>.986</td>
<td>.994</td>
<td>-.144**</td>
</tr>
<tr>
<td>Sex of the Care Recipient (male = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race of the Care Recipient (non-black = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>.039</td>
<td>.109**</td>
<td>.440*</td>
<td>2.489**</td>
<td>-.076**</td>
</tr>
<tr>
<td>Education of the Care Recipient</td>
<td>-.023</td>
<td>.019</td>
<td>1.082**</td>
<td>1.004</td>
<td>.154**</td>
</tr>
<tr>
<td>Sex of the Caregiver (male = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.044</td>
<td>-.033</td>
<td>.806</td>
<td>1.255</td>
<td>.034</td>
</tr>
<tr>
<td>Education of the Caregiver</td>
<td>-.031</td>
<td>.013</td>
<td>1.003</td>
<td>.998</td>
<td>.005</td>
</tr>
<tr>
<td>Relationship to the Caregiver (spouse = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Son/Daughter</td>
<td>.082*</td>
<td>-.007</td>
<td>.800</td>
<td>.756†</td>
<td>.024</td>
</tr>
<tr>
<td>Brother/Sister</td>
<td>-.002</td>
<td>-.034</td>
<td>.699</td>
<td>.831</td>
<td>-.058*</td>
</tr>
<tr>
<td>All Other Relationships</td>
<td>-.150**</td>
<td>.133**</td>
<td>.543†</td>
<td>.787</td>
<td>.001</td>
</tr>
<tr>
<td>Number of ADLs</td>
<td>.012</td>
<td>-.036</td>
<td>.930</td>
<td>.977</td>
<td>-.031</td>
</tr>
<tr>
<td>Number of IADLs</td>
<td>.109**</td>
<td>.080**</td>
<td>1.075</td>
<td>1.025</td>
<td>.220**</td>
</tr>
</tbody>
</table>
Table 6. Subjective Burden, Objective Burden, Socio-demographic Characteristics, and Functional Limitations as Predictors of Life Stress Paradigm Mediators: National Long Term Care Survey, 2004 (N=1279) (continued)

<table>
<thead>
<tr>
<th></th>
<th>Recent Family Contact$^1$</th>
<th>Recent Contact with Friends$^1$</th>
<th>Organization Participation$^2$</th>
<th>Religious Service Attendance$^2$</th>
<th>SPMSQ Score$^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-rated Health Score</td>
<td>-.059*</td>
<td>.011</td>
<td>1.189</td>
<td>1.242**</td>
<td>-.017</td>
</tr>
<tr>
<td>Contact with Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact with Friends</td>
<td>.221**</td>
<td></td>
<td>1.220**</td>
<td>1.101**</td>
<td>.073</td>
</tr>
<tr>
<td>Recent Civic Organization Participation (has not recently participated = reference) Has recently participated</td>
<td>-.045</td>
<td>.171**</td>
<td></td>
<td>4.474**</td>
<td>.011</td>
</tr>
<tr>
<td>Recent Religious Service Attendance (has not recently attended church = reference) Has recently attended church</td>
<td>.016</td>
<td>.116**</td>
<td>4.581**</td>
<td></td>
<td>-.008</td>
</tr>
<tr>
<td>SPMSQ Score</td>
<td>.045</td>
<td>.078**</td>
<td>1.019</td>
<td>.989</td>
<td></td>
</tr>
<tr>
<td>Goodness of Fit Measure$^3$</td>
<td>.123</td>
<td>.179</td>
<td>.254</td>
<td>.170</td>
<td>.236</td>
</tr>
</tbody>
</table>

$^1$. Standardized coefficients for OLS

$^2$. Results are based on logit model

$^3$. Nagelkerke R-squared value reported for logit models and Adjusted R-squared value reported for OLS models

**. Coefficient is significant at the 0.01 level (2-tailed)

*. Coefficient is significant at the 0.05 level (2-tailed)

†. Coefficient is significant at the 0.1 level (2-tailed)
For subjective burden, only cognitive functioning (i.e., SPMSQ score) had a significant relationship ($B = .062, p < .05$) when descriptive covariates and other mediators were controlled. Said differently, increased subjective caregiver burden was associated with increased cognitive functioning of the care recipient. On the other hand, increased objective caregiver burden was associated with decreased cognitive functioning, when covariates were controlled ($B = -.274, p < .01$). Recent participation in civic organizations was associated with increased objective caregiver burden score ($OR = 1.050, p < .05$). Recent contact with family and friends and recent religious service attendance appeared not to function as mediating variables in the relationship between caregiver burden and care recipient depression.

Table 7 reports regression estimates of social and psychological resources and caregiver subjective and objective burden score as predictors of care recipient depressive symptoms.
### Table 7. Logistic Regression Analysis of Caregiver Subjective and Objective Burden, Socio-demographic Characteristics, Functional Limitations, and Life Stress Paradigm Measures as Predictors of Care Recipient Depressive Symptoms, National Long Term Care Survey, 2004 (N=1279)

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE</th>
<th>OR</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective Caregiver Burden</td>
<td>.002</td>
<td>.029</td>
<td>1.002</td>
<td>.935</td>
</tr>
<tr>
<td>Objective Caregiver Burden</td>
<td>.070</td>
<td>.016</td>
<td>1.072</td>
<td>.000</td>
</tr>
<tr>
<td>Age of the Care Recipient</td>
<td>-.013</td>
<td>.009</td>
<td>.987</td>
<td>.147</td>
</tr>
<tr>
<td>Sex of the Care Recipient (male = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.297</td>
<td>.178</td>
<td>1.345</td>
<td>.095</td>
</tr>
<tr>
<td>Race of the Care Recipient (non-black = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>-.536</td>
<td>.265</td>
<td>.585</td>
<td>.043</td>
</tr>
<tr>
<td>Education of the Care Recipient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-.052</td>
<td>.023</td>
<td>.949</td>
<td>.024</td>
<td></td>
</tr>
<tr>
<td>Sex of the Caregiver (male = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>-.081</td>
<td>.160</td>
<td>.922</td>
<td>.611</td>
</tr>
<tr>
<td>Education of the Caregiver</td>
<td>-.001</td>
<td>.025</td>
<td>.999</td>
<td>.971</td>
</tr>
<tr>
<td>Relationship to the Caregiver (spouse = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Son/Daughter</td>
<td>-.078</td>
<td>.187</td>
<td>.925</td>
<td>.675</td>
</tr>
<tr>
<td>Brother/Sister</td>
<td>-.170</td>
<td>.380</td>
<td>.844</td>
<td>.655</td>
</tr>
<tr>
<td>All Other Relationships</td>
<td>-.211</td>
<td>.263</td>
<td>.810</td>
<td>.423</td>
</tr>
<tr>
<td>Number of ADLs</td>
<td>.051</td>
<td>.047</td>
<td>1.053</td>
<td>.279</td>
</tr>
<tr>
<td>Number of IADLs</td>
<td>-.008</td>
<td>.037</td>
<td>.992</td>
<td>.835</td>
</tr>
<tr>
<td>Self-rated Health Score</td>
<td>-.249</td>
<td>.086</td>
<td>.780</td>
<td>.004</td>
</tr>
<tr>
<td>Contact with Family</td>
<td>.020</td>
<td>.025</td>
<td>1.021</td>
<td>.409</td>
</tr>
<tr>
<td>Contact with Friends</td>
<td>-.009</td>
<td>.026</td>
<td>.991</td>
<td>.725</td>
</tr>
<tr>
<td>Recent Civic Organization Participation (has not participated = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has recently participated</td>
<td>.018</td>
<td>.200</td>
<td>1.018</td>
<td>.929</td>
</tr>
<tr>
<td>Recent Religious Service Attendance (has not recently attended church = reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has recently attended church</td>
<td>.222</td>
<td>.146</td>
<td>1.249</td>
<td>.127</td>
</tr>
<tr>
<td>SPMSQ Score</td>
<td>-.080</td>
<td>.042</td>
<td>.923</td>
<td>.054</td>
</tr>
<tr>
<td>Pseudo R^2</td>
<td>0.099</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Table 7, care recipient depressive symptoms were regressed on subjective and objective burden and life stress paradigm measures. Race, education, and self-reported health of the care recipient were all negatively associated to care recipient depression.
Specifically, the odds of reporting depressive symptoms was 41.2 percent lower for black older adult care recipients than care recipients of other races. Furthermore, every one-unit increase in education level of the care recipient corresponded to a 5.1 percent decrease in the odds of reporting any depressive symptoms by the care recipient. Finally, a one-unit increase in self-reported health status was associated with a 22 percent decrease in the odds of reporting depressive symptoms. Care recipients who report better health were less likely to report depressive symptoms.

Objective burden had a positive relationship with care recipient depressive symptoms when life stress paradigm measures and descriptive covariates were controlled (OR = 1.072, p < .01). Every one-unit increase in objective burden score corresponded to a 7.2 percent increase in the odds of a care recipient reporting any depressive symptoms. For the life stress paradigm measures, only cognitive functioning (SPMSQ score) had a negative trend relationship with care recipient depressive symptoms (OR = .923, p < .10). Put differently, increased cognitive functioning of the care recipient was marginally associated with a decrease likelihood of that care recipient reporting depressive symptoms.

The final research objective sought to investigate whether psychological and social resources mediate the effect of caregiver burden on care recipient depression and whether any mediation effect is conditional on race. Both components of this object, testing for mediation and testing for whether any mediation effect is conditional on race, can be accomplished simultaneously with a moderated mediation analysis (Preacher et al. 2007). In general, moderated mediation models allow for an indirect effect from a
variable X to an outcome Y via an intermediate variable M to vary across different subgroups. This is similar to a standard analysis of an interaction, except that rather than testing whether a main effect varies (e.g., the effect of X on Y) one tests whether an indirect effect varies (e.g., the indirect effect of X on Y via M). In my analysis, the indirect effect of interest is the effect of caregiver burden (X) on care recipient depression (Y) via social and psychological resources (M) and I will test whether this indirect effect varies across different racial/ethnic groups of the care recipient. Table 8 follows with the conditional indirect effects of race on the relationship of caregiver burden on care recipient depression through social and psychological resources.

Table 8. Conditional Indirect Effects of Race on the Objective Burden, Cognitive Functioning, and Depressive Symptomology Mediation Pathway: National Long Term Care Survey, 2004 (N=1279)

<table>
<thead>
<tr>
<th></th>
<th>Indirect Effect</th>
<th>Standard Error</th>
<th>p-value</th>
<th>p-value of Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-black</td>
<td>0.0014</td>
<td>0.0008</td>
<td>0.0567</td>
<td>0.713</td>
</tr>
<tr>
<td>Black</td>
<td>0.0019</td>
<td>0.0011</td>
<td>0.0777</td>
<td></td>
</tr>
</tbody>
</table>

Table 8 presents the results from an analysis of the indirect effects of race on the relationship between objective burden and depressive symptoms through the mediating variable cognitive functioning. The other life stress paradigm measures (recent contact with family and friends, recent participation in civic organizations, and recent religious service attendance) did not possess significant relationships with subjective and objective burden and depressive symptoms. As such, they do not function as mediators (see Tables 6 and 7). Only SPMSQ score (i.e., cognitive functioning) had a negative trend relationship with care recipient depressive symptoms when descriptive covariates and the other possible mediators were controlled (OR = .923, p < .10). This is why cognitive functioning was the only mediator included in a Table 8. Although cognitive functioning
mediated the relationship between objective burden and care recipient depressive symptoms, this relationship was not conditional on race.
CHAPTER 6
DISCUSSION AND CONCLUSION

The purpose of this study was to systematically evaluate subjective and objective caregiver burden as a possible cause of adverse mental health for non-institutionalized older adult care recipients. Depression is a leading mental health issue that affects older adults around the world (Strine et al. 2008; Barkow et al. 2003). Although there is a great deal of research that discusses the possible causes of depression in non-institutionalized older adults, the current body of research has failed to study how the mental health of an aging care recipient can be negatively or positively affected by his/her primary informal caregiver. This study used the life stress paradigm and the social exchange perspective to investigate the relationship between caregiver subjective and objective burden and care recipient depressive symptoms. In addition, this work examined whether the racial/ethnic group of the care recipient has an effect on the relationship between caregiver burden and the depressive symptomology of the care recipient.

Subjective and Objective Burden

The first objective of this research was to test whether subjective or objective burden of a primary caregiver has a greater effect on the depressive symptomology of a care recipient. Subjective and objective burden are correlated, however, each has a distinct set of predictor correlates, indicating that the factors that cause subjective burden do not necessarily cause objective burden (Montgomery et al. 1985). Montgomery and colleagues (1985) found that caregivers who are younger and employed “have demands
that conflict with [their caregiving roles]” and are more likely to experience burden than older caregivers (Montgomery et al. 1985:22). For objective burden, the type of tasks that the caregiver must perform predicts burden levels. Thus, depending on the characteristics of the caregiver and the tasks the caregiver must perform, a caregiver can experience low levels of objective burden and high levels of subjective burden simultaneously, and vice versa. As a result, a non-directional hypothesis was proposed:

1. *Subjective and objective burden experienced by the caregiver will have an effect on the depressive symptomology of the older adult care recipient.*

In Table 3, model 1, care recipient depressive symptoms was regressed on caregiver subjective and objective burden, socio-demographic characteristics, and functional limitations as predictors of care recipient depressive symptoms. In this regression analysis, greater objective burden levels (e.g., increased time spent up at night taking care of the care recipient or dealing with a bowel or bladder accident) were associated with an increased likelihood of the care recipient reporting depressive symptoms, supporting hypothesis 1. In Table 1, a bivariate analysis showed that caregivers with higher subjective burden scores were more likely to take care of care recipients who report depressive symptoms. However, when all other variables were controlled, this relationship became non-significant. This does not provide support for hypothesis 1.

This study’s measurement of subjective burden possessed some inadequacies. The original Zarit Burden Index featured a 22-item scale; the NLTCS only had three items. This modified index asked only about financial hardship, emotional stress, and physical strain. In addition to those three measures, the original version also asked about balancing work responsibilities while caregiving, perceived support from other family members, and life satisfaction as a caregiver (Zarit, Reever, and Bach-Peterson 1980). The
Cronbach’s alpha coefficient (α=.771) of the subjective burden scale used in the NLTCS was adequate but was not the recommended α = .80. This is another indication that this scale may not have been a reliable measure of subjective burden. This is a limitation of this study.

The second research objective was to investigate whether the effects of caregiver subjective and objective burden on care recipient depression are conditional on race. Studies have shown that African Americans are less likely to report feelings of distress as a result of caregiving than their white counterparts (Dilworth-Anderson et al. 1999). In fact, 21 percent of African Americans, compared to 32 percent of whites and 35 percent of Hispanic caregivers, report that caregiving is highly stressful (National Alliance for Caregivers and AARP 2009). As a result, African American care recipients may be less like to develop depressive symptoms as a result of having a burden caregiver. The following hypothesis was proposed:

2. Caregiver subjective and objective burden is less likely to lead to depression in African American care recipients than in white care recipients.

For objective burden only, the main effect of black was associated with a decreased likelihood of the care recipient reporting any depressive symptoms. However, depressive symptoms were not conditional on the race of care recipient for both subjective and objective burden, which does not support this hypothesis (see Table 3, models 2 and 3).

The Social Exchange Perspective

The social exchange perspective views social exchange relationships, such as caregiving, as a series of costs and rewards. The caregiving relationship, however, is unique because it is characterized by imbalance. This imbalance leaves the caregiver in
control; as a result, the care recipient may try to reduce the power differential. The subjective and objective burden that the caregiver experiences is indicative of the inherent imbalance in this relationship. Greater caregiver burden signifies greater input into the exchange from the side of the caregiver, and greater relationship imbalance. Greater relationship imbalance leads to a negative emotional response to the care relationship by the individual who is most dependent, in this case, the care recipient (Molm 2003; Cook and Rice 2003). This study argues that this negative emotional response will manifest itself into depressive symptoms for the care recipient.

The care recipient may try to reciprocate the exchange of goods in efforts to reduce the imbalance of the care relationship. The care recipient may decide to exchange physical goods (e.g., help with household chores, babysitting, giving money and gifts), social goods (e.g., providing helpful company to the caregiver), and psychological goods (e.g., making the caregiver feel useful and needed) with the caregiver. This exchange of goods will reduce the negative emotional response that care recipient experiences because of the imbalance, thus reducing the level of depression that the care recipient feels. Accordingly, the following hypotheses have been derived consistent with Molm and Cook’s (1995) social exchange perspective:

3. Subjective and objective burden experienced by the caregiver will increase the depressive level of the older care recipient.

4. There will be a negative relationship among the physical, psychological, and social exchange goods that the care recipient provides to the caregiver and the care recipient’s depressive level.

In a regression analysis of care recipient depressive symptoms predicted by caregiver burden and social exchange measures (Table 4, model 1), greater objective caregiver burden was associated with an increased likelihood of the care recipient
reporting depressive symptoms (support for hypothesis 3). For the social exchange perspective measures, only social exchange goods had a marginally significant relationship with depressive symptoms. The relationship however, was not in the expected direction proposed by hypothesis 4. Care recipients who exchanged social goods were more likely than those who did not exchange social goods to report depressive symptoms.

The next objective of this research was to test the extent to which the effects of social, psychological, and physical exchange goods on depressive symptoms, net of caregiver burden, were conditional on the race of care recipient. Antonucci’s (1991) Support Bank Theory (an extension of the Social Exchange Theory) argues that the relationship between minority parents and children is characterized by life-long exchanges. Parents make early investments by caring for their children in hopes that in their old age the favor will be returned. In adulthood, children feel an obligation to return the favor in-kind by caring for their aging parent(s). As a result, minority care recipients are not likely to view the exchange relationship as unbalanced. Consequently, a negative emotional response to the exchange relationship is less likely to result, as it would if the relationship was perceived as unbalanced. Thus, African American care recipients are less likely to develop depressive symptoms from the caregiving relationship. Based on this perspective the following hypothesis was proposed:

5. **When social exchange perspective measures are considered, caregiver subjective and objective burden is less likely to lead to depression in African American care recipients than in white care recipients.**

Hypothesis 5 proposes that the exchange of physical, social, and psychological goods will vary by race. Specifically, African American older adult care recipients are less likely to
view the relationship as unbalanced compared to other races. Since the relationship is not viewed as unbalanced, African American care recipients will be less likely to exchange goods to alleviate the negative emotional reaction that comes as a result of being taken care of by a burdened caregiver. In the analyses of Table 5, we see that the exchange of psychological and physical goods did not vary by race. The exchange of social goods, however, did. According to the average predicted probabilities of care recipient depression for the interaction between race and social exchange goods (Table 5), exchanging social goods substantially reduced the predicted probability of reporting any depressive symptoms for African Americans (0.18 vs. 0.40). This was not an expected result. This suggests that African Americans care recipients do feel an obligation to exchange, at least the social good of helpful company, with their caregivers.

Among care recipients who are non-black, those who exchanged social goods with their care recipient had a higher predicted probability of reporting any depressive symptoms than those who did not exchange social goods (0.18 vs. 0.26). This again was a surprising finding. The results suggest that reasons other than an unbalanced care relationship are causing depressive symptoms for non-black care recipients. Perhaps, non-black care recipients find the inherent dependency of needing to be cared for as depressing. No matter how much they exchange goods, care recipients are still unable to completely take care of themselves and must rely on their caregivers for some form of help. This perpetual dependency may be the cause of depression for this group.

The Life Stress Paradigm

The life stress paradigm relates chronic and enduring life stressors to adverse mental health (Ensel and Lin 1991). According to the deterioration model (Figure 3.3) of
In this perspective, chronic life stressors, such as a burdened caregiver, can have a direct negative effect on the mental health of a care recipient. Moreover, life stressors can have an indirect effect on mental health by way of diminishing resources. Life stressors directly reduce the amount of the social and psychological resources that one has at his/her disposal to deal with the chronic life stressors. Recurring negative life experience, such as dealing with a burdened caregiver, becomes a chronic life stressor of the individual who is under their care. The life stressor (caregiver subjective and objective burden), in turn, has a direct and negative effect on the mental health (i.e., the depressive level) of the older adult care recipient. Additionally, caregiver subjective and objective burden, the negative life stressor, has an indirect and negative effect on the depressive level of the care recipient by negatively affecting the resources, both social and psychological, that the care recipient possesses. Finally, social resources and psychological resources work to reduce the negative effects of caregiver subjective and objective burden on the mental health of the caregiver. So, the presence of resources has a negative effect on the depressive symptomology of the care recipient. Accordingly, the following hypotheses were derived consistent with the life stress paradigm:

6. Subjective and objective burden experienced by the caregiver will increase the depressive level of the older care recipient.

7. The level of subjective and objective burden of the caregiver will decrease the amount of social and psychological resources that the care recipient possesses.

8. The social and psychological resources that the care recipient possesses will decrease the level of depression of the care recipient.

In regression estimates of caregiver subjective and objective burden as predictors of care recipient depression, greater objective burden was associated with an increased
likelihood of the care recipient reporting depressive symptoms even when life stress paradigm measures were controlled (partial support for hypothesis 6). Subjective burden was not associated with care recipient depressive symptoms; this may again be due to the inadequacy of the subjective burden measure.

To test the relationship between burden and social and psychological resources, regression analyses of subjective and objective caregiver burden as predictors of the life stress paradigm measures were produced. Only cognitive functioning (i.e., SPMSQ score) had a significant and positive relationship with subjective burden when descriptive covariates and other mediators were controlled. Put differently, increased subjective caregiver burden was associated with increased cognitive functioning of the care recipient. This is opposite of the direction proposed in hypothesis 7 in which subjective burden should decrease the cognitive functioning of the care recipient. Subjective burden was not significantly associated with any other life stress paradigm measures.

For objective burden, cognitive functioning had a significant and negative association when descriptive covariates were controlled (B= -.274, p< .01). So, increased objective caregiver burden was associated with decreased cognitive functioning; this does support hypothesis 7. Alternately, increased objective caregiver burden was associated with greater participation recent in civic organizations, which does not support hypothesis 7.

Next, I tested whether the life stress paradigm measures had an association with care recipient depressive symptoms. Only cognitive functioning had a marginally significant relationship with care recipient depressive symptoms (OR =.923, p =.054). Greater cognitive functioning of the care recipient was related to a decreased likelihood
of reporting depressive symptoms by the care recipient, providing partial support for hypothesis 8.

Finally, this research intended to investigate whether psychological and social resources mediate the effect of caregiver burden on care recipient depression and whether any mediation effects are conditional on race. The following hypothesis was proposed:

9. When life stress paradigm measures are considered, caregiver subjective and objective burden is less likely to lead to depression in African American care recipients than in white care recipients.

SPMSQ score was the only life stress paradigm measure that functioned as mediator in the relationship between burden and depressive symptoms. However, the mediating relationship was not conditional on race (see Table 7). Cognitive functioning mediated the relationship between objective burden and care recipient depressive symptoms the same for African American as it did for all other races (this does not support hypothesis 9).

Limitations

This dissertation has contributed to a clearer understanding of the association of caregiver characteristics with care recipient depression using a nationally representative sample of disabled older adults collected in 2004. However, as with all research projects, this study has limitations which I outline below.

One of the most important limitations of this study was its lack of use of longitudinal data. Cross-sectional analyses, such as this one, are vulnerable to the endogeneity critique— that is the possibility that care recipient burden (the outcome variable) caused caregiver subjective and objective burden (the main predictor variables). In addition, a cross-sectional analysis makes it difficult to distinguish which intervening
pathways of the mediation analyses are more correct (Stage, Carter, and Nora 2004). Initially, an analysis using the two most recent waves (1999 and 2004) of the NLTCS was proposed. However, a large number of the sample attrited between waves leaving a sample of only 173 care recipients from an initial 1,309 eligible respondents. This small size caused statistical analyses to be underpowered and results non-significant. To resolve the sample size issue, I opted for cross-sectional analyses using the most recent wave (2004) of the NLTCS.

Depressive symptoms were dichotomized, another limitation of this study. Ideally, a scale measure of depression, such as the DSM-IV-R or the 20-item CES-D scale, should have been used. However, the NTLCS only ask three questions to measure depressive symptoms. In addition, the majority (75.1 percent) of the sample expressed no depressive symptoms. As a result, depressive symptoms were best measured as those who report no depressive symptoms against those who reported any depressive symptoms.

Subjective caregiver burden, one of the main predictor variables in this study, failed to have a significant relationship with depressive symptoms. This may be as a result of how the subjective burden was measured. Originally, the Zarit Burden Interview was a 22-item scale (Zarit, Reever, and Bach-Peterson 1980). This study, however, features only a three-item scale which asked respondents about the emotional stress, strain, and hardship that they have experienced from being a caregiver. This may not have been enough to evaluate the complex concept of subjective burden. Also, the Cronbach’s alpha for the modified Zarit Burden Interview ($\alpha = .771$) revealed that this measure was not as reliable as the measure of objective burden ($\alpha = .814$)
Furthermore, this study required better measures of social resources. The RAND social health battery used in this study measures social contact, not social support. This survey only provided information on the frequency of social contact that the older adult care recipient had with family and friends, but does not provide information on the nature of these relationships. A more appropriate measure of social support for this group would have been the 20-item revised Social Connectedness Scale (SCS-R) (Lee et al. 2001). In addition, civic organization participation was not a good social resource measure for this sample because the vast majority of respondents (84.1 percent) had not recently participated in a civic organization. A better measurement of social embeddedness would have been the six-item Lubben Social Network Scale (Lubben 1988). These inaccurate measures of social contact and social embeddedness may be reasons why no social resource measures functioned as mediators in this study.

There were issues with the way caregiver’s age was measured in the NTLCS. The age of the primary caregiver was not asked as a single question. The care recipient was asked to list the ages of all individuals who provide them informal care (each respondent could have up to twenty caregivers). The primary caregivers were not asked their ages again in the supplemental National Informal Caregivers Survey they completed; as a result, primary caregiver could not be determined.

There were also issues with race. Although race was a central issue discussed in this research, African Americans were underrepresented in the study’s sample. African American make up 13.2 percent of the US population, however only 8.4 percent (107 out 1279 individuals) of the eligible respondents were black (US Census Bureau 2014). This may be why only a few racial effects were seen. Furthermore, there was no way to
identify the race of the caregiver in this study because the caregivers were not asked about their racial and ethnic backgrounds.

Finally, the data are relatively old. The NLTCS was last collected in 2004, 10 years ago. It can be argued that the findings from the study are obsolete; however more recent caregiving research has found similar findings. Grant and colleagues (2013) found that caregiver well-being (i.e., depressive symptoms and life satisfaction) mediated the relationship between impairment and depressive symptoms among stroke survivors using the ongoing REasons for Geographic and Racial Differences in Stroke (REGARDS) study. Internationally, Huang et al. (2012) found a relationship between caregiver burden and behavioral and psychological symptoms of dementia in the older adult Taiwanese care recipients. This is evidence that the findings of this study are still relevant and important for caregiving research.

Conclusion and Future Directions

In this dissertation, six research questions were posed to systematically evaluate subjective and objective caregiver burden as a possible cause of adverse mental health for a non-institutionalized older adult care recipient. The investigative method involved analyzing the association of subjective and objective caregiver burden level and care recipient depressive symptoms using the most recent wave of the National Long Term Care Study (NLTCS) and using both the life stress paradigm and the social exchange perspective as theoretical guides. Finally, this study investigated the relationship between caregiver subjective and objective burden, racial/ethnic backgrounds of the caregiver, and care recipient depressive symptoms.
First, the study’s results show that greater levels of objective caregiver burden were associated with an increased likelihood of the care recipient reporting depressive symptoms. Even when social exchange and life stress paradigm measures were controlled, increased objective caregiver burden was still associated with an increased likelihood of the care recipient depressive symptoms. So, despite efforts of the care recipient to cope with social and psychological resources and exchange social goods to balance the relationship, increased time and physical effort on the part of the caregiver (i.e., increased objective burden) was still associated with the increased likelihood of the care recipient reporting any depressive symptoms.

For the social exchange perspective, only social exchange goods had a nearly significant relationship with caregiver burden and care recipient depressive symptoms. However, when the conditional effects of race were considered, the effects of social exchange on depressive symptoms, net of the effects of caregiver burden, on care recipient depressive symptoms were more pronounced. Results from the study show that the average predicted probability for African American care recipients who exchange the social good of helpful company was lower than for those who do not. This suggests that African Americans care recipients do feel an obligation to at least exchange the social good of helpful company with their caregiver in efforts to bring balance to the care relationship. Because the onset of chronic disease is often earlier for African Americans, it is likely that black care recipients have been receiving informal care for an extended period of time, presumably much longer than their white counterparts (Hill, Ross, and Angel 2005). In addition, African American caregivers, on average, provide help with more ADLs than caregivers of other races (Alzheimer’s Association 2011). As a result of
the increased need and dependency of the care recipients, these individuals may feel an obligation to bring balance to the relationship. It is also likely that these individuals are unable to exchange other goods (such as money, gifts, or help with household duties) because of their disability and low income, so they feel that they must do what they can (i.e., provide helpful company to the care recipient) to help bring balance to the care relationship.

Alternately, among non-black care recipients, individuals who exchanged social goods with their care recipient had a higher predicted probability of reporting any depressive symptoms than those who did not exchange social goods. This suggests that reasons other than an unbalanced care relationship are causing depressive symptoms in this group. Perhaps being perpetually dependent on the caregiver is the cause for depression in this group. This is a very interesting finding and could be an area for future research. This research should focus on the attitudes surrounding long-term physical dependency for disabled older adult informal care recipients.

For the life stress paradigm measures, only cognitive functioning functioned as a mediator in the relationship between caregiver burden and care recipient depressive symptoms. This mediating relationship, however, was not conditional on race. Put differently, cognitive functioning mitigated the negative effect that caregiver burden had on care recipient depressive symptoms the same for blacks and non-blacks.

Only a few of the hypotheses of this dissertation were supported; however this was expected because of the use of cross-sectional data for analysis, the moderate scale reliability coefficients for the subjective burden and life stress paradigm measures, and small sample of African American care recipients. Nonetheless, this dissertation has
contributed to a clearer understanding of the association of caregiver characteristics with care recipient depression, using both the social exchange perspective and the life stress paradigm as guides. Specifically, the results show that, on average, objective caregiver burden negatively affects the mental health of an older adult care recipient, despite efforts of that care recipient to improve and cope with the care relationship. In addition, African American care recipients find exchanging helpful company with their care recipient (i.e., a social exchange good) useful in reducing the negative emotional reaction that may result from an unbalanced exchange relationship. It is likely that if this work was repeated using a representative sample, panel design, and social support measures more suitable for the older adults, more substantial results would have been found. Nevertheless, these findings have the potential to be the foundation for research that makes great strides in depression care and management, which would help to improve mental health care for older Americans who suffer from this condition.

Future research should make use of longitudinal analytic methods to investigate caregiver burden’s effects on the mental health of the older adult care recipient. This research should also make use of more appropriate measures for subjective burden, and social and psychological resources. This work should focus on what dependency means for the care recipient, and how this dependency affects the relationship between caregiver burden and care recipient depressive symptoms. In addition, future research should consider possible characteristics of the caregiver beyond burden that could potentially lead to depression in older adult care recipients. This work also highlights the need for interventions geared at the caregiver-care receiver dyad as a method to reduce the negative mental health effects that this relationship can cause its group members. This
intervention should focus on improving communication and joint problem-solving skills between care recipients and caregivers.
LIST OF REFERENCES


Drentea, Patricia, Olivio J. Clay, David L. Roth, and Mary S. Mittelman. 2006. “Predictors of Improvement in Social Support; Five-year Effects of a
Structured Intervention for Caregivers of Spouses with Alzheimer’s Disease.” *Social Science and Medicine* 63(4):957-967.


Green, Sara Eleanor. 2007. “‘We’re Tired, Not Sad’: Benefits and Burdens of Mothering a Child with Disability.” Social Science and Medicine 64:150-163.


APPENDIX A

OBJECTIVE CAREGIVER BURDEN: A MODIFIED VERSION OF THE SCREEN FOR CAREGIVER BURDERN INDEX
In the past week, on how many days did you personally have to deal with the following behavior of the [care recipient]? How many days did [he/she]:

a. Keep you up at night?
   0. No days
   1. 1-2 days
   2. 3-4 days
   3. 5 or more days

b. Repeat questions/stories?
   0. No days
   1. 1-2 days
   2. 3-4 days
   3. 5 or more days

c. Try to dress the wrong way?
   0. No days
   1. 1-2 days
   2. 3-4 days
   3. 5 or more days

d. Have a bowel or bladder accident?
   0. No days
   1. 1-2 days
   2. 3-4 days
   3. 5 or more days

e. Hide belongings and forget about them?
   0. No days
   1. 1-2 days
   2. 3-4 days
   3. 5 or more days

f. Cry easily?
   0. No days
   1. 1-2 days
   2. 3-4 days
   3. 5 or more days

g. Act depressed or downhearted?
   0. No days
   1. 1-2 days
   2. 3-4 days
   3. 5 or more days

h. Cling to you and follow you around?
   0. No days
   1. 1-2 days
   2. 3-4 days
   3. 5 or more days

i. Become restless or agitated?
   0. No days
   1. 1-2 days
2. 3-4 days
3. 5 or more days

j. Become irritated or angry?
0. No days
1. 1-2 days
2. 3-4 days
3. 5 or more days

k. Swear or use foul language?
0. No days
1. 1-2 days
2. 3-4 days
3. 5 or more days

l. Become suspicious, or believe someone is going to harm [him/her]?
0. No days
1. 1-2 days
2. 3-4 days
3. 5 or more days

m. Threaten people?
0. No days
1. 1-2 days
2. 3-4 days
3. 5 or more days

n. Show sexual behavior or interest at the wrong time/place?
0. No days
1. 1-2 days
2. 3-4 days
3. 5 or more days

o. Destroy or damage property?
0. No days
1. 1-2 days
2. 3-4 days
3. 5 or more days

Scores range from 0 to 45, with 0 representing no objective burden and 45 representing the highest level of objective burden.
APPENDIX B

SUBJECTIVE CAREGIVER BURDEN: A MODIFIED VERSION OF THE ZARIT BURDEN INTERVIEW
On a scale from 1 to 5, where 1 is not a strain at all and 5 is very much of a strain, how much of a physical strain would you say that caring for [the care recipient] is for you?

0. Not a strain at all  
1. A little straining  
2. Moderately straining  
3. Pretty straining  
4. Very much of a strain

A. Using the same scale from 1 to 5, where 1 is not at all stressful and 5 is very stressful, how emotionally stressful would you say that caring for [care recipient] is for you?

0. Not at all stressful  
1. A little stressful  
2. Moderately stressful  
3. Pretty stressful  
4. Very stressful

B. Using the same scale from 1 to 5, where 1 is no hardship at all and 5 is a great deal of hardship, how much of a financial hardship would you say that caring for [the care recipient] is for you?

0. No hardship at all  
1. A little bit of a hardship  
2. A moderate hardship  
3. Pretty much of a hardship  
4. Great deal of a hardship

Scale scores range from 0 to 12, with 0 representing no subjective burden and 12 represent high levels of subjective burden.
APPENDIX C

SCALE OF SOCIAL CONTACT: RAND SOCIAL HEALTH BATTERY
Part 1: Scale of recent contact with family.

A. Not counting relatives who live here, how many times in the past month did … see…” relatives, including children?

0. None
1. Once or twice
2. Three to five times
3. Six or ten times
4. Eleven to twenty-nine times
5. Thirty or more

B. In the past month, how often did … speak with …’s relatives, on the telephone?

0. None
1. Once or twice
2. Three to five times
3. Six to ten times
4. Eleven to twenty-nine times
5. Thirty or more

Scores range from 0 to 10, with 0 representing no contact with family and 10 representing daily contact with family.

Part 2: Scale of recent contact with friends.

A. How often in the past month did … see …’s friends?

0. None
1. Once or twice
2. Three to five times
3. Six to ten times
4. Eleven to twenty-nine times
5. Thirty or more

B. How often in the past month did … speak with…’s friends, on the telephone?

0. None
1. Once or twice
2. Three to five times
3. Six to ten times
4. Eleven to twenty-nine times
5. Thirty or more

Scores range from 0 to 10, with 0 representing no contact with friends and 10 representing daily contact with friends.

Part 3: Measures of Religious and Other Organization Participation
During the past month did you…

a. Go to a religious service?
   0. No
   1. Yes

b. Attend a meeting of civic, religious, professional, or recreational club or organization?
   0. No
   1. Yes
APPENDIX D

PSYCHOLOGICAL RESOURCES: SHORT PORTABLE MENTAL STATUS QUESTIONNAIRE (SPMSQ)
a. What is the date today?
   0. Incorrect answer
   1. Correct answer
b. What day of the week is it?
   0. Incorrect answer
   1. Correct answer
c. What is the name of this place?
   0. Incorrect answer
   1. Correct answer
d. What is your street address?
   0. Incorrect answer
   1. Correct answer
e. In what State is this?
   0. Incorrect answer
   1. Correct answer
f. How old are you?
   0. Incorrect answer
   1. Correct answer
g. When were you born?
   0. Incorrect answer
   1. Correct answer
h. Who is the President of the United States now?
   0. Incorrect answer
   1. Correct answer
i. Who was the President just before him?
   0. Incorrect answer
   1. Correct answer
j. What is your mother’s maiden name?
   0. Incorrect answer
   1. Correct answer
k. Subtract 3 from 20 and keep subtracting 3 from each number until you get all the way down.
   0. Incorrect answer
   1. Correct answer

Scores ranged from 0 to 10, where 0 represents the lowest level of cognitive functioning and 10 represents the highest level of cognitive functioning.
APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVAL FORM
DATE:        April 2, 2014

MEMORANDUM

TO:          Deborah Ejem
             Principal Investigator

FROM:        Marilyn Doss, M.A.
             Vice Chair
             UAB Institutional Review Board for Human Use (IRB)

RE:          Request for Determination—Human Subjects Research
             IRB Protocol #N140228001 – The Effects of Subjective and Objective
             Caregiver Burden on the Depressive Symptomology of a Disabled Elderly
             Care Recipient

A member of the Office of the IRB has reviewed your Application for Not Human Subjects
Research Designation for above referenced proposal.

The reviewer has determined that this proposal is not subject to FDA regulations and is
not Human Subjects Research. Note that any changes to the project should be resubmitted to the
Office of the IRB for determination.
APPENDIX F

INSTITUTIONAL REVIEW BOARD PROJECT AMENDMENT/REVISION FORM
### 1. Today's Date

<table>
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<th>Date</th>
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### 2. Principal Investigator (PI)

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<tbody>
<tr>
<td>Deborah Ejem, MA</td>
<td>tejem</td>
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<td><a href="mailto:tejem@uab.edu">tejem@uab.edu</a></td>
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#### Contact person who should receive copies of IRB correspondence (Optional)

<table>
<thead>
<tr>
<th>Name</th>
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### 3. UAB IRB Protocol Identification

#### 3.a. Protocol Number

| N140228001 |

#### 3.b. Protocol Title

The Effects of Subjective and Objective Caregiver Burden on the Depressive Symptomatology of a Disabled Elderly Care Recipient

#### 3.c. Current Status of Protocol—Check ONE box at left; provide numbers and dates where applicable

- [ ] Study has not yet begun
- [ ] In progress, open to accrual
- [ ] Enrollment temporarily suspended by sponsor
- [ ] Closed to accrual, but procedures continue as defined in the protocol (therapy, intervention, follow-up visits, etc.)
- [ ] Closed to accrual, and only data analysis continues

<table>
<thead>
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<th>Date closed:</th>
<th>Number of participants receiving interventions:</th>
<th>Number of participants in long-term follow-up only:</th>
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### 4. Types of Change

Check all types of change that apply, and describe the changes in Item 5.c. or 5.d. as applicable. To help avoid delay in IRB review, please ensure that you provide the required materials and/or information for each type of change checked.

- [ ] Protocol revision (change in the IRB-approved protocol)
  In Item 5.c., if applicable, provide sponsor's protocol version number, amendment number, update number, etc.

- [ ] Protocol amendment (addition to the IRB-approved protocol)
  In Item 5.c., if applicable, provide funding application document from sponsor, as well as sponsor's protocol version number, amendment number, update number, etc.

- [ ] Add or remove personnel
  In Item 5.c., include name, title/degree, department/division, institutional affiliation, and role(s) in research, and address whether new personnel have any conflict of interest. See "Change in Principal Investigator" in the IRB Guidebook if the principal investigator is being changed.

- [ ] Add graduate student(s) or postdoctoral fellow(s) working toward thesis, dissertation, or publication
  In Item 5.c., (a) identify these individuals by name; (b) provide the writing title of the thesis, dissertation, or publication; and (c) indicate whether or not the student's analysis differs in any way from the purpose of the research described in the IRB-approved HSP (e.g., a secondary analysis of data obtained under this HSP)

- [ ] Change in source of funding; change or add funding
  In Item 5.c., describe the change or addition in detail, include the applicable OSP proposal number(s), and provide a copy of the application as funded (or as submitted to the sponsor if pending). Note that some changes in funding may require a new IRB application.
Add or remove performance sites
In Item 5.c., identify the site and location, and describe the research-related procedures performed there. If adding site(s), attach notification of permission or IRB approval to perform research there. Also include copy of subcontract, if applicable. If this protocol includes acting as the Coordinating Center for a study, attach IRB approval from any non-UAB site added.

Add or change a genetic component or storage of samples and/or data component—this could include data submissions for Genome-Wide Association Studies (GWAS)
To assist you in revising or preparing your submission, please see the IRB Guidebook for Investigators or call the IRB office at 934-3789.

Suspend, re-open, or permanently close protocol to accrual of individuals, data, or samples (IRB approval to remain active)
In Item 5.c., indicate the action, provide applicable dates and reasons for action; attach supporting documentation.

Report being forwarded to IRB (e.g., DSBM, sponsor or other monitor)
In Item 5.c., include date and source of report, summarize findings, and indicate any recommendations.

Revise or amend consent, assent form(s)
Complete Item 5.d.

Addendum (new) consent form
Complete Item 5.d.

Add or revise recruitment materials
Complete Item 5.d.

Other (e.g., investigator brochure)
Indicate the type of change in the space below, and provide details in Item 5.c. or 5.d. as applicable.
Include a copy of all affected documents, with revisions highlighted as applicable.

5. Description and Rationale
In Item 5.a. and 5.b, check Yes or No and see instructions for Yes responses. In Item 5.c. and 5.d, describe—and explain the reason for—the change(s) noted in Item 4.

Yes ☒ No

5.a. Are any of the participants enrolled as normal, healthy controls?
If yes, describe in detail in Item 5.c. how this change will affect those participants.

Yes ☒ No

5.b. Does the change affect subject participation, such as procedures, risks, costs, location of services, etc.?
If yes, FAP-designated units complete a FAP submission. FAP-designated unit in Item 5.c.
For more details on the UAB FAP, see www.uab.edu

5.c. Protocol Changes: In the space below, briefly describe—and explain the reason for— all change(s) to the protocol.

The title of the project must be changed to “The Effects of Subjective and Objective Caregiver Burden on the Depressive Symptomology of a Disabled Older Adult Care Recipient”. This change in title is to reflect the current literature which no longer uses “elderly” when referring to individuals aged 65 years and older. The more appropriate term for this group is “older adults”. This is why the change needs to be made. Nothing else concerning this protocol needs to be changed.

5.d. Consent and Recruitment Changes: In the space below,
(a) describe all changes to IRB-approved forms or recruitment materials and the reasons for them;
(b) describe the reasons for the addition of any materials (e.g., addendum consent, recruitment); and
(c) indicate either how and when you will reconsent enrolled participants or why recomsenting is not necessary (not applicable for recruitment materials).

Also, indicate the number of forms changed or added. For new forms, provide 1 copy. For revised documents, provide 3 copies:
- a copy of the currently approved document (showing the IRB approval stamp, if applicable)
- a revised copy highlighting all proposed changes with “tracked” changes
- a revised copy for the IRB approval stamp.

Signature of Principal Investigator ___________________________ Date 4/30/2014

FOR 224
06/26/2012
FOR IRB USE ONLY

☐ Received & Noted  ☐ Approved Expedited*  ☐ To Convened IRB

Signature (Chair, Vice-Chair, Designee)  Date

Marilyn Jass  5-9-14

DOLA  4-23-14

Change to Expedited Category  Y / N / NA

*No change to IRB's previous determination of approval criteria at 45 CFR 46.111 or 21 CFR 50.111
This estimate is based off of the average hours that caregivers work per year at $10.10.

Information from the Gallup poll is based off telephone interviews of a sample of 2,805 adult (aged 18+) US residents, who provide care for at least 15 hours each week. These data were gathered between December 2010 and January 2011.

Data from the 2008 National Health Interview Survey, Provisional Summary Health Statistics for US Adults.

These estimates were gathered from National Health Interview Survey 2010.

Individuals with Alzheimer’s disease and dementia are not considered in this study.

This type of exchange relationship would be beneficial to all caregivers, regardless of color. However, this is most likely to occur in African American caregiver-care recipient dyads. American Americans become parents and grandparents at younger ages than whites (Barnett 2008). As a result, they are more likely to provide more help with care of their grandchildren.

Initially, the researcher proposed using the two most recent waves (1999 and 2004) of the NLTCS, however a large number of the sample attrited between waves leaving a sample of 173 care recipients from an initial 1,309 eligible respondents. This small size caused statistical analyses to be underpowered and results non-significant. To resolve the sample size issue, the researcher opted for cross-sectional analyses using the most recent wave (2004) of the NLTCS.

Education level was measured in the following way, “less than 1st grade” = 1; “1st, 2nd, 3rd, or 4th grade” = 2; “5th or 6th grade” = 3; “7th or 8th” = 4; “9th grade” = 5; “10th grade” = 6; “11th grade” = 7; “12th grade and no diploma” = 8; “High School Graduate Diploma or
Equivalent GED” = 9; “Some college but no degree” = 10; “Diploma or certificate from a vocational technical trade” = 11; “Associate Degree in college, Vocational” = 12; “Associate Degree in college, Academic” = 13; “Bachelor’s Degree, BA, AB, BS” = 14; “Master’s Degree, MA, MS, MEng, MEd, MSW, MBA” = 15; “Professional School Degree, MD, DDS, DVM, LLB, JD” = 16; “Doctoral Degree, PhD, EdD” = 17.

This variable originally contained 26 categories. For the study, caregiver relationship was collapsed into five categories: spouse, son/daughter (this includes son-in-law, daughter-in-law), mother/father (this includes mother-in-law and father-in-law), brother/sister (this includes brother-in-law and sister-in-law), and all other relationships (this category is comprised of other male relative, other female relative, male friend, female friend, female neighbor, employee, someone from helping organization, institution/assisted living facility, legal guardian, and someone else). The mother/father group was added to the “all other relationships” category in the analysis because there was only one respondent in the mother/father group.

Upon further investigation, the Cronbach’s alpha coefficient (α = .771) of the subjective burden scale suggested adequate, but lower than recommended, internal consistency. As a result, each item of the subjective caregiver burden scale was entered individually into the model. None of the items had a significant relationship with care recipient depression when descriptive covariates were controlled. So for simplicity, the researcher returned to the initial subjective burden scale measure, which will be used for all other analyses.

Initially race was measure in three categories. Only 35 care recipients reported their race as “other”. Since this category was comparatively smaller than the other two
categories, the “other” category was added to the “white” category. Race was measured as “black” or “non-black” in all statistical analyses.