THE EFFECTS OF CAREGIVER EMOTIONAL STRESS ON THE DEPRESSIVE SYMPTOMATOLOGY OF THE CARE RECIPIENT

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THE EFFECTS OF CAREGIVER EMOTIONAL STRESS ON THE DEPRESSIVE SYMPTOMATOLOGY OF THE CARE RECIPIENT

DEBORAH B. EJEM

MEDICAL SOCIOLOGY

ABSTRACT

Depression is a leading mental health issue effecting America’s aging population. The current body of research contends that stress, social disconnectedness, and the presence of disability are possible causes of depression. This research, on one hand, widely neglects to study caregiver emotional stress as another probable cause of depression in the elderly. This study plans to investigate caregiver emotional stress as a chronic life stressor of an elderly care recipient using the life stress paradigm as the theoretical foundation. The relationship between caregiver emotional stress and care receiver depression will be investigated using the 2004 wave of the National Long Term Care Study. The mediating effects of social and psychological resources will also be investigated using a modified version of methods developed by Baron and Kenny to produce ordinal regression estimates.

Keywords: depression, caregiver, care recipient, mediation, stressor, National Long Term Care Study
DEDICATION

I dedicate this work to my son, Noah Jeremiah. You inspire me to be successful.
ACKNOWLEDGMENTS

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CHAPTER 1
INTRODUCTION

Statement of the Research Problem

The purpose of this study is to systematically evaluate the emotional stress of a primary caregiver as a possible stressor that results in adverse mental health in the aging population. This will be done by conducting multivariate analyses of the association of caregiver stress with care recipient depression in the presence of mediating social and psychological resources using the National Long Term Care Study (NLTCS).

Depression is one of the leading mental health issues that affect America’s aging population. Although there is a great deal of research that discusses the possible causes of depression in the non-institutionalized elderly, such as disability, pain, and the absence of social support networks, the current body of research neglects to study how the mental health of an aging individual can be negatively or positively affected by mental health of the individual that they depend on the most, their primary caregiver. This is a salient issue because there are approximately 15 to 25 million informal caregivers who provide an average of 31 hours per week of unpaid help to nearly 11.7 million elderly individuals in the United States (Neavaie-Waliser et al. 2002; LaPlante, Harrington, and Kang 2002).

The relationship between a caregiver and a care receiver is a very personal one. Caregiving requires intimate body work in which the caregiver must see the care recipient in their most vulnerable element, a state which people would normally never see. However, the care recipient has no choice because they are totally dependent on their informal caregiver for their health and well-being. The caregiver also has no choice because they feel a moral obligation to provide care for their loved one. And in most cases, the caregiver has to juggle the care of his/her elderly loved ones with the
responsibilities of their immediate family members. Because of this, feelings of burden, stress, and depression may arise from both the caregiver and the care receiver. This study seeks to delve into this intimate relationship from the perspective of the elderly care receiver.

The analyses of this study are designed to test hypotheses derived from the life stress paradigm, a paradigm which has been used to relate chronic and enduring life stressors, such as negative caregiving relationships, to adverse mental health. The hypotheses predict that emotional stress of the caregiver will have a negative effect on the mental health of the care recipient. However, the presence of mediators (social and psychological resources) may reduce this negative effect (Lin and Ensel 1989).

This research has great importance in terms of its future implications for the field. To my knowledge, there has been no other research that has looked at depression and burden from the care receiver’s perspective, and also using representative data. Understanding “their side” could give us further insight in the delicate intricacies of elderly depression. By answering the research question at hand, we have to potential to make great strides in depression care and management, and can improve the quality of life for millions of elderly Americans who suffer from this condition.
CHAPTER 2

LITERATURE REVIEW

In this chapter, I examine the issue of depression in older adults, as well as the emotional stress of the caregiver. I also discuss the literature that examines the caregiver-care receiver relationship.

Depression is a leading mental health issue in the United States and is associated with impaired social functioning and health-related quality of life (Strine et al. 2008). With national projections estimating that older adults are the fastest growing population, depression is especially troublesome for this group (Navaie-Waliser, Spriggs, and Feldman 2002; Sczuufca, Menezes, and Almeida 2002). In fact, 1.9 to 2.3 percent of individuals over the age of 65 suffer from major depression (Center for Disease Control 2010). Another 8 to 16 percent have “clinically significant depressive symptoms” (Cole and Dendukuri 2003; Hybels and Blazer 2003). Yet still, another 5 million people suffer from subsyndromal depression, in which symptoms fall short of being considered major depression (Alexopoulos 2000). Because depression is such a widespread problem, a substantial amount of research is devoted to the causes of depression of the elderly.

What is Major Depressive Disorder?

According to the American Psychiatric Association DSM-IV-TR (2000:310)

Major Depressive Disorder (MDD) is 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

\[(DSM-IV-TR 2000:310)\]

For an individual’s condition to be considered MDD or clinical depression, his or her 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 \((DSM-IV-TR 2000)\).

Although the DSM has been very useful to psychologists and clinicians in diagnosing depression, sociologists and many other scientists alike, make use of the Center for Epidemiologic Studies Depression scale (CES-D) as a way to identify depressive symptoms in community surveys (Perrieria et al. 2005). Developed by Radloff (1977), the CES-D is a self-report scale consisting of 20 items geared toward adults, aged 18 years old and over, in the general population. The CES-D scale, or some variation of the scale, has also shown to be valid and reliable in a many subpopulations (Callahan and Wolinsky 1994; Dershem, Patsiorkovski, and O’Brien 1996; Perrieira et al. 2005). For example, modified versions of the CES-D have produced valid results for groups such as adolescents and elderly minorities (Perrieira et al. 2005). Because of this, the CES-D has been used in a number of national surveys; the National Long Term Care Survey is one of them (Perrieira et al. 2005; Duke University Center for Demographic Studies 2006).

Emotional stress of a caregiver is a salient issue because there are approximately 15 to 25 million Americans who provide informal care to the elderly (Neavaie-
Waliser et al. 2002). According recent estimates from the CDC (2010), 6.5 to 7.3 percent of uninstitutionalized elderly in the United States live with some form of depression. This estimate drastically increases to 13.5 percent for those who receive home healthcare, and 11.5 percent of those who live in nursing homes. Some studies on elderly depression suggest the factors such as presence of a disability, being female, perceived social isolation, social disconnectedness, pain, and bereavement may be the cause of depression in this group (Cole and Dendukuri 2003; Wrosh, Schultz, and Heckhausen 2004; Cornwell and Waite 2009; Anderson 2008; Frasure-Smith and Lespérance 2005; Jakobsson, Hallberg, and Westergren 2004). However, most of the interest in elderly depression is geared toward studying how caregiving for an elderly person can cause adverse mental and physical health. This body of research makes most use of the social exchange theory to evaluate how the burden and distress of caregiving can affect mental health (Lee, Netzer, and Coward 1995; Call et al. 1999). As such, I will briefly review the social exchange theory, as well as other ways to understand the caregiver-care receiver relationship.

Social Exchange Theory and other Approaches for Understanding Depression in Elderly

The social exchange theory makes four important assumptions:

[Individuals are] (1) dependent on one another for the things that they value, (2) people behave in ways that increase the outcomes they value and decrease outcomes they do not value, (3) people engage in ongoing, mutually contingent exchanges with specific partners over time, and (4) all outcomes obey a principle of satiation—that is, diminishing marginal utility, and increasing marginal costs.

Molm and Cook 1995:215
Caregivers may decide to enter a relationship because of the possible personal and interpersonal rewards they may receive for caring for an elderly person. However, if these rewards are not 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 receiver 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 is especially true for individuals who are responsible not only for the care of their aging parents, but also for the care of their young children (Call et al. 1999). Distress caused by the burden of caregiving can subsequently result in adverse mental health for the individuals who are obligated to provide care (Call et al. 1999; Clair et al. 1995; Pavalko and Woodbury 2000; Navaie-Waliser et al. 2002). This perspective, however, has produced largely inconclusive and inconsistent results when it comes to this relationship’s effect on the mental health of the individual who receives the care (Lee et al. 1995).

There are a handful of studies that use other methods and explanations to establish the possible causal link between caregiver characteristics and the mental health of the care receiver. Specifically, these studies look at areas such as body work, ambivalence, and negative caregiving characteristics as tentative explanations for diminished mental health of the elderly population. One such of these studies finds that body work or the “hands-on activities, handling, assessing, and manipulating” another person’s body is seen as ambivalent because it defies the “norms of body management” (Twigg et al. 2011:172). Caring for one’s own body in
terms of grooming and feeding is seen as something done personally, and not by anyone else. However, physical limitations may not allow the elderly individual to take care of their personal hygiene. Thus, the caregiver must step in and assist the care recipient with needs such as bathing, grooming hair, and brushing teeth.

Research in the area of body work finds that such an intimate relationship as providing care for an elderly individual is often seen as demeaning and disgusting for the person who is obligated to provide the care (Twigg 2011; England and Dyck 2011; Gimlin 2007). However, this research neglects to discuss this from the perspective of the individual in need of the care. This person too may find it demeaning and demoralizing to have to depend on someone for help with the most menial of tasks, tasks that years ago were very easy for them to do. They may, therefore, develop feelings of ambivalence, or contradictory positive and negative feelings, toward their caregiver (Willson, Shuey and Elder 2003). They may appreciate the help they are receiving, as well as resent the fact that they need the care. This could be a potential cause of depression and stress for the disabled elderly care recipient.

Finally, other studies find that negative caregiving characteristics such as resentfulness, discourtesy, reluctance, and criticism led to negative reactions by the care recipient (Newsom 1999). These negative reactions consequently resulted in issues with psychological well-being such as lowered self-esteem and perceived control (Newsom 1999). This study, however, does not establish that negative characteristics of the caregiver are caused solely by the caregiving relationship instead of some other intrinsic factors. Furthermore, this study, as with many others,
fails to study the stress experienced by the caregiver as a chronic life stressor of a care receiver that directly causes adverse mental health. Rather, negative characteristics of caregivers were studied only as moderators of psychological well-being (Newsom 1999). For these reasons, the following research is very important because it intends to fill a substantial gap in gerontological research by systematically studying the direct and indirect effects of caregiver emotional stress on the depression of the elderly care recipient.

In this chapter, I have examined both the issue of depression in older adults, as the emotional stress that caregiving can cause. I have also discussed social exchange theory and other approaches in an effort to understand the complex relationship between caregivers and care receivers. Although these perspectives do shed light on this stressful relationship, they all fail to study the depression of caregivers as a chronic life stressor of a care receiver that is directly related to adverse mental health. Thus, I am led to the Life Stress Paradigm. This framework provides a theoretical link between the one’s daily encounters (i.e. dealing with an emotionally stressed caregiver) to one’s health outcome (i.e. depression of the care receiver). The Life Stress Paradigm will be discussed in depth in the next chapter.
CHAPTER 3
THEORETICAL FRAMEWORK

Life Stress Paradigm

The life stress paradigm is a useful theory in evaluating the effects of depression of a caregiver on the mental health of the elderly who receives his/her care because it provides a general theoretical link between one’s daily encounters and one’s health outcome. The life stress paradigm developed by Nan Lin and Walter Ensel (1989) states that life stressors have a negative effect on one’s well-being. However, resources, both social and psychological, can mediate the effect that these life stressors have on health (Lin and Ensel 1989). That is, 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).

Negative Caregiving Relationships as a Form of Life Stressor

A life stressor is defined as “the experiential circumstances that give rise to stress” (Pearlin 1989:243). Life stressors can result from two sources, traumatic life events or recurring and enduring life problems termed as chronic strain (Pearlin 1989). The latter, and the most influential in this study involves “enduring problems, conflicts, and threats that many people face in their daily lives” (Pearlin 1989:245). One form of chronic strain is role restructuring, in which the relationships in a role set undergo change. This is a salient issue for the elderly. As these individuals age, they begin to relinquish their previous roles to individuals close to them (Roth et al. 2009). This can result in distress and subsequent negative physical and mental health conditions, such as depression, for the individuals who assume the additional role as
caregiver. An individual, who becomes depressed because of his or her roles as a caregiver, consequently suffers worst physical functioning (Roth et al. 2009). This decline in functioning can result in a decrease in the level of care received by the care recipient. This decreased level of care on a daily basis can be perceived as a chronic life strain on the elderly individual who is dependent on the care (Roth et al. 2009).

Social Support as a Mediator of Health Outcomes

Social support, which Lin and Ensel (1989:383) define as “the process by which resources in the social structure are brought to bear to meet the functional needs in routine and crisis situations,” can improve one’s health and his/her potential to counter the negative effects of life stressors (Clay et al. 2008; Drentea et al. 2006). As previously argued, intimate relationship have the potential to affect the mental health of the individuals involved in them (Lin and Ensel 1989). These intimate relationships can also have a mediating effect on the mental health of the individual who receives the support. The mediating, or intervening effect, occurs when the incorporation of these intimate relationship lessens the effect of the negative life events on mental and physical health (Lin and Ensel 1989). Seeking support from other family members, neighbors, and voluntary associations can reduce the effects of the negative caregiving relationship on the mental health of the elderly.

Psychological Resources and Chronic Life Stress

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 personal competence, locus of control, self esteem, hardiness, and mastery have a mediating effect on the mental and physical determent 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). Therefore, an individual who has high levels of personal competence, self-esteem, and mastery, and has a strong sense of personal control are better able to cope with the negative caregiving relationship that they are in, and as a result have better mental and physical health outcomes.

*Physiological Resources and Stress*

The physiological environment also has an effect on the well-being of an individual (Lin and Ensel 1989). Physiological stress such as clinically-diagnosed illnesses, and physical symptoms such as the presence of disabilities with activities of daily living (ADLs), and instrumental activities of daily living (IADLs) are said to have a negative effect on well-being. On the other hand, physiological resources, such as diet, exercise, and healthy lifestyle practices such as refraining from drugs, tobacco, and alcohol, are expected to have a positive effect on well-being (Lin and Ensel 1989).

*Church Attendance and Organization Membership as a Social Resource*

Many studies have cited the importance of membership in religious organizations in predicting mental and physical health outcomes (Drentea and Goldner 2006; Kramer et al. 2007; Krause et al. 2001; Pearce 2005; Broyles and Drenovsky 1992).
A number of these studies have 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, or coping mechanism, to help them deal with stressful life situations.

*Sex, Race, and Depression*

A wealth of research has found a causal link between socio-demographic factors and diminished mental health (Link and Phelan 1995; Roxbury 2009; Nolen-Hoeksema 2001; Beauboeuf-Lafontant 2007; Brown, Brody, and Stoneman 2000; Adler and Snibbe 2003). Specifically, it is thought the lower social position that women hold makes them more vulnerable to experience stressful life events. This, in combination with being overloaded by the demands of work and family, have led to women suffer from depression at rates twice as high as men (Link and Phelan 1995; Roxbury 2009; Nolen-Hoeksema 2001; Beauboeuf-Lafontant 2007; Brown, Brody, and Stoneman 2000).

Likewise, when it comes to race, it has been found that ethnic minorities experience depression at higher rates than their white counterparts. This is believed to be caused by the lower socioeconomic status that these groups hold which leaves them with diminished resources, both social and economical, to combat stressful life situations (Adler and Snibbe 2003). The combination of diminished resources and
low economic and social status renders this group susceptible to mental health disorders such as depression and anxiety (Adler and Snibbe 2003; Link and Phelan 1995).

*Life Stressors Negative Effect on Social and Psychological Resources*

Finally, there is 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, resources are directly affected by life stressors. The presence of life stressors diminishes the amount of resources available to an individual. Therefore, a negative caregiving relationship has a negative effect on the resources, both social and psychological, that the care recipient has. A conceptual diagram below illustrates the theoretical propositions of the Life Stress Paradigm (See Figure 1).
In this section, I use the life stress paradigm to explain caregiver emotional stress as a chronic life stressor of an elderly care recipient. First, as stated previously, recurring negative life experiences, such as dealing with a depressed caregiver, becomes a chronic life stress of the individuals who are under their care. This life stressor, in turn, has a direct and negative effect on the physical, and in this case, mental health of the elderly care recipient. Put differently, emotional stress of the caregiver positive affects the depressive symptomatology of the care recipient. Additionally, the negative life stressor (caregiver emotional stress) 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 emotional stress) on the mental health of the care giver. In other words, the presences of resources have a negative effect on the depressive symptomatology of the care recipient.
HYPOTHESES

Based on my modified version of the life stress paradigm, the following hypotheses have been devised:

1. The level of emotional stress of the caregiver will have a direct effect on the level of depression of the care recipient. Higher levels of caregiver emotional stress will be associated with higher levels of care receiver depressive symptoms.

2. The level of emotional stress of the caregiver will decrease the amount of social and psychological resources available to the care recipient.

3. The social and psychological resources available to care recipient will decrease the level of the depression of the care receiver.

Figure 2 below gives an illustration of this theoretical model.

Figure 2: Conceptual Diagram of Hypotheses.
CHAPTER 4

RESEARCH DESIGN

Data and Sampling

The researcher will use secondary analysis of the most recent wave of the National Long Term Care Survey (NLTCS) to ascertain how the level of depression of a caregiver affects the depressive symptomatology of a care recipient. The NLTCS is a nationally-representative longitudinal study used to identify frail and disabled elderly persons living in the United States. The NLTCS was first collected in 1982; thereafter, five other waves were collected at five year intervals (1984, 1989, 1994, 1999, and 2004). 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. 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).

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1 Ideally, two waves of data should be used to establish the relationship between caregiver emotional stress and care receiver depression. However, questions asked in subsequent waves are not synonymous, thus data cannot be compared across waves.
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). 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 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 activities of daily living (ADL) or instrumental activities of daily living (IADL) for at least one hour in the week prior to 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 2004 wave will be used to investigate the effects of a stressed caregiver on the depressive symptomatology 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 three questions. First, this sample was restricted to individuals who answered all of the depression questions. This reduced the analytic sample to 4,355 respondents. Second, the sample was restricted to respondents who reported having a primary caregiver. This reduced the sample further to 1,605 respondents. Finally, all caregivers who did not complete the interview were excluded, resulting in an analytic sample of 1,340 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 is missing for caregiver emotional stress, care receiver education, ADLs, IADLs, self-rated health, caregiver education, social and psychological resources. 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 a modified version of the CES-D scale (Radloff 1977). This is a three-item scale in which the NLTCS respondents were asked questions about recent depressed mood. Specifically, the elderly 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 scale ranged from 0 to 3 and had a Cronbach’s alpha of .713, suggesting that the scale items have relatively high internal reliability. Upon further investigation of this variable, I found that the majority (74.5 percent) of the sample expressed no depressive symptoms. Thus, the sample was strongly positively skewed; therefore using ordinal logistic regression was not appropriate. Instead, depression was 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

Stressors. The main predictor in this study is emotional stress of the caregiver. Unfortunately, there were no direct measures of depression in the NLTCS. Therefore, emotional stress will be used a surrogate measure of depression because emotional stress is thought to lead to depression (Call et al. 1999). Emotional stress will be measured by an ordinal-level question asking the respondent to describe how emotionally stressful caregiving was for them. Caregivers were asked: “Using the scale 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?” The response options for this ordinal variable were 1 (not at all stressful), 2 (a little stressful), 3 (moderately stressful), 4 (pretty stressful), and 5 (very stressful).

Resources. Social support will be measured by two scales (See Appendix A). Both scales are derived 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 relatives 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 family or friends, and a score of 10 represents daily contact with family or friends. The correlation coefficients of the family and friend contact scales were .502 and .510, respectively.

To measure social participation, two questions were asked about religious service attendance and participation in other organizations. For civic participation the respondents were asked, “In the past month did you attend a meeting of civic, religious, 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 component of psychological resources, will be measured using the Short Portable Mental Status Questionnaire (SPMSQ) (Pfeiffer 1975). Specifically, respondents were asked questions such as, “What is the date today?” and “What day of the week is it?” Correct responses were scored as 1 and incorrect responses were scored as 0. 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. The Cronbach alpha for this scale is .741, suggesting relatively high internal reliability (Appendix B).

*Control variables*

Important descriptive covariates including the age of the care recipient, age of the caregiver, sex of the caregiver and care recipient (female code as 1 and male coded as 0), race of the respondent (black coded as 1 and nonblack coded as 0), education level of both the caregiver and care recipient, and self-rated health of the care receiver (poor health coded as 1, fair health coded as 2, good health coded as 3, and excellent health coded as 4). The relationship of the caregiver to the care receiver (spouse as the reference group) was controlled\(^2\). Also, physiological stress was controlled for by determining the number of ADLs and IADLs of the elderly respondent. This is measured based on Katz and Akpom’s (1976) index of ADLs and Lawton and Brody’s (1969) instrumental activities of daily living. The Katz and Akpom’s (1976) index of ADLs includes six questions in which the respondent is asked questions such as, “Do you have problems

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\(^2\) This variable originally contained 26 categories. In this study, I collapsed caregiver relationship 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 omitted from the analysis because there were no respondents in this group.
getting in and out of bed 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 modified version of Lawton and Brody’s (1969) instrumental activities of daily living used in this study include seven questions in which the respondent was asked questions such as, “Are you able to take medicine with 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 for ADL and IADL scale was .778 and .827, respectively.

Analytic Procedure

The NLTCS is a longitudinal data set, and the analysis of the research question will be done using the most recent wave (2004) of data. To evaluate the direct and indirect effects of caregiver emotional stress on care receiver depression, binary logistic regression will be used based on the methods proposed by Baron and Kenny (1986) to test mediation effects. First, the researcher will establish that there is a correlation between the presence of emotional stress of the caregiver and the depressive symptomatology of the care receiver. Then, care receiver depression will be regressed on caregiver emotional stress, while controlling for all other descriptive variables. Second, the researcher will establish that there is a relationship between the level of the depression of the caregiver and mediating variables (friends/family contact, organization participation, and cognitive functioning). Specifically, the researcher will regress each of
the mediating variables on the main predictor variable (emotional stress of the caregiver), while controlling for age, sex, physical disabilities, and educational attainment of the care receiver. Third, the researcher will show how the mediator affects the outcome variable by regressing the outcome variable (depression of the care receiver) on each of the mediating variables while controlling for caregiver emotional stress, age, sex, and education level of the caregiver and care receiver, the relationship of the caregiver to the care receiver, and the physical disabilities, self-rated health, race of the care recipient, and caregiver relationship to care recipient. Finally, to determine whether the psychological and social resources have a complete or partial mediating effect on the relationship between caregiver emotional stress and care receiver depression, care receiver depression will be regressed on caregiver emotional stress while controlling for all mediating and descriptive variables.
CHAPTER 5

RESULTS

In this chapter, I will present the results of the analyses including descriptive statistics, bivariate analysis, and regression results of the study.

Table 1 presents the descriptive statistics of the study population.

[Table 1 about here]

The average age of sample elderly respondents was about 81. The sample was predominately white (90.75 percent) and majority female (67.84 percent) with an 11th grade education. On average, the majority of sample (75 percent) did not report any depressive symptoms. Furthermore, this sample of elderly individuals had more IADLs than ADLs and reported being in good health. Additionally, the group scored very high on the Short Portable Mental Status Questionnaire (SPMSQ) with an average score of 8.62 on a 10 point scale. On average, respondents had moderate contact with family and friends. Finally, the majority of the sample attends church regularly, while they do not participate in civic organizations on a regular basis.

The majority of caregivers were females (daughters or daughters-in-law) who had received a high school diploma or a GED. In general, caregivers in this sample reported that caregiving caused them minimal stress.

Table 2 presents the correlation between caregiver emotional stress and the social and psychological resources of the care recipient.

[Table 2 about here]

3 All tables located in Appendices C through G.
4 In the NTLCS, age was collected for all eligible caregivers (both part-time and primary) in one question which asked the respondent to provide the ages of all their caregivers. Thus the age of the primary caregiver could not be determined and was not included in this analysis.
Caregiver emotional stress score has a negative correlation with the SPMSQ score, recent contact with friends, and religious service attendance. Thus, caregiver emotional stress has a negative association with the mental health, frequency of contact with friends, and church attendance of the elderly care recipient. All correlations were in the expected direction.

An important step in Baron and Kenny’s (1986) model is whether there is fact a relationship between the outcome variable of interest and the mediators. Thus, I next ran a difference of means test comparing care recipients with and without depressive symptoms to determine whether the social and psychological mediators were related to care receiver depression.

According to Baron and Kenny’s (1986) model to test mediation effects, one must initially establish that a relationship between the independent variable (caregiver emotional stress) and the dependent variable (care recipient depression) exists. Once this relationship is established, then the effects of mediators can be tested. Average caregiver emotional stress of care receivers with no depression symptoms was significantly lower than the average caregiver emotional stress of care receivers with depressive symptoms. Caregiver emotional stress averaged 2.22 for those with depression and 1.86 for those with not depressive symptoms. Also, the SPMSQ score for individuals with no depressive symptoms is significantly higher (8.76) than the SPMSQ score for individuals with depressive symptoms (8.24). No other differences were significant.

To illustrate that a relationship exists between caregiver emotional stress and care receiver depression, I present table 4. Specifically, table 4 is a logistic regression of the
effects of caregiver emotional stress, care receiver and caregiver demographics, self-rated health of the care recipient, and the relationship of the caregiver to the care receiver on care receiver depression.

[Table 4 about here]

Caregiver emotional stress had a significant positive relationship with care recipient depressive symptomatology. Specifically, for every one unit increase of the caregiver emotional stress score, the odds of a care receiver being depressed is 1.20. The education level and the self-rated health score of the care receiver were negatively related to the depressive symptomatology of the care recipient. Thus, individuals with higher levels of education and those who reported being in better health were less likely to be depressed than those which lower levels of education and who report being worse health. No other variables were significantly related to depression.

In table 5, I included all of the social and psychological mediators to determine if they have an attenuating effect on the relationship between caregiver emotional stress and caregiver depression. Specifically, table 5 is a logistic regression of the effects of caregiver emotional stress, care receiver and caregiver demographics, self-rated health of the care recipient, the relationship of the caregiver to the care receiver, and the social and psychological resources of the care receiver on the depressive symptomatology of the care recipient.

[Table 5 about here]

Age, education level, self-rated health score, and the SPMSQ score of the care recipient had a negative relationship with their depressive symptomatology. In other words, younger

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5 I ran separate model for each of the mediator; however only the SPMSQ score was significant. Thus, I enter all mediators at the same time to save space.
respondents, those with higher education, and those with better mental and physical health are more likely not to be depressed than are older individuals with lower education and worse mental and physical health. On the other hand, the relationship between caregiver emotional stress and depression remained highly significant. Thus, for every one unit increase in the emotional stress appraisal score of the caregiver, the odds of the care receiver reporting 1 or more depressive symptom increased by 1.184. No other variables were significant in this table.
CHAPTER 6

DISCUSSION AND CONCLUSION

Elderly depression is a leading mental health issue in the United States and is associated with impaired social functioning and health-related quality of life (Strine et al. 2008). Although there is a great deal of research that discusses the possible causes of depression in the non-institutionalized elderly, the current body of research neglects to study how the mental health of an aging individual can be negatively or positively affected by mental health of the individual that they depend on the most, their primary caregiver. This is a salient issue because there are approximately 15 to 25 million informal caregivers who provide unpaid help to nearly 11.7 million elderly individuals in the United States (Neavaie-Waliser et al. 2002; LaPlante, Harrington, and Kang 2002).

The purpose of this study was to systematically evaluate the emotional stress of a primary caregiver as a possible stressor that results in adverse mental health in the aging population using the life stress paradigm. The life stress paradigm provides a theoretical link between one’s daily encounters (i.e. dealing with an emotionally stressed caregiver) to one’s health outcome (i.e. depression of the care receiver). First, recurring negative life experiences, such as dealing with a depressed caregiver, becomes a chronic life stress of the individuals who are under their care. This life stressor, in turn, is correlated with the physical, and in this case, mental health of the elderly care recipient. Put differently, emotional stress of the caregiver is positively associated with the depressive symptomatology of the care recipient. Additionally, the negative life stressor (caregiver emotional stress) has an indirect negative correlation with 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., cognitive functioning) work to lessen the negative effects of the chronic life stressor (caregiver emotional stress) on the mental health of the caregiver. In other words, social and psychological resources are negatively correlated with the depressive symptomatology of the care recipient.

Overall, the results of this study support the hypothesis derived from the theoretical perspective that an emotionally stressed caregiver will be negatively associated with the mental health of a disabled care receiver. Even when health and social and psychological resources were taken into account, the emotional stress of a caregiver had a very significant effect on the depressive symptomatology of a disabled care receiver. On the other hand, the results only provided partial support for the social and psychological resource variables collected serving as a way to attenuate the negative effects of an emotionally stressed caregiver.

According to Baron and Kenny’s (1986) model to test for mediation effects, the relationship between then independent variable (emotional stress level of the caregiver) and the dependent variable (depressive symptomatology of the care receiver) must first be established. This was illustrated by table 4. In this covariate adjusted model, we see that caregiver emotional stress has a strong positive relationship with care receiver depression, even when you take into account the relationship of the caregiver to the care receiver, as well as the sociodemographic characteristics of the both caregiver and the care receiver. This provides support for hypothesis one which states that the emotional stress level of the caregiver will have a direct and positive association with the level of
depression on the care recipient. Even when you account for possible mediators, as in table 5, caregiver stress still retains a highly significant and positive relationship with care receiver depression.

The second hypothesis states that the emotional stress score of the caregiver will a negative association with the amount of social and psychological resources available to a care recipient. Table 2, a correlation matrix which measures the association between caregiver emotional stress and care recipient social and psychological resources provides partial support for this hypothesis. Caregiver emotional stress score has a negative correlation with the SPMSQ score, recent contact with friends, and religious service attendance. Thus, caregiver emotional stress is negatively associated with the mental health, frequency of contact with friends, and frequency of recent church attendance of the elderly care recipient. On the other hand, caregiver emotional stress did not have a significant relationship on frequency of contact with family and frequency of recent civic organization participation.

The third and final hypothesis states that the social and psychological resources available to a care recipient will negatively affect the level of depression of the care recipient. Table 5 provides partially supports this hypothesis. The unstandardized coefficient for the effect of caregiver emotional stress on care receiver depression decreased from .182 in table 4 (regression analysis without mediators) to .169 in table 5 (regression analysis with social and psychological mediators); however, the relationship remained significant at the p< .01 in both models. If we take a closer look at table 5, we find that only the SPMSQ score has a significant association with care receiver
depression. All other mediators were not effective in reducing the negative effects of an emotional stress caregiver on the depressive level of a care receiver.

It is possible that the mediators in this study were not effective because they were not the most appropriate measures for social and psychological support for this study’s population. For instance, civic participation may have not been a suitable mediator because the majority of the sample (84.4 percent) had not recently participated in any civic organizations. This group was possibly too old and frail take part in any such organization. On the other hand, the majority (59 percent) of respondents had recently attended church. However, church attendance still did not have a significant mediating effect on the negative relationship that caregiver emotional stress has on the mental health of a disabled care receiver. Some research asserts that the social networks that develop from regular church attendance, and not church attendance in and of itself, are a valuable social resource (Drentea and Goldner 2006).

The RAND Social Health Battery scale may have also failed as a mediator because it is measuring frequency of social contact and not social support. This is a limitation of this study; a better measure of social support needs to be used in order to determine if this resource can buffer the negative effects of an emotionally stressed caregiver.

Limitations

One of the most important limitations of this research project is the issue of selection bias. In order to assume that a linear relationship exists between an exogenous and endogenous variable, one must first assume “that the endogenous variable is affected additively by [an] error term characterized by an expected value of zero for each value of
the exogenous” (Berk 1983:387). In other words, the relationship between the exogenous variable and the error term are not confounded. To accomplish this, the sample should be selected at random. However, the sample for this study is not random due to a variety of factors. First, with a sample of elderly individuals whose average age is about 81, one can assume that individuals who were included in the sample were in some way different than those who were not. The individuals that were included in this sample are likely to be a resilient and healthier group, which would have a direct effect on their mental health. Thus, the sample used in this study is biased. These issues are endemic to any longitudinal data set, especially among the elderly.

Ideally, to test the theory I would have preferred to have had caregiver depression instead of caregiver emotional stress. However, because emotional stress and depression are correlated (Call et al. 1999), it was suitable replacement.

Another limitation of this work is that only one wave of data was used. A cross-sectional sample makes it difficult to distinguish which intervening pathways are more correct (Stage, Carter, and Nora 2004). To establish a causal relationship between the effects of the mental health of a caregiver on the depressive symptomatology of the care receiver, at least two waves of data must be used. However, the questions asked in each wave of the NTLCS are not identical. Thus, I could not compare data across waves. I, therefore, decided to use the most recent wave of the NLTCS in my analyses.

Depression in this study was dichotomized; this is another limitation of study. Ideally, a scale measure of depression such as the 20-item CES-D or the DSM-IV-R should have been used to measure depressive symptomatology. However, depression in the NLTCS was measured by three questions. Furthermore, the majority of the sample (74.6
percent) had no depressive symptoms. Since the sample was so skewed, with only relatively small groups reporting any depressive symptoms, I decided to dichotomize this variable\(^6\).

Furthermore, this study requires better measures of social resources. The RAND social health battery used in this study only measures frequency of social contact with family and friends, and does not measure whether these ties are positive or negative.

Civic Organization participation was not a good social resource measure for this group because the vast majority of respondents had not recently participated in civic organization. A more appropriate measure of social connectedness is required for this group, such as the 20-item revised Social Connectedness Scale (SCS-R) (Lee et al. 2001).

There was also an issue with the way caregiver age was measured. Primary caregiver age not asked as a single question. Care receivers reported the age of all their caregivers together (each respondent could have up to twenty caregivers), thus age of primary caregiver could not be determined.

In the National Long Term Care Survey, race and ethnicity are categorized in a complex way. Race and ethnicity was asked in several different questions; thus, a respondent could report being of multiple different races and ethnicities. Instead I categorized race as black and non-black, a categorization that the creator of this data set uses in his own work (Manton and Gu 2001). Although this categorization does not allow for rich comparison, it was the best way to represent race in this study.

Furthermore, I ran multiple regression models with the more complicated measures of

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\(^6\) Of the study’s sample, 13.3 percent of the sample reported 1 depressive symptom, 7.2 percent reported to 2, and 4.9 percent reported 3 depressive symptoms.
race and ethnicity, and race was not a significant covariate in any of the models, thus I decided to go with less complicated categorization.

Conclusion

The purpose of this study was to systematically evaluate the emotional stress of a primary caregiver as a possible stressor that results in adverse mental health in the aging population. This was to be done by conducting multivariate analyses of the correlation of caregiver depression with care recipient depression in the presence of mediating social and psychological resources using the National Long Term Care Study. Overall, the results supported the hypothesis that an emotionally stressed caregiver will be negatively associated with the mental health of a disabled care receiver. Even when health and social and psychological resources were taken into account, the emotional stress of a caregiver retained a very significant relationship with the depressive symptomatology of a disabled care receiver.

This research sets the groundwork for further research. First of all, longitudinal analysis of the research question is required to establish a causal relationship between caregiver emotional stress and care receiver depressive symptomatology. Furthermore, there needs to be more work done to determine more appropriate social and psychological mediators for this study’s special population. Finally, and most importantly, intervention research on caregiver-care receiver dyads needs to be done in order to reduce the negative mental health effects of that this relationship has on all parties involved.
This research has great importance in terms of its future implications for the field. To my knowledge, there has been no other research that has looked at depression and burden from the care receiver’s perspective, and also using representative data. Understanding “their side” could give us further insight in the delicate intricacies of elderly 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 elderly Americans who suffer from this condition.
LIST OF REFERENCES


APPENDICES

Appendix A

*Scale of Social Support - 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…-

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 B

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 C

Table 1. Descriptive Statistics for Study Sample: National Long Term Care Survey, 2004

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<th>Category</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
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<tr>
<td>Age of Care Recipient</td>
<td>81.34</td>
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<td>Sex of Care Recipient</td>
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<tr>
<td>Male</td>
<td>431</td>
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<td>909</td>
<td>32.16</td>
<td>431</td>
<td>32.16</td>
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<tr>
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<tr>
<td>Nonblack</td>
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<td></td>
</tr>
<tr>
<td>Education of Care Recipient</td>
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<tr>
<td>Caregiver Sex</td>
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<td>34.93</td>
<td>871</td>
<td>65.07</td>
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<tr>
<td>Female</td>
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<td>65.07</td>
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</tr>
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<tr>
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<td>Spouse</td>
<td>460</td>
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<td>Son/Daughter</td>
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<td>Number of ADLs</td>
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<td>1.76</td>
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<td>Number of IADLs</td>
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<td>RAND Social Health Battery</td>
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<td>Frequency of Contact with Family</td>
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<td>Has recent participation</td>
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<td>Frequency of Church Attendance</td>
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<td>Has not recently attended church</td>
<td>792</td>
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<td></td>
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<tr>
<td>Has recently attended church</td>
<td>551</td>
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<td>SPMSQ score</td>
<td>8.62</td>
<td>1.77</td>
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<td>Not Depressed</td>
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<td>Depressed</td>
<td>341</td>
<td>25.40</td>
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N=1340
Appendix D

Table 2. Correlations between Caregiver Emotional Stress, Care Recipient Psychological Resources, and Care Recipient Social Resources, National Long Term Care Survey, 2004

<table>
<thead>
<tr>
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<th>3</th>
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<th>5</th>
<th>6</th>
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</tr>
<tr>
<td>2. SPMSQ score</td>
<td>-.149**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Recent contact with friends</td>
<td>-.109**</td>
<td>.164**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Recent contact with family</td>
<td>-.040</td>
<td>.099**</td>
<td>.219**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Recent religious service attendance</td>
<td>-.056*</td>
<td>.053</td>
<td>.204**</td>
<td>.051</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>6. Recent civic organization participation</td>
<td>-.010</td>
<td>.092**</td>
<td>.234**</td>
<td>.002</td>
<td>.286**</td>
<td>1.00</td>
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</table>

**p<.001, *p<.05
Appendix E

Table 3. Means Test of Caregiver Emotional Stress, Care Recipient Psychological Resources, and Care Recipient Social Resources Comparisons for Care Recipients with and without Depressive Symptoms, National Long Term Care Survey, 2004

<table>
<thead>
<tr>
<th>Variable</th>
<th>No Depressive Symptoms n=999</th>
<th>Depressive Symptoms n=344</th>
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<th>p</th>
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<tbody>
<tr>
<td>1. Caregiver emotional stress</td>
<td>1.86(1.185)</td>
<td>2.22(1.392)</td>
<td>-4.661</td>
<td>.000</td>
</tr>
<tr>
<td>2. SPMSQ score</td>
<td>8.76(1.656)</td>
<td>8.24(2.004)</td>
<td>4.754</td>
<td>.000</td>
</tr>
<tr>
<td>3. Recent contact with friends</td>
<td>4.16(2.945)</td>
<td>3.91(2.920)</td>
<td>1.378</td>
<td>.168</td>
</tr>
<tr>
<td>4. Recent contact with family</td>
<td>6.16(2.912)</td>
<td>6.32(2.893)</td>
<td>.862</td>
<td>.389</td>
</tr>
<tr>
<td>5. Recent religious service attendance</td>
<td>.41(.491)</td>
<td>.42(.494)</td>
<td>-.270</td>
<td>.787</td>
</tr>
<tr>
<td>6. Recent civic organization participation</td>
<td>.16(.364)</td>
<td>.15(.359)</td>
<td>.286</td>
<td>.775</td>
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</table>

Standard deviation in parentheses
Table 4. Logistic Regression Analysis of Caregiver Emotional Stress, Demographics, and Self-Rated Health as Predictors of Care Recipient Depressive Symptoms, National Long Term Care Survey, 2004

<table>
<thead>
<tr>
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<th>B</th>
<th>SE</th>
<th>OR</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caregiver Emotional Stress Score</td>
<td>0.182</td>
<td>0.051</td>
<td>1.200</td>
<td>0.000</td>
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<td>Age of Care Recipient</td>
<td>-0.015</td>
<td>0.008</td>
<td>0.985</td>
<td>0.070</td>
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<tr>
<td>Sex of Care Recipient</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Female</td>
<td>0.294</td>
<td>0.168</td>
<td>1.342</td>
<td>0.080</td>
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<tr>
<td>Race of Care Recipient</td>
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<td></td>
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<tr>
<td>Nonblack</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Black</td>
<td>-0.119</td>
<td>0.226</td>
<td>0.888</td>
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<td>Education of Care Recipient</td>
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<td>0.022</td>
<td>0.947</td>
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<tr>
<td>Caregiver Sex</td>
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<td></td>
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<tr>
<td>Male</td>
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<td>-</td>
<td>-</td>
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<tr>
<td>Female</td>
<td>-0.059</td>
<td>0.151</td>
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<td>0.696</td>
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<tr>
<td>Education of Caregiver</td>
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<tr>
<td>-0.009</td>
<td>0.024</td>
<td>0.991</td>
<td>0.714</td>
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<tr>
<td>Relationship to the Care Recipient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spouse</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Son/Daughter</td>
<td>-0.044</td>
<td>0.179</td>
<td>0.957</td>
<td>0.807</td>
</tr>
<tr>
<td>Brother/Sister</td>
<td>-0.197</td>
<td>0.364</td>
<td>0.821</td>
<td>0.859</td>
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<tr>
<td>All Other Relationships</td>
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<td>0.243</td>
<td>0.827</td>
<td>0.425</td>
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<tr>
<td>Number of ADLs</td>
<td>0.062</td>
<td>0.040</td>
<td>1.064</td>
<td>0.117</td>
</tr>
<tr>
<td>Number of IADLs</td>
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<td>0.034</td>
<td>0.952</td>
<td>0.141</td>
</tr>
<tr>
<td>Self Rated Health Score</td>
<td>-0.214</td>
<td>0.081</td>
<td>0.808</td>
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<tr>
<td>Pseudo R²</td>
<td>0.071</td>
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Table 5. Logistic Regression Analysis of Caregiver Emotional Stress, Demographics, Self-Rated Health, Care Recipient Psychological Resources, and Care Recipient Social Resources as Predictors of Care Recipient Depressive Symptom, National Long Term Care Survey, 2004

<table>
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<th>SE</th>
<th>OR</th>
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</thead>
<tbody>
<tr>
<td>Caregiver Emotional Stress Score</td>
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<td>0.051</td>
<td>1.184</td>
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<tr>
<td>Male</td>
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<tr>
<td>Female</td>
<td>0.260</td>
<td>0.170</td>
<td>1.297</td>
<td>0.127</td>
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<tr>
<td>Race of Care Recipient</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Nonblack</td>
<td>-</td>
<td></td>
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<tr>
<td>Black</td>
<td>-0.228</td>
<td>0.233</td>
<td>0.796</td>
<td>0.327</td>
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<tr>
<td>Education of Care Recipient</td>
<td>-0.045</td>
<td>0.022</td>
<td>0.956</td>
<td>0.042</td>
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<tr>
<td>Caregiver Sex</td>
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<tr>
<td>Male</td>
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<tr>
<td>Female</td>
<td>-0.055</td>
<td>0.153</td>
<td>0.947</td>
<td>0.719</td>
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<tr>
<td>Education of Caregiver</td>
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<td>-0.007</td>
<td>0.024</td>
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<tr>
<td>Relationship to the Care Recipient</td>
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<tr>
<td>Spouse</td>
<td>-</td>
<td></td>
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</tr>
<tr>
<td>Son/Daughter</td>
<td>-0.021</td>
<td>0.181</td>
<td>0.979</td>
<td>0.907</td>
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<tr>
<td>Brother/Sister</td>
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<tr>
<td>Number of ADLs</td>
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<td>0.040</td>
<td>1.061</td>
<td>0.137</td>
</tr>
<tr>
<td>Number of IADLs</td>
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<tr>
<td>Self Rated Health Score</td>
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<td>RAND Social Health Battery</td>
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<tr>
<td>Frequency of Contact with Family</td>
<td>0.022</td>
<td>0.024</td>
<td>1.022</td>
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</tr>
<tr>
<td>Frequency of Contact with Friends</td>
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<td>0.989</td>
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<td>Civic Organization Participation</td>
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<tr>
<td>Has not recently participated</td>
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<tr>
<td>Has recent participation</td>
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<tr>
<td>Frequency of Church Attendance</td>
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<tr>
<td>Has not recently attended church</td>
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<td>Has recently attended church</td>
<td>0.160</td>
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<tr>
<td>SPMSQ score</td>
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<tr>
<td>Pseudo R²</td>
<td>0.085</td>
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</tbody>
</table>
Appendix H

IRB Approval Form

THE UNIVERSITY OF
ALABAMA AT BIRMINGHAM
Institutional Review Board for Human Use

DATE: December 27, 2011

MEMORANDUM

TO: Deborah Ejem
   Principal Investigator

FROM: Cari Oliver
   Assistant Director, UAB OIRB

RE: Request for Determination—Human Subjects Research
IRB Protocol #N111219001 - The Effects of Caregiver Emotional Stress on the Depressive Symptomatology of the Care Recipient

A member of the Office of the IRB has reviewed your application for Designation of Not Human Subjects Research 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.