

AN ABSTRACT OF THE DISSERTATION OF

Verna E. Zehner Ourada for the degree of Doctor of Philosophy in Human Development and Family Studies presented on May 3, 2012.

Title: The Stress Process Model and Physical Health Outcomes of Parent Versus Adult Child Caregivers.

Abstract approved:

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As the baby boomer generation ages, and as advanced medical techniques keep people alive longer, the need for family caregivers will grow. Researchers have determined that the health of family caregivers is generally poorer than noncaregivers. Also, the type of family relationship has been determined to influence health outcomes. This study examined how caregiving parents and caregiving adult children compared with regard to caregiving variables and health outcomes. Social support was then assessed to determine if a mediating effect existed between the predictors and health outcomes.

Using data from the MIDUS II survey, the health outcomes of self-identified caregiving parents and caregiving adult children was studied in light of the predictor variables of type of relationship, provision of activities of daily living, length of time caregiving, and family demands. Multiple regression

analysis was used to determine the relation between the predictors and health outcomes. Mediation tests were administered to assess if social support mediated between the significant predictors and health outcomes.

The type of family relationship influenced health outcomes with caregiving parents demonstrating poorer health than caregiving adult children. Caregiving parents had lower self-rated health and higher numbers of chronic conditions than caregiving adult children. Perceived family demands were associated with increased number of chronic conditions for both caregiving adult children and caregiving parents. No significant influence was found between provision of activities of daily living or length of time caregiving with health outcomes. Similarly, no mediation effect of social support was found between the significant predictor variables and health outcomes.

Using the stress process model, this study examined caregiving predictor variables and health outcomes for caregiving parents and caregiving adult children. Caregiving parents were found to demonstrate poorer self-rated health and more chronic health conditions than caregiving adult children. Unlike many previous studies, perceived family demands was found to have a strong association with the number of chronic health conditions for both groups of caregivers.

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The Stress Process Model and Physical Health Outcomes of Parent Versus
Adult Child Caregivers

by
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I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

Verna E. Zehner Ourada, Author

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TABLE OF CONTENTS

	Page
Introduction	1
Influences of Caregiving	4
Literature Review	8
Theoretical Perspective	9
Caregiver Health	13
Family Relationship Between Caregiver and Care Recipient	15
Primary and Secondary Stressors	26
Mediating Variable	31
Health Measurement	34
Method	41
Research Design	41
Study Population	41
Operational Definitions	44
Analysis Plan	49
Results	52
Analysis	55
Summary of Results	62
Discussion	63
Social Support as a Mediator	66

TABLE OF CONTENTS (Continued)

	<u>Page</u>
Family Relationship Between Caregiver and Care Recipient	67
Perceived Family Demands	70
Limitations	74
Strengths	78
Future Research Directions	79
Conclusion	82
References	84
Appendix A	100

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. The Stress Process Model	11

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Characteristics for Caregiving Parents and Caregiving Adult Children	45
2. Correlation Matrix of Dependent, Independent and potential mediating Variables	54
3. Summary of Regression Analysis for the Relation Between Predictor Variables and Self-Rated Health	57
4. Summary of Negative Binomial Regression Analysis for Total Chronic Health Conditions	60

The Stress Process Model and Physical Health Outcomes of Parent Versus Adult Child Caregivers

In 2009, the *Caregiving in the U.S.* survey estimated 65.7 million people in the United States were family caregivers to either an adult or a child with a disability, which constituted 29% of the population at that time. Family caregiving is provided to those individuals with a disability or illness that prevents them from caring for themselves. This broad definition includes care recipients diagnosed with a wide variety of disabilities including dementia, mental illness, intellectual and developmental disorders, neurological diseases, arthritic conditions, cardiovascular issues, endocrine diseases, cancers, and so on. The age range of care recipients varies as much as the diagnosis, ranging from birth to old age.

As the baby boomer generation ages, and as advanced medical techniques keep people alive longer, the need for family caregivers will not lessen, but will actually grow. Although there are institutional options such as nursing homes and residential services, the need exceeds both the feasibility of institutional care and the demand for it. Nursing home placement is very expensive, and not all families can afford this option. Also, many families do not want to place family members into nursing homes. Similarly, residential facilities for those with intellectual disability are limited in number and cannot meet the demand. This shortage is not expected to change in the foreseeable future (Yamaki et al., 2009). Therefore, the need for family caregivers will continue to be present and will grow.

Research has determined that the health of caregivers is generally poorer than that of the noncaregiving population. Poor physical health is not only a risk to the caregiver, but has potentially negative risks for the care recipient as well (Gonzales et al., 2011). Caregivers who are unable to care for themselves eventually are unable to care for others. Interestingly, not all caregivers experience the same health outcomes. It is important to examine caregivers in light of differing family relationships as the health outcomes of caregiving spouses, parents, and adult children may differ from each other, based on different demands.

Health outcomes of caregivers differ by the family relationship of the caregiver with the care recipient. For example, research has revealed that wives who are caregivers to their husbands have different health outcomes than parents who care for their children and from adult child caregivers (Corry and White, 2009; McPherson et al., 2000). Two groups of family caregivers will be the focus of this study: those who provide care to their child with a disability (caregiving parents), and those who provide care to an aging parent (adult child caregivers). What follows are two examples of typical caregiving situations that are defined by the type of family relationship between the caregiver and the care recipient.

Edwina is the mother of a 35-year-old son, Paul, who has cerebral palsy. She has been his caregiver since his birth. Although Paul is able to feed himself and perform basic hygiene, he is unable to toilet or shower

himself, transfer from his wheelchair to a bed or car, or speak clearly so that others can understand him. Although Paul is more functional in his daily activities than he was when he was younger, the assistance he continues to require is both physically exhausting and time consuming. Edwina is almost 60 years old and now finds herself prioritizing Paul's needs above those of her own health. Family members have encouraged Edwina to find a community placement for Paul, but she is not ready to consider this option and does not know if she ever will be ready.

Marjory is the 55-year-old daughter of Mildred, who was diagnosed with dementia two years ago. Marjory does not live with her mother, but spends several hours a day at her mother's home trying to ensure her safety. Although she has two siblings, Marjory does not receive assistance from them as one lives in another state far away, and the other refuses to help. Both of Marjory's siblings have said that they do not want their mother put in a nursing home. Marjory does not mind helping her mother, but feels some awkwardness when she finds herself speaking to her mother in a "mothering" way. Her work at the state library is suffering and she has been told many times to finish her work. Similarly, Marjory's 17 year-old daughter is feeling abandoned, even though she understands her mom needs to be helping her grandmother. Marjory has high blood pressure and is at risk for diabetes, but she is inconsistent with her medical appointments as she already feels

overcommitted with caring for her mother, her daughter, and her work demands.

There are similarities and differences in these two scenarios. Both Edwina and Marjory deal with family input that may or may not be helpful and both defer their medical needs because of caregiving duties. Their experiences differ, however, in that Edwina has been providing care for 35 years, much longer than Marjory. Unlike Edwina, Marjory struggles with her changing role in the relationship with her mother. Edwina is a caregiving parent and has always been a caregiving parent to Paul. Marjory was once the care recipient but is now her mother's caregiver. Although the current situation requires Marjory to provide little "hands on" assistance, this will likely change as Mildred's dementia worsens. Both women are providing care, but with different influences on their experience.

Influences of Caregiving

Caregiving can be assessed in different ways including how long care will be provided, how much physical assistance is needed, who is being cared for, and how the caregiver responds to the input of others. As can be seen from the scenarios above, caregiving situations can vary in many ways. Caregiving parents typically provide care for longer periods of time than caregiving adult children. Caregiving adult children, however, often experience ambivalence or emotional reactions to providing care to the person who once provided care to them. Both caregiving groups interact with others

in some way about the caregiving situation, perhaps others who compete for their time, give caregiving advice or criticism, or health professionals. The demands of interacting directly with the care recipient and interacting with others about the caregiving relationship are stressors that can influence health outcomes in the caregiver.

Little research has specifically examined how caregiving parents and caregiving adult children compare with regard to physical health. Although the two groups are similar in many ways, they differ in many ways as well. These differences may lead to different health outcomes. This research will attempt to highlight whether and how these two groups differ with regard to specific caregiving variables and self-rated health. Specifically, I will examine comparisons of health outcomes for each group of caregivers and then determine which caregiving variables influence the health of each group. I will also examine how social support from family and friends influences, if at all, the health outcomes that caregivers experience.

Conclusion

This study examines the health outcomes of caregiving parents and caregiving adult children and the influences on those outcomes. It is conceivable that caregiving parents and caregiving adult children will have different health outcomes and that different factors will influence their health. For example, the length of time caregiving for a child with a disability is usually much longer than the time spent caregiving for an aging parent. Thus the

length of time caregiving may influence caregiving parents differently from how it influences caregiving adult children. Also, the overall health of a caregiver may be influenced by the length of time providing care because of an accumulation of stress over time. Similarly, providing physical assistance as opposed to supervision may influence health outcomes. As caregivers age and face their own health challenges, providing physical assistance may be detrimental to the caregiver. The support of family and friends may play a role by influencing health outcomes by decreasing the impact of the stress of caregiving.

Family caregivers are essential to care recipients and to society. The outlook for the future is that family members will continue to be needed to care for relatives with a disability. It is essential that those involved with caregivers in any way, (e.g., health care workers, family members, friends) learn as much as possible about how caregiving influences the health of the caregiver, to be able to provide the support that will enable them to continue to provide care and to determine possible alternatives to family caregiving.

U.S. policy and practice are structured such that family members have no choice about providing care (Bogenschneider, 2000; Bogenschneider & Corbett, 2010; Singer, Biegel, & Ethridge, 2010). Other western societies help family members take on such responsibility or routinely provide supports to aging family members who need assistance. Care provision by family members to family members may not always be in the best interests of

individuals, families, or society. Attention to quality of life issues associated with the well-being of caregivers and care receivers may help us to determine when and under what circumstances care provision by family members is reasonable and sustainable. In the meantime, examining the health outcomes of caregiving for caregivers can inform our understanding of issues that would need to be resolved before recommending changes in policy and practice

Caregivers often are limited in alternative caregiving options, as the cost of hiring a caregiver is often prohibitive and residential care is limited, as is the availability of qualified caregivers. Family caregivers, however, should not be left to provide care at their own peril. At a minimum, research that demonstrates the health outcomes of family caregivers as poorer than that of noncaregivers could provide impetus for policy makers to put into place options for caregivers that may include residential care, respite care, day care centers, and professionally trained care providers. Limiting potential negative outcomes of caregiving is an important place to begin to make changes for families faced with overwhelming tasks and responsibilities.

Literature Review

Providing care for a disabled or aging family member is becoming more and more common as medical technologies advance (Heller, Caldwell, & Factor, 2007; Seltzer & Seltzer, 1992). Not only are people living longer, but people are now able to live longer with a disability or disease (Roberto, 1993; Stephens & Franks, 2009). Approximately 65.7 million people in the United States are unpaid family caregivers (AARP, 2009). Many of these family caregivers also are employed outside the home, leaving them little time for self-care.

Caregiving for a family member has rewards such as feelings of satisfaction, personal reward, and gratitude (Blake, 2008; Greenberg, Seltzer, & Greenley, 1993; Moller, Gudde, Folden, & Linaker, 2009). It also has drawbacks in that the caregiver often experiences health issues as a consequence of caregiving (Marks, 1996; Son, Erno, Shea, Femia, Zarit, & Stephens, 2007). The added stress, work, and time commitments for a person to provide care can influence health outcomes. This review examines literature on the physical health issues and health outcomes of family caregivers. In specific areas where no literature addressing physical health of caregivers was found, I explore the impact of caregiving using the outcomes that have been examined, such as mental health or burden.

Theoretical Perspective

Although the stress process model was originally used to study depression (Pearlin, Menaghan, Lieberman, & Mullan, 1981), it has since been proposed for caregiver research as well (Pearlin, Mullan, Semple, & Skaff, 1990). This model links the context within which care is given with primary and secondary stressors to explain outcomes for caregivers. Figure 1 demonstrates the interactions between the various components of the stress process model. The central concept of the stress process model is that the conditions of caregiving lead to stress, and the interactions of the conditions are processes that change over time (Pearlin et al., 1990). The stress process model has been used in many studies of caregiver health (Bainbridge, Krueger, Lohfeld, & Brazil, 2009; Blieszner & Roberto, 2010; Hilgeman et al., 2009; Park, 2009).

Stress process model.

Four domains comprise the stress process model: background and context, stressors, mediators of stress, and outcomes of stress (Pearlin et al., 1990). Each of these domains influence health and well-being (Blieszner & Roberto, 2010). The stress process model allows the researcher to examine the caregiving role from a holistic perspective, using a multifaceted approach. Each domain is discussed below.

Context. The context of a caregiving relationship describes the circumstances within which caregiving takes place; it is the environment of the

caregiving situation. Contextual variables can include the caregiver's age, educational level, gender, and income adequacy, along with the relationship to the care recipient.

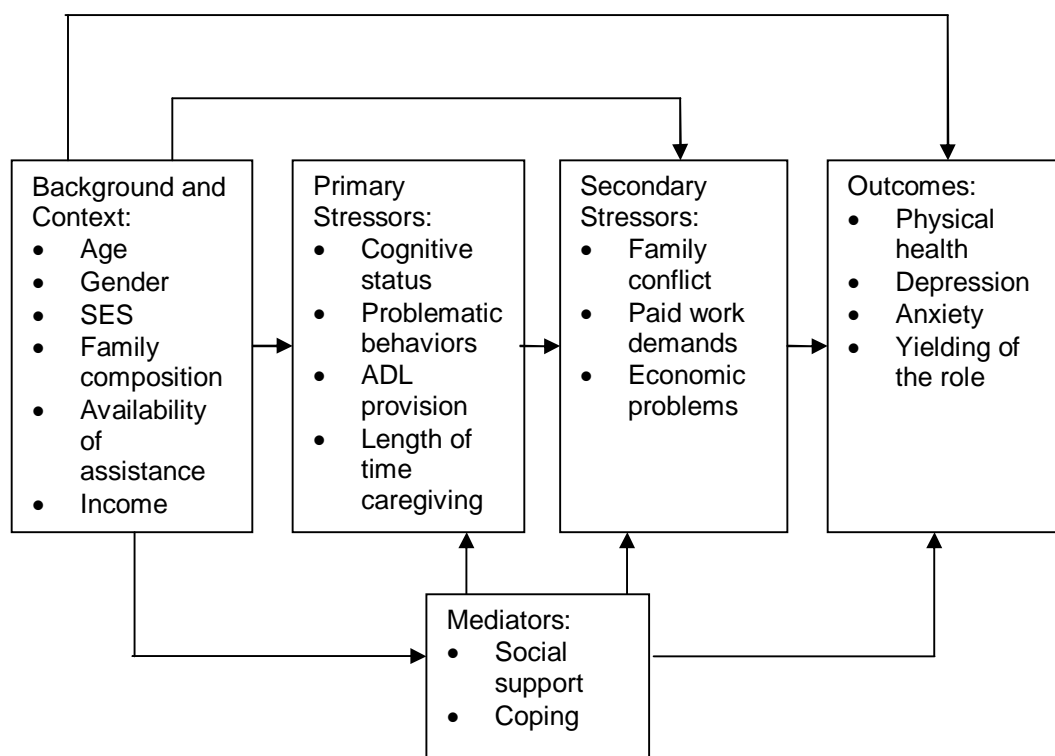
Because each caregiving relationship is unique, the context and outcome of each relationship is unique as well. For example, a well educated, middle-class, adult child caring for a parent with Alzheimer's disease may have an entirely different caregiving experience than a poorly educated, working-class, adult child who also is caring for a parent with Alzheimer's disease.

Stressors. Stressors are the conditions, experiences, and activities that create problems for people (Pearlin et al., 1990). When examining caregiving relationships, stressors can be divided into two categories: primary and secondary stressors. Primary stressors are those stresses that are related directly to the needs of the care recipient, and can include the physical needs, cognitive status, or behaviors of the recipient (Pearlin et al., 1990). For example, the actual physical labor involved in caring for a person with a disability can be considered a primary stressor. Similarly, dealing with a behavioral outburst in public is also considered a primary stressor.

Dependence, cognitive status, and problematic behaviors demonstrate objective indicators of stress that can increase the difficulty of caregiving, leading to poorer caregiver outcomes. The natural progression of primary

stressors is usually toward greater responsibility on the part of the caregiver, which often leads to secondary stressors (Pearlin et al., 1990).

Figure 1. *The Stress Process Model*



Note. Adapted from Pearlin et al. (1990), p. 586

Secondary stressors come from the encroachment of caregiving stressors into the other areas of the caregiver's life (Cho, Zarit, & Chiriboga, 2009). These types of stressors derive from caregivers' interactions with others around the caregiving situation (Pearlin et al., 1990). Stressful interactions may be in regard to differences of opinion with other family members about the attention and care being provided to the care recipient, or

may come from family members wanting more of the caregiver's time for themselves.

Secondary stressors also can arise from work-caregiving conflicts. Although there is some evidence that employment may be beneficial for caregivers (Spitze, Logan, Joseph, & Lee, 1994), compromises often must be made in the approach to work (Barnes, Given, & Given, 1995; Ory, Hoffman, Yee, Tennstedt, & Schulz, 1999). These compromises often include shortening work hours, declining promotions, and not being able to take on all the expectations of the workplace (AARP, 2008; National Caregiver Alliance, 2009).

Mediators. A mediator can influence the association between a cause and an effect. Using the stress process model as an example, stressors can be considered the *cause* and the outcomes the *effect* of the caregiving relationship. A mediator in this example may be how the caregiver copes with primary and secondary stressors. Through coping, the outcomes may be different than they would be without the mediator. Pearlin and colleagues (1990) suggest that coping and social support are the mediators in a caregiving relationship. These mediators function to lessen the intensity of the stressors.

Outcomes. The outcomes of research using the stress process model with caregiving are typically defined as well-being, physical health, and/or mental health. These are the effects that are manifested in the caregiver from

the caregiving experience (Pearlin et al., 1990; Raina et al., 2004). Negative outcomes are the result of the intensifying of primary and secondary stressors over time (Gaugler et al., 2009).

The World Health Organization (WHO) defines health as “complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (WHO, 1946). Consistent with the focus of this study, this review examines the physical aspect of health for caregivers.

Caregiver Health

When caring for another person, some caregivers prioritized the care recipient’s needs above their own (Clemmer, Ward-Griffin, & Forbes, 2008; Kushner, 2007). Also, the extra responsibilities of caregiving took time and energy, which often led caregivers to neglect their own physical health needs (Stevens et al., 2009). Both of these possibilities can lead to health challenges for the caregiver. In general, caregivers reported poorer health than those who did not provide care (Blake, 2008; Douglas & Daly, 2003; Hoyert & Seltzer, 1992; Marks, 1996; Raina et al., 2004).

Lower self-reported health scores have been reported by family members caring for relatives with brain injury (McPherson, Pentland, & McNaughton, 2000), long-term ventilator use (Douglas & Daly, 2003), spina bifida (Grosse, Flores, Ouyang, Robbins, & Tilford, 2009), stroke (Tooth, McKenna, Barnett, Prescott, & Murphy, 2005), mental illness (Seltzer, Greenberg, Floyd, & Hong, 2004), and dementia (Zhang, Vitaliano, Lin, 2006).

Poor health has been reported by both women and men caregivers (Marks, 1996), wives who cared for husbands (Hoyert & Seltzer, 1992; Sparks, 1998), mothers who cared for children with a disability (Raina et al., 2004; Wallander et al., 1989), and daughters who cared for aging parents (Barnes, Given, & Given, 1995; Sparks, 1998). Although husbands, fathers, and sons also may have health consequences from caregiving, little research has focused specifically on this subject.

Although one might assume those providing care began the role in poor health already, research suggests otherwise. Marks (1996) concluded that the poorer health seen in caregivers was most likely the outcome of caregiving and not the cause of becoming a caregiver. On a similar note, Gross et al. (2009) reported it was not necessarily the caregiver role itself that caused health problems, but rather the degree to which the role interfered with the caregivers' ability to care for themselves and to function outside of the caregiver role. Finally, good health was a chief determining factor in many families when identifying who will be a caregiver within a family (Biegel, Sales, & Schultz, 1991). The demands of caregiving can influence the health of caregivers by overshadowing the caregiver's personal needs.

Not all research, however, led to the conclusion that the health of caregivers was negatively influenced by caregiving. Killian, Turner, and Cain (2005) found no significant relationship between helping older family members and self-reported health status. A review of 16 longitudinal caregiving

research articles found that caregiving did not necessarily result in decreased physical health over time (Salter, Zettler, Foley, & Teasell, 2010). Rather, the changes in caregivers' physical health matched those of aging noncaregivers. Similarly, others have found that physical health remained stable over time for caregivers of persons with Alzheimer's disease and stroke (Wright, Hickey, Buckwalter, Hendrix, & Kelechi, 1999). Surprisingly, Robinson, Fortinsky, Kleppinger, Shugrue, and Porter (2009) found that self-reported caregiver health was actually better than the self-reported health of noncaregivers in their study of baby boomer and older adults providing care for a family member or friend. These conflicting results suggest caregiving may affect caregiver's health differently depending on unique caregiving situations.

Family Relationship Between Caregiver and Care Recipient

It is important to look at caregiver outcomes in respect to the family relationship that exists between the caregiver and the care recipient. Although some research suggested that the physical health of caregivers was poorer than that of noncaregivers regardless of the type of family relationship with the care recipient (Robinson et al., 2009; Soskolne et al., 2007), there were trends in the health of caregivers based on the family relationship with the care recipient. For example, providing care for primary kin (parent, child, spouse) demonstrated negative effects for the caregiver but providing care for more distant kin did not (Marks, Lambert, & Choi, 2002). There is also evidence

that in general, women experienced more caregiving costs than men (Raschick & Ingersoll-Dayton, 2004).

The family relationship between a caregiver and a care recipient influences the stressors of the caregiver. For example, parents caring for adult children with a disability may provide care for several decades (Chou et al., 2009), whereas adult children caring for their parents may face stressors from family responsibilities to their own children, as well as stressors from the workplace, in addition to the change in the dynamic of their relationship with their parents (Pnina, 2006). Both caregiving situations can result in health changes for the caregiver, but for different reasons. The time over years spent providing care is a primary stressor of the stress process model whereas the interactions with workplace and other family members are secondary stressors. Both types of stressors indicate potential for negative outcomes over time.

Similarly, family relationships can lead to ambivalence with caregivers having feelings of both positive and negative sentiments toward the care recipient that differ depending on the family relationship (Birditt, Fingerman, & Zarit, 2010). Generally in family relationships, there is tension between parents and children that continues through adulthood. These tensions result from changing in priorities as children gain more independence and rely less on their parents, and as parents cannot control the decisions and priorities of their children (Birditt, Miller, Fngerman, & Lefkowitz, 2009). Adult caregiving

children may find themselves caring for a parent with whom they have previous tensions. The role reversal inherent in caregiving for an aging parent leads to greater ambivalence than is found in adult child-parent relationships without this dependency (Fingerman, Chen, Hay, Cichy, & Lefkowitz, 2006; Willson, Shuey, & Elder, 2003). With regard to those caregiving for children, ambivalence for parents comes from wanting their children to reach the milestones of adulthood, but realizing that will not happen (Birditt et al., 2010; Pillemer & Suitor, 2002). Interestingly, Birditt et al. (2010) found that even though both parents of a child with a disability experienced greater ambivalence than did parents whose children did not have a disability, fathers experienced more long lasting ambivalence than mothers. Studies of ambivalence on parent-adult child relationships reinforces that different types of family relationships may face differing issues.

Corry and While (2009) found the needs of spouses were different from the needs of other family caregivers when caring for someone with multiple sclerosis. They attributed the differences to the nature of the spousal relationship and the emotional involvement for spouses that varied from that of other family caregivers. Similarly, research with people who provided care to a family member with brain injury demonstrated that the overall health of spousal caregivers was different from that of caregiving parents (McPherson et al., 2000).

Caregiving research conducted without identifying the family relationship between the caregiver and the care recipient does not provide an accurate accounting of the outcomes of caregiving. Studies that have delineated the differences in caregiver's health outcomes by the relationship with the care recipient (Blake, 2008; Hoyert & Seltzer, 1992; McPherson et al., 2000; Sparks et al., 1998) have all found differences in the health outcomes of caregivers depending on the family relationship with the care recipient.

Caregiving parents.

Parents who care for their children with disabilities face a commitment of responsibility for many years. Lower fertility rates of the 21st century combined with increasing life expectancy for adults with a developmental disability leaves parents providing ongoing care at home for longer periods of time than in the past (Heller et al., 2007; Minnes & Woodford, 2004). These caregiving parents must deal with their children's care in the present; they also must plan for the children's future if the parent is no longer able to provide care (Murphy et al., 2007).

Tobin (1996) studied women over the age of 60 who were caring for an adult child who had mental retardation. He found that even caregiving mothers well into their ninth decade were not comfortable with the idea of dying, as they had a child who still needed to be cared for. The theme "I cannot die" resonated from these women, several of whom had made no arrangements for their child's care after their own death.

Often the role of caregiver ended only with the death of the caregiving parent (Chou et al., 2009; Seltzer & Seltzer, 1992). Although some parents may have hoped that their other children (i.e., siblings) would take over the care of the child with a disability, it was not always possible for or desired by the other family member (Minnes & Woodford, 2004). It was common, however, for adult siblings to have a close relationship with the person with a disability (Pruchno et al., 1996) and to provide emotional support.

Several studies have focused on the health outcomes of parents caring for children with disabilities (Chou et al., 2009; Marks, Lambert, & Choi, 2002; Pruchno et al., 1996; Seltzer et al., 2009). Of these studies, most reported the outcomes of “parents” and did not delineate between mothers’ and fathers’ experiences. Two groups have been studied: parents with young children with disabilities, and groups of parents that combined those with young children and adult children with disabilities. This second group included children with disabilities ranging from ages 3 to 42 years.

Children under the age of 18 years. Transitioning to the role of caregiver for a child has been shown to increase depressive symptoms for both women and men (Marks et al., 2002). The physical health of caregiving parents of children between the ages of 4 and 11 years with nonspecified health problems was found to be significantly poorer than the health of caregivers of healthy children (Brehaut et al., 2009).

In one study, caregiving parents of children under the age of 18 years with cerebral palsy were found to have physical health similar to that of the general population (Byrne, Hurley, Daly, & Cunningham, 2009). A qualitative study of similar caregiving parents, however, revealed that parents of children with cerebral palsy found the physical demands of caring to become more demanding as the child grew older and became larger physically (Davis, Shelly, Waters, Boyd, Cook, & Davern, 2009).

Perhaps the amount of care required by the child with a disability is more important to the health of the caregiving parent than the specific diagnosis. In a study of children who had spina bifida, it was found that the caregiving parents who reported the worst health were the ones whose child had a higher level of disability (Grosse et al., 2009).

Children between the ages of three and 42. Parents provided the majority of care to their children with disabilities (Minnes & Woodford, 2004; Pruchno et al., 1996). It was more likely that the parents of children with an intellectual disability would take on the role of the child's lifelong caregiver than that of any other relative (Chou et al., 2009). As the children being cared for grew older, their needs changed; as parents aged, their abilities to provide care changed as well. Caregiving parents reported harmful physical and mental health effects attributed to a combination of the concrete tasks of caregiving, which became harder as children became physically bigger, and

an overall concern regarding their children's future and health (Murphy et al., 2007).

Many studies have concluded that caregiving parents of children of all ages had poorer health than their noncaregiving counterparts (Brehaut et al., 2009; Brehaut et al., 2004; Seltzer et al., 2009; Seltzer et al., 2004; Yamaki, Hsieh, & Heller, 2009). In these studies, health was measured by a variety of means, but all included a count of physical conditions and/or a measure of self-rated health. Interestingly, Yamaki et al. (2009) found that caregiving mothers of people with intellectual and developmental disabilities had more chronic conditions than noncaregiving mothers, but rated their health as better.

In addition to a count of symptoms, Seltzer et al. (2009) also measured daily cortisol levels of caregiving parents who had provided care on average for 18 years to a child with a disability. These researchers found a pattern of dysregulation of cortisol that was not present in the noncaregiving comparison group. Cortisol is a biological marker that has an important role in linking stress exposure to health problems (Seltzer et al., 2009). The pattern of cortisol dysregulation was similar to the patterns seen with chronic stress, which is reflected in the length of time caregivers had provided care. The authors suggested the impact of cortisol stress accumulated over time, leading to the chronic nature of physical symptoms in long-term caregiving parents.

Although Ha et al. (2008) found that parents who provided care for their child with developmental or mental health disorders had more somatic

symptoms than noncaregiving parents, they also found older caregiving parents had fewer differences from the control group than younger caregiving parents. Ha et al. suggested this result may be attributed to the attenuation of the stress of caregiving over time. They believed the longer the caregiving parent continued to provide care, the less stressful that provision would be as the caregiver became more used to the role.

Regardless of the age of the child, caregiving parents often overlooked their own health issues and prioritized the needs of children or families as a whole. These findings were found to be true with caregivers of children ranging from four to 35 years (Murphy et al., 2007). In addition to not prioritizing their own health needs, caregiving parents had limited time, lack of respite hours, and lack of a suitable alternate care provider to allow them the opportunity to care for themselves. Murphy et al. also found that when respite hours were available, they were often used by the caregiving parent to care for other family members instead of themselves.

Along with studies that found health differences between caregiving and noncaregiving parents, other studies concluded that parents of adults with developmental disorders reported their health as no different from that of the general population (Chen, Ryan-Henry, Heller, & Chen, 2001; Heller et al., 2007). In fact, Chen et al. found that younger mothers of children with an intellectual disability actually reported better physical health than their noncaregiving counterparts. Although Seltzer, Greenberg, Floyd, Pettee, and

Hong (2001) had similar results in their study of parents of adult children with intellectual disability, they found these parents had physical health similar to noncaregiving parents in midlife and old age. With regard to the type of disability a child had, Seltzer et al. (2001) found that parents of adult children with severe mental illness did not have the same health as those of parents whose child had an intellectual disability, but rather showed worse physical health in midlife than noncaregiving parents.

Caregiving adult children.

Caring for aging parents has been an issue facing adult children for many years. In her address, at the 37th Annual Scientific Meeting of the Gerontological Society of America in 1984, Elaine Brody discussed how at that time people were providing more parent care than in the past, and for longer periods of time (Brody, 1985). Because older people were living longer, adult children were providing long-term care for their parents. Without using the terms *primary* or *secondary* stressors, Brody discussed the physical health and emotional consequences of caregiving, as well as the impact on the caregiver's personal relationships. At that time, Brody stated that adult children would continue to care for their aging parents, but cautioned that, without changes in social policies, the health challenges of family caregivers would increase the costs to society. Nearly 30 years later, caregiving adult children still face the same issues of health and emotional changes.

Typically close family members provided the majority of care for older family members with a chronic illness (Clemmer et al., 2008). Hoyer and Seltzer (1992) found health outcomes differed for caregivers depending on the generational relationship between the caregiver and care recipient (Hoyer & Seltzer, 1992; Narayan, Hepburn, & Lewis, 2004). Basically, the physical or mental health outcomes for a spouse were different from those of an adult caregiving child or a caregiving parent. Surprisingly, the research on the physical health of adult children caring for a parent was limited. Instead, mental health and caregiver burden appear to be the areas of interest. In this review, I report on the mental health of adult child caregivers when physical health information is not available.

Caring for an aging parent is very different from caring for an adult child. The average length of time an adult child spent caring for a parent was five years (Seltzer & Seltzer, 1992) with the role often ending with the death of the care recipient. Research has shown that unlike caregiving parents who care for their child with a disability for many years, some primary caregiving adult children were replaced by a sibling over a two-year period (Szinovacz & Davey, 2007). The role of adult child caregiver was not necessarily as permanent as the role of caregiving parent, as siblings may have shared the responsibilities of the adult child caregiver. Other research has suggested that although some siblings were not able to replace the primary caregiving sibling, they increased their involvement with the parent who needed care, either with

physical assistance, social support, or financial assistance as needed (Ingersoll-Dayton, Neal, Ha, & Hammer, 2003).

A portion of the research on adult child caregivers examined the differences in outcomes between adult daughters and adult sons. The importance of gendered expectations has been included in the research, with acknowledgement that often the care provided by a daughter may look different from the care provided by a son (Mui, 1995). Typically a daughter was more likely than a son to provide assistance not only with household chores, but also with personal care tasks such as bathing and dressing. Sons were less likely to assume the primary caregiver role, and even when they did, they were less likely to provide the “hands on” assistance necessary in personal care (Montgomery, 1992).

One study found that a poor relationship with a parent prior to a caregiving relationship led to declines in self-esteem among daughters and decreased psychological wellness for sons once caregiving began (Marks, Lambert, Jun, & Song, 2008). Another found a greater risk of decreased self-reported physical health over time for low-income women as compared with women from higher income groups when providing care for a parent (Marks et al., 2008).

Adult caregiving daughters demonstrated higher depression scores than noncaregivers (Hoyert & Seltzer, 1992). Similarly, when compared to adult caregiving sons, adult caregiving daughters reported poorer self-rated

health (Mui, 1995) and poorer mental health (Ron, 2006). Ron suggested that caregiving daughters may have taken on the role of caregiver because of social norms and family expectations, which led to intense negative feelings and depression.

Research has demonstrated again and again that the effects of caregiving with regard to caregiver health differ depending on the generational relationship of the caregiver to the care recipient (Blake, 2008; Corry & While, 2009; Marks, Lambert, & Choi, 2002; McPherson et al., 2000). Very little research has examined the differences or similarities of health outcomes or health influences in caregiving parents as compared with adult caregiving children. Although exact outcomes are uncertain, I anticipate caregiving parents self-rated health and total chronic health conditions will differ from those of caregiving adult children because of demands of the different types of relationships.

Primary and Secondary Stressors

Provision of Activities of Daily Living.

Activities of daily living (ADLs) are the tasks one does throughout the day to care for oneself. For example, bathing, dressing, and toileting are considered to be ADLs. Depending on the limitations of a care recipient, the caregiver may need to provide assistance with one or many ADLs throughout the course of a day. It is feasible that the physical requirements involved in providing ADL assistance could have an impact on caregiver health.

Rezende, Coimbra, Costallat, and Coimbra (2010) found that ADL provision resulted in a higher impact on caregiver's lives relative to those caregivers who did not provide ADL assistance. Although not measuring physical health specifically, Rezende et al. used the caregiver burden scale to determine impact. The caregiver burden scale measures strain, disappointment, emotional involvement, isolation, and environment. In this study of 127 primarily daughters and spouses of elderly care recipients, the authors found that, on average, each care recipient needed assistance with at least three different ADLs. Caregivers who rated the ADL level of the care recipient as high were found to experience more burden than when the ADL level was lower (Faison, Faria, & Frank, 1999; Razani et al., 2007).

Again, not measuring physical health, but instead depression, Covinsky et al. (2003) found that caregivers who cared for someone with decreased ADL function had a higher incidence of depression than those who cared for someone who was able to perform ADLs independently. Other research has found that caregivers who cared for those with difficulties in performing ADLs reported high levels of both emotional and physical strain (Ory et al., 1999).

Although most research found a relationship between ADL provision and some type of negative caregiver outcome, not all found significance. In their research of 67 caregivers providing care to a family member with dementia, Zarit, Femia, Kim, and Whitlach (2010) did not find any significant association between ADL provision and physical or mental health outcomes.

This study, however, was considered by the authors to be “descriptive and exploratory rather than predictive or seeking causative explanations” (p. 225) as they were using a relatively large number of predictor variables for the small sample size.

Because ADL provision is a primary stressor in the stress process model, I would expect the provision of ADLs would be a predictor of caregiver health. Both caregiving parents and caregiving adult children may provide ADL assistance, although it may be that caregiving adult children would provide more assistance than caregiving parents. As care receiving parents’ health declines, the amount of ADL assistance by the caregiving adult children potentially increases, whereas caregiving parents of children may experience a decrease in ADL provision as those children with developmental disorders often learn the basics of self-care at some point in their development process.

Duration of caregiving responsibilities.

The stress process model of caregiving suggests that the longer the duration of caregiving responsibilities, the greater the risk for poor caregiver outcomes. The cumulative effect of stress over time left those who provided care for longer periods more vulnerable than those who provided care for a short period of time (Ha et al., 2008). This cumulative effect was found to be true in multiple studies, confirming that the time, in years, a caregiver was responsible for a family member was directly related to a higher impact in the

caregiver's life (Hoyert & Seltzer, 1992; Rezende, Coimbra, Costallat, & Coimbra, 2010; Sparks et al., 1998; Tooth et al., 2005).

In their comparison study of caregivers and noncaregivers of older family members, Soskolne et al. (2007) found that those who provided care for two or more years had more self-reported physical health difficulties than noncaregivers. The same study found that those who provided care for fewer than two years demonstrated no difference in physical health from noncaregivers. Similarly, another study found that caregiver strain and depression were determined to be higher five years post-disabling injury of a family member than one-year post-injury (Blake, 2008).

Not all research, however, has found the relationship between duration of caregiving and health to be negative. Adaptation theory suggests that over time people adjust to the stress of a family member's disability and are able to respond better to family circumstances (Ha et al., 2008). Ha et al. (2008) found that parents of children with developmental disabilities had negative effects from caregiving, but the effects diminished over time, although they still remained higher than those for noncaregivers. In a more definitive study, no significant relationship between duration of care and physical health was found in a study of 42 family caregivers of a person with dementia (McConaghy & Caltabiano, 2005). Similarly, Saunders (2009) found no correlation between duration of caregiving and depression or the number of medical illnesses in caregivers of family members with heart failure.

It is unclear how the duration of caregiving responsibilities influenced caregiver outcomes. The number of research studies that suggested duration does not influence caregiver health is much smaller than the number of studies that concluded it does. Because duration of caregiving is a primary stressor in the stress process model, I anticipate that my study will find the duration of caregiving influences caregiver health.

Family demands.

Family demands are considered secondary stressors in the stress process model. These stressors come from the caregiver's involvement with a care recipient, but not from direct interactions with the care recipient. Instead, the stress is from relationships that are infringed upon by the relationship of the care recipient and the caregiver, such as the caregiver's interactions with other family members or an employer.

The literature studying family demands is quite limited and does not have a consistent way of measuring these demands. Some researchers measured family demands by the number of people living within the home and the number of children under the age of 15 years (Artazcoz, Borrell, Benach, Cortes, & Rohlfs, 2004; Regidor, Pascual, de la Fuente, Santos, Astasio, & Ortega, 2010); others used the number of dependents within the home as defined by anyone who does not have an income and is financially supported by an employee in the family (Melchoir, Berkman, Niedhammer, Zins, & Goldberg, 2007). Who performed the housework is yet another way family

demands have been measured in research (Regidor et al., 2010). Because I searched for research that looked at both family demands and how they influenced health, the available literature was even more limited.

Of the research available regarding family demands and health, there is little consistency in the findings. Findings included: family demands led to decreased health, but only for women of low education (Artazcoz et al., 2004); there was no relationship between family demands and women's health when measured by household size or the number of children under the age of 15 years (Regidor et al., 2010); both men and women who are exposed simultaneously to high work stress and high family demands demonstrate greater rates of work absence secondary to mental illness (Melchoir et al., 2007); and, because of high family demands, caregivers often neglect their own health needs (Daire, Torres, & Edwards, 2009).

From the above findings, it is difficult to determine just how family demands influence caregiver health. Using the stress process model, one would be led to believe that family stress would have deleterious effects over time on the health of a caregiver. The literature neither supports nor opposes this theoretical prediction.

Mediating Variable

Perceived Social Support

Pearlin and colleagues (1990) suggest that social support is a mediator that influences health outcomes in the caregiving scenario. Social support

generally refers to the availability of assistance should one need help. This support can be practical assistance, information, or emotional encouragement (Wallace Bisconti, & Bergeman, 2011). Social support is sometimes assessed by the number of supportive individuals available (Phillips, Siu, Yeh, & Cheng, 2008; Wallace, Bisconti, & Bergeman, 2011). For example, a support network may include several individuals, some of whom provide tangible assistance, and others who provide emotional support.

Most research that has studied caregivers and social support assessed its effect on caregiver burden and mental health but not physical health. The consensus in the literature is that perceived social support had positive effects on caregiver's well-being (Ferguson & Goodwin, 2010; Liu, Insel, Reed, & Crist, 2012; Shyu, Y. L., Chen, M., Liang, J., & Tseng, M., 2012), enhancing psychological health (Bozo, Anahar, Ates, & Etel, 2010; Song, Biegel, & Milligan, 1997) and reducing burden (Chiou, Chang, Chen, & Wang, 2009; Tolkacheva, Van Groenou, De Boer, & Van Tilburg, 2011) and stress (Wethington & Kessler, 1986).

Perceived social support is the belief of the caregiver that assistance is available whenever needed (Liu et al., 2012). The perception of support is extremely important. Assistance that is actually provided is received support; surprisingly, it does not appear to have the same benefits on well-being as perceived support (Liu et al., 2012; Taylor & Lynch, 2004; Wethington & Kessler, 1986).

Social support can come from family members, friends, or social institutions (Aneshensel, Pearlin, Mullan, Zarit, & Whitlach, 1995; Bozo et al., 2010; Pearlin, Menaghan, Lieberman, & Mullan, 1981). Much of the research on social support did not differentiate support received from family and support received from friends (Butterworth, Pymont, Rodgers, Windsor, & Anstey, 2010; Ferguson & Goodwin, 2010; Wallace, Bisconti, & Bergman, 2001; Wethington & Kessler, 1986); typically, support from the two groups was combined into one social support variable.

Aneshensel et al. (1995) found that friends and family members both helped caregivers to provide care but assistance with household chores was provided mostly by family members. In their study to determine whether the source of social support (family members or friends) impacted physical and mental health outcomes in older men, DuPertuis, Aldwin, and Bosse (2001) found no difference in the impact on health outcomes from the two sources. Similarly, Reinhardt (1996) found no differences in the effect of friend versus family support on life satisfaction and depressive symptoms for older men and women losing their eyesight. Reinhardt, however, did find friend but not family support had a positive influence on adaptation to vision loss. As previously noted, most researchers do not delineate support from family members versus support from friends. Generally, when attempts have been made to discover how the types of support differ, the results have been mostly inconclusive.

The research is divided as to the mediation effects of social support on caregiver outcomes. Perceived support has been found to mediate the relation between optimism and subjective well-being (Ferguson & Goodwin, 2010), disability and depressive symptoms (Taylor & Lynch, 2004), and family conflict and mental health (Butterworth et al., 2010). Other studies, however, have found that social support did not mediate caregiver outcomes of optimism, well-being, and resilience (Ekas, Lickenbrock, & Whitman, 2010; Wilks & Croom, 2008). Because the stress process model specifically designates social support as a mediator of caregiver outcomes, I expect to find a mediation effect of social support on self-rated health and on the number of chronic conditions.

Health Measurement

Health can be measured in many ways with difficulty of gaining information ranging from easy to difficult. Idler and Benyamini (1997) reviewed 27 studies of community health that included a self-rated health survey along with some other measure of health. These other health measures included self-rated disability, chronic conditions, functional limitations and/or pain symptoms; interviewer measured blood pressure, height, and weight; examinations by physicians; complete review of medical records; and nurse evaluations of somatic states, mental status, and dementia. Because self-rated health surveys have been found to be both reliable and valid (Lundberg & Manderback, 1996), and these self-reports

have been found to be correlated with physicians' assessment of health in older adults (Pruchno, Kleban, Michaels, & Dempsey, 1990), they are widely used in social science research. In large population studies, this type of assessment is most feasible and informative because of the ease of gaining reliable information (Jylha, 2009; Lantz, 2001; Subramanian, Huijts, & Avendano, 2010).

Self-Reported Health

Caregiving health research relied heavily on self-rated health (Douglas & Daly, 2003; Marks et al., 2008; Minnes & Woodford, 2004; Soskolne et al., 2007). Most studies conducted in the United States asked participants to rate their health on a five-item scale ranging from *poor* to *excellent* (Jylha, 2009). In general, self-rated health was a good indicator of health (Segovia, Bartlett, & Edwards, 1989) and has been shown to be a better predictor of mortality than a medical diagnosis (Idler & Benyamini, 1997). Although it is not known exactly why self-rated health is as accurate as it is, one suggestion is that when asked to rate personal health, people take into account the knowledge they have of their family health history, their own symptoms, and the longevity of parents and grandparents (Idler & Kasl, 1991).

There has been some question regarding self-rated health reliability among those from disadvantaged groups. The concern was that disadvantaged groups would fail to perceive and report illness or health deficits, and that advantaged groups would report higher levels of poor health

than disadvantage populations (Subramanian et al., 2010). Using data from the World Health Survey of 69 countries, researchers found there was little reporting bias regardless of social position, and concluded that self-rated health could be useful for epidemiological studies. Some discussion still exists however, regarding self-rated health and its accuracy as a measure on an international scale when comparing countries of varying social equalities (Barford, Dorling, & Pickett, 2010; Jen, Jones, & Johnston, 2009). In countries where health is equated to the ability to succeed, people may report their health as good or excellent to maintain their self-image as successful. Further, cultural influences on health may lead people to respond to health questions in a manner that does not reflect their health at all, Related issues could arise among various disadvantaged groups within a society as well, raising questions about both the reliability and the validity of self-rated health.

It appears that self-rated health may include components other than perception of health only. One component is that people account for family health history in their own self-rated health (Idler & Kasl, 1991). Other research has found that a component of psychological health or life satisfaction is also included in the self-rated health assessment (Hooker & Siegler, 1992).

Nevertheless, the literature supports the use of self-reported health as a reliable method to establish the health of a participant. Reliability has been established with men, women, various age groups (Lundberg & Manderbacka,

1996), and with people from many different countries (Subramanian et al., 2010).

Count of Chronic Conditions

Another measure of health that appeared in the caregiving literature is a count of chronic conditions or comorbidity (Brehaut et al., 2004, 2009; Pruchno et al., 1996; Sparks et al., 1998). The chronic conditions count was often performed by the researcher asking participants if they had ever been diagnosed with one or more of a list of specific conditions. To date, there does not appear to be one standardized list of conditions, with the number of conditions asked about ranging from 10 to 29. Despite variations in the number of conditions counted, most researchers agreed that the greater the number of chronic conditions, the greater the risk of mortality (Lee et al., 2007; Williams, Pham-Kanter, & Leitsch, 2009; Sparks et al., 1998). It also was found that the number of chronic conditions increased with age (Perriuccio, Power, & Badley, 2007; Yamaki et al., 2009).

Surprisingly, most research did not delineate comorbidities by impact on overall health. For example, it is possible for a relatively benign chronic condition, such as psoriasis, to carry the same weight in the count as a severe chronic condition, such as diabetes. Fortin et al. (2006) researched the relationship between multiple morbidity and health-related quality of life using both self-rated health surveys and a weighted chronic conditions scale. The weighted scale assigned a score ranging from 0 to 4 to each condition, with 0

indicating the participant *did not have the condition* and 4 indicating the *condition was extremely severe*. Fortin's group found that using a weighted scale resulted in poorer scores on all physical health, and some mental health scales, than using the self-reported health survey alone (Fortin, 2006). They concluded that using a weighted scale for multiple morbidity was a better measure to assess the overall burden of disease for a participant.

In their report on health measures used in the National Social Life, Health, and Aging Project (NSHAP), Williams et al. (2009) also stated that using a weighted scale of comorbidity is highly predictive of mortality rates. Although the conditions included in the NSHAP survey did not include all the conditions on the specific standardized health index that the NSHAP researchers were using, resulting in chronic conditions not being indexed, Williams et al. concluded that an unweighted count of conditions was still informative as a gross measure of burden of disease.

In the literature on caregiver outcomes, self-reported health was one of the most consistently used measures to determine health status. This measure has been reported to be accurate and reliable at predicting the health of the participant. A count of chronic conditions was also used frequently; in general, however, it did not appear there was a standardized way of obtaining an accurate count. Still, a chronic conditions count was used and found to provide information and insight into the participant's health.

Research Questions

The literature reviewed here draws attention to the complexity of health outcomes for caregiving parents and caregiving adult children. The physical health of a caregiver is dependent on many variables including what type of a relationship exists between the caregiver and care recipient, the type of care provided, and the length of time care is provided. What is evident is that caregiving challenges differ by the relationship of the caregiver to the care recipient, and there are multifactorial influences on the health of both groups. Caregiving parents provide care on the average for a much longer time, but the adult caregiving children face a change in roles, from the child who was once cared for to the child now providing care. Although both groups are caregivers, they face different stressors depending on the type relationship with the care recipient.

Although research exists comparing outcomes of spouse and caregiving adult children, there is little that compares caregiving parents to adult child caregivers. A comparison of the health outcomes and predictors of health for caregiving parents with caregiving adult children is the focus of this work. The primary goal of this study is to determine influences on caregiver health and whether and how health outcomes differ for each of the caregiving groups. Using data from a large, nationally representative sample, I examine the associations between the causal variables of type of relationship of caregiver to care recipient, length of time caregiving, provision of ADLs, family

demands, and the two outcome variables of self-rated health and the number of chronic health conditions reported by caregivers.

From the stress process model, I anticipate the length of time providing care will influence health outcomes. Thus, caregiving parents will have lower self-rated health and more chronic health conditions than caregiving adult children as caregiving parents provide care for much longer periods of time. ADL provision was also a primary stressor that I anticipate will influence health. Although the literature was not clear on how ADL provision influences caregivers, the stress process model would suggest a negative influence on health outcomes regardless of the relationship between the caregiver and the care recipient. Finally, I anticipate that family demands will influence health outcomes in a negative way, although literature regarding this hypothesis is inconsistent. Family demands are a secondary stressor in the stress process model and thus, potentially influence both caregiving groups. Because I use a subjective measure of family demands instead of an objective measure as seen in the literature, the results may differ from what has been found in the past.

The study of caregiver health is important as society relies heavily on family members to provide informal care for people with a disability or illness. Caregiving for a child with a disability or an aging parent is usually done without cost to insurance companies or the government. The health of these caregivers must be preserved.

Method

The health outcomes of caregiving parents relative to caregiving adult children were the focus of this work. Goals for this study were to compare the health outcomes of the two caregiving groups, and to compare how the predictor variables influenced the health outcomes for each group. Also, social support was evaluated to determine whether it mediated the effect of the predictor variables on health outcomes. Using data from a large, nationally representative sample, I examined the associations between the causal variables of relationship of caregiver to care recipient, length of time caregiving, provision of ADLs, family demands, and the outcome variables of self-rated health and the number of chronic health conditions reported by caregivers. Specific methodological details follow the brief discussion of the research design and a description of the participants included in this study.

Research Design

This study was a secondary analysis using pre-existing data from the second wave of the Midlife Development in the United States (MIDUS II) survey. The parent study (MIDUS) is described in detail in following sections.

Study Population

The population used for this analysis included self-identified family caregivers, specifically caregiving parents and caregiving adult children. It was conceivable that these two groups, which were similar in age, would have different health outcomes due to the demands of their specific relationship with

care recipients. It was also conceivable that predictors of health outcomes would vary by the caregiving group.

Midlife Development in the United States (MIDUS). MIDUS was funded by the John D. and Catherine T. MacArthur Foundation, with the intent to examine how behavioral, psychological, and social factors influence age-related differences in physical and mental health (Brim et al., 2011). Data were drawn from a nationally representative random-digit-dial sample of noninstitutionalized, English speaking adults, ranging in age from 24 to 74 years of age, who lived in the continental United States. The MIDUS survey was conducted from 1995 to 1996.

MIDUS II. Ten years later, with funding from the National Institute on Aging, the MIDUS II study resurveyed the original MIDUS respondents and received responses from 4,963 (69%) of the original participants. In addition to the information requested at the earlier MIDUS study, the scope of the MIDUS II survey was expanded to include caregiving, stressful life events, cognitive functioning, and coping. Nonparticipation in MIDUS II was because of participant refusal (12%), unknown whereabouts of prior participants (10%), or illness/death (8%). Demographic variables that predicted retention of participants in the MIDUS II survey were race, marital status, and education, with those who were White, married, and had higher levels of education more likely to respond. Similarly, gender was predictive of participation with women being more likely to participate than men (Radler & Ryff, 2010).

Current study sample. The samples of caregivers were drawn from the MIDUS II data set and included caregiving parents and caregiving adult children. These data were collected in 2004–2006. Of the 4,963 respondents to the MIDUS II survey, 629 (13%) identified themselves as caregivers by responding to the question:

Sometimes because of a physical or mental condition, illness, or disability, people have trouble taking care of themselves and require the assistance of friends or relatives. During the last 12 months have you, yourself, given personal care for a period of one month or more to a family member or friend because of a physical or mental condition, illness, or disability?

Of the self-identified caregivers, 498 (10%) provided care to a family member. Seventy four (1.5%) family caregivers provided care for a child with a disability and 219 (4.4%) provided care for their mothers or fathers. This study used data provided by these self-identified caregivers to determine if self-rated health and total chronic health conditions of the two groups differed, and whether the predictors of health differed between the groups. Because only the MIDUS II survey asked questions regarding caregiving, the combined surveys could not be used to assess changes in caregiver health over time.

Participant Characteristics

Table 1 provides general characteristics of the sample. The average age of all caregivers in this sample was 53 years with a standard deviation of 10.5

years. The caregivers were at least twice as likely to be women as men, and were overwhelmingly White (89%). The education levels of both groups of caregivers were distributed fairly evenly between high school or less and postgraduate education. There was a notable difference between the employment status of caregiving parents and that of caregiving adult children with slightly fewer than half (47%) of caregiving parents being employed compared to 70% of caregiving adult children. Caregiving parents were most likely to live in the same household as the care recipient (69%), unlike caregiving adult children (28%). Both caregiving parents (31%) and caregiving adult children (32%) reported having given care in the past. The average length of time spent caring for the current care recipient was 3.5 years for caregiving adult children, and 10 years for caregiving parents. I was unable to determine whether any caregivers provided care to more than one care recipient at the time of the MIDUS II survey.

Operational Definitions

Outcome variables.

Self-rated health. The question, “In general, would you say your health is excellent, very good, good, fair, or poor?” was used to address self-rated health. These were coded in the MIDUS II data on a scale of 1 to 5, with 1 being *excellent* and 5 being *poor*. For the purposes of my study, I recoded the variables so that the lower number represents poorer health. The

Table 1.

Sample Characteristics for caregiving parents (n = 74) and caregiving adult children (n = 219)

Characteristic	Caregiving parents		Caregiving adult children	
Age (<i>m</i> in years)	55.75		52.05	
	<i>n</i>	%	<i>n</i>	%
Education				
High school or less	24	32	62	28
Some College	26	35	83	38
College degree	10	14	36	16
Postgraduate	14	19	38	17
Gender				
Female	55	74	145	66
Male	19	26	74	34
Race				
White	66	89	195	89
Black/African American	1	1.5	14	6.5
Native American	2	3	2	1
Asian	0	0	1	0.5
Other	5	6.5	7	3
Current Employment status				
Employed	35	47	153	70
Looking for work	5	7	5	7
Unemployed	34	46	57	26
Income adequacy				
Not enough money	21	34	39	22
Just enough money	29	47	93	53
More than enough money	12	19	44	25
Living situation				
Co-residing with care recipient	51	69	62	28
Had provided care in the past	23	31	71	32

self-rated health variable is now coded 1 = *poor*, 2 = *fair*, 3 = *good*, 4 = *very good*, and 5 = *excellent*. Self-rated health is believed to be a valid and useful indicator for measuring health (Lantz et al., 2001).

Number of chronic conditions. Respondents were asked 30 questions addressing chronic health conditions such as asthma, diabetes, high blood pressure, and tuberculosis. The survey questions asked if they had been diagnosed or treated for the 30 conditions (see Appendix A). For this study, I am using a simple count of reported chronic conditions to determine the number of chronic conditions for each respondent (Brehaut et al., 2004; Lee et al., 2007; Williams et al., 2009).

Predictor variables.

Type of family relationship of caregiver with care recipient.

Respondents chose from a variety of relationships to answer the question, “To whom do you give the most personal care?” The options for this question ranged from *husband* (1) to *other* (13). For the purposes of this study, I was interested only in those who cared for a child, coded in MIDUS II as *son* (3) or *daughter* (4), and those who cared for a parent, coded *father* (5) or *mother* (6). I combined son and daughter into one category (child) and father and mother into another (parent), creating a dummy variable to indicate the type of relationship with the care recipient: 0 = *caregiving parent*, and 1 = *caregiving adult child*. I am using caregiving parent or caregiving adult child because I am studying caregivers as opposed to care recipients.

Provision of ADLs. ADL provision was addressed with the question, “because of (his/her) limitations (do/did) you provide (him/her) personal help with bathing, dressing, eating, or going to the bathroom?” Respondents could respond either *yes* (1) or *no* (2). For this study, responses were recoded as 0 = *no* and 1 = *yes*.

Duration of caregiving. Respondents were asked what year they started providing care to the care recipient. The years ranged from 1951 to 2004. Because I am interested in how the duration of caregiving influences caregiver health, I converted the year care was first provided into years of giving care by subtracting the first year of caring from 2005. The survey was given between January 2, 2004 and January 2, 2006. I used 2005 because it was the middle year of the survey. No respondents had begun providing care in 2005 or 2006, so there is no caregiver providing care for less than one year. The number of years providing care ranged from 1 to 54.

Family demands. To assess family demands, respondents were asked, “Not including your spouse or partner, how often do members of your family make too many demands on you?” They were able to choose between *often* (1), *sometimes* (2), *rarely* (3), and *never* (4). These responses were recoded to 0 = *never*, 1 = *rarely*, 2 = *sometimes*, and 3 = *often*.

Mediator variable.

Perceived Social support. Social support was assessed with two questions: “How much can you rely on them (your family) for help if you have a

serious problem?" and "How much can you rely on them (your friends) for help if you have a serious problem?" Response options were: *a lot* (1), *some* (2), *a little* (3), or *not at all* (4). For this study, responses were recoded to 0 = *not at all*, 1 = *some*, 2 = *a little*, and 3 = *a lot*. Because most caregiving literature on social support reports on combined family and friend support, I combined these two variables into a perceived *social support* variable.

Control variables.

Age. The age of the respondents was calculated by the MIDUS II team by subtracting the respondent's year of birth from the year the survey was completed. The respondents range in age from 34 to 84 years.

Gender. The gender of each respondent was coded as 0 = *male* and 1 = *female*.

Education. Respondents were asked, "What is the highest grade of school or year of college you have completed?" Respondents were able to choose between 12 options ranging from *no school/some grade school* (1) to *PhD, EdD, MD, DDS, LLB, LLD, JD, or other professional degree* (12). The responses were recoded as 0 = *high school or less*, 1 = *some college*, 2 = *college degree*, and 3 = *postgraduate education*.

Marital status. The marital status of the respondents was determined by responses to "Are you married, separated, divorced, widowed, or never married?" Responses ranged from *married* (1) to *never married* (5). These

responses were recoded to 0 = *married*, 1 = *separated*, 2 = *divorced*, 3 = *widowed*, and 4 = *never married*.

Analysis Plan

I used the statistical software package Stata 12 (Stata Corp, 2011) to complete the statistical analysis. Frequency distributions and descriptive statistics were generated for all the variables of interest. I generated a correlation matrix to determine whether any of the variables were correlated with each other, although correlation alone is not a reason to eliminate variables. Once the regression analysis was performed, a postestimation test of variance inflation was administered that determined the precise amount of collinearity (Acock, 2010). An average variable inflation factor of 1.0 or less indicates no problem with multicollinearity, whereas a variable inflation factor over 10 (Cohen, Cohen, West & Aiken, 2002) indicates problems that may need to be resolved by either dropping a variable or combining the two correlated variables (Acock, 2010).

Linear multiple regression was used to determine how the relationship of the caregiver to the care recipient, length of time providing care, provision of ADLs, and family demands influenced the self-rated health of caregivers. Multiple regression allowed me to study many variables working together to produce an outcome (Acock, 2010). To determine the influence of the same variables on the number of chronic health conditions of the caregivers, I used a negative binomial regression. Although Poisson regression appeared to be

the obvious choice as it is specific to dependent count variables and is designed to work with variables that may be skewed such as a count of chronic health issues (Acock, 2010), the MIDUS II data collection violated the assumption of the variance being equal to the mean. Instead, negative binomial regression, which was designed for circumstances when the variance is larger than the mean, was used (Long & Freese, 2006).

The two groups of caregivers I analyzed were not the same size. This was not a problem with regression analysis as research has shown that performance of the regression model outcomes are similar despite differing sample sizes (Heo & Leon, 2005). The Stata 12 software was able to accommodate the unequal sample sizes by using a pooled estimate of variance, which results in a slightly more conservative p -value (Glantz, 2005) from when groups are equal in size. This alteration to the testing did not assume that the variances were unequal; instead it did not assume that variances were equal (Pagano & Gauvreau, 2000).

Finally, I tested the results from the above regression analyses to assess whether social support mediated the relation between the predictor variables and the outcome variables. I followed the method outlined by Baron and Kenney (1986). Essentially, three regressions were performed to attempt to establish mediation. First, the predictor variables were regressed onto the dependent variables to determine whether a significant association existed. Then each predictor variable that was found to be significantly associated with

the outcome variable was regressed onto the proposed social support variable to check for significance. If the social support variable had been associated with any of the predictor variables I would have then tested for significance with the outcome variables. Since this was not true, however, the test for mediation was ended.

Missing data.

I used multiple imputation to manage missing data. Multiple imputation uses the available data to predict the values for missing data, imputing the missing values through an iterative process and combining the analyses into a single summary (Olinsky, Chen, & Harlow, 2003). This approach also uses variables other than the ones being studied to improve the accuracy of the predicted values (Acock, in press). Multiple imputation has been shown to work well with small samples such as in this study.

The only missing variables that needed to be imputed were family demands and social support, as 18% of the responses were missing for each variable. Both the family demand and social support variables were part of the survey that was to be completed at home and to be mailed to the researchers. The imputation model included the independent variables in this study, auxiliary variables that may have explained missingness, such as income and age, and relevant variables that are related to the predictor variables as determined by a logistic regression (Acock, in press). I used Stata 12 software to perform multiple imputation.

Results

Following multiple imputation for missing data, this study examined influences on the health outcomes of caregiving parents versus caregiving adult children, and whether social support mediated those influences. Multiple regression and negative binomial regression were used to determine how much of the variance in the dependent variables was explained by the independent and mediator variables.

Power Analysis

Before running any analysis, I first determined that the number of participants in my sample were sufficient for adequate power. Using *G*Power* 3 software that was designed specifically to assist with power analysis, I computed the sample size needed for a multiple regression analysis with an effect size of 0.1 (small to moderate), $\alpha = 0.05$, power of 0.95, and using five predictor variables. The minimum total sample size was determined to be 204, which fell well within my sample of 293 participants.

Assessment of Multicollinearity

Table 2 shows the correlations of dependent, mediator, and independent variables. This matrix was produced to check for collinearity that might have interfered with the results of my analysis. Multicollinearity is when two or more variables are highly correlated and overlap each other in the amount of information they are adding to the analysis. Self-rated health and number of chronic conditions are both dependent variables; as such, it is not surprising

that they are correlated. Time caregiving is significantly correlated with type of caregiver, although a correlation of 0.34 is considered to be moderate (Acock, 2010). Similarly, ADL provision is significantly correlated with type of caregiver but 0.21 is a weak correlation. As a general rule, a correlation between independent variables of less than 0.60 is considered nonproblematic (Cohen et al., 2002).

To further insure there would be no issues with multicollinearity, diagnostics were performed postregression analysis to determine the amount of variance inflation factor (VIF) for each independent variable. The mean VIF was 1.11, which is considered to be nonproblematic and well below the suggested cutoff VIF of 10, with regard to multicollinearity (Acock, 2010; Cohen et al., 2002). Thus, multicollinearity was not an issue in this study.

Missing Data Management

The variables *family demands* and *social support* each had 18% missing data and *time caregiving* was missing 4%. To address these missing values, I used multiple imputation. Multiple imputation is a method of creating multiple sets of plausible values for the data that are missing (Rubin, 1996). After generating several sets of plausible values, the values are pooled to obtain an improved estimate of the missing values (Acock, 2005). Using variables from my data set, I was able to determine auxiliary variables to explain the patterns of missing values and to predict the value of the missing data.

Table 2

Correlation Matrix of Dependent, Independent, and Potential Mediating Variables (N = 229)

	1	2	3	4	5	6	7
1. Self-rated health (1 = <i>poor</i> , 5 = <i>excellent</i>)	-						
2. Chronic conditions	-0.43***	-					
3. Type of caregiver (1 = <i>caregiving adult child</i>)	0.16*	-0.16*	-				
4. ADL provision (1 = <i>yes</i>)	0.01	-0.01	0.24***	-			
5. Time caregiving	-0.02	-0.02	-0.32***	-0.05	-		
6. Family demands (0 = <i>not at all</i> , 3 = <i>often</i>)	-0.1	0.12	0.11	-0.06	-0.07	-	
7. Social support (0 = <i>not at all</i> , 3 = <i>a lot</i>)	0.12	-0.08	0.03	0.03	-0.16*	-0.18**	-

* $p < .05$. ** $p < .01$. *** $p < .001$.

Stata 12, a statistical software program, was used to impute values, following the guidelines listed by Acock (2010). I determined which variables would help predict missingness by performing a logistic regression of possible variables with the variables *family demands* and *time caregiving*. The logistics regression revealed that the variables *care recipient lives in household*, *employment*, and *care to whom* were correlated with the two variables that were missing data. Included in the logistic regression, but showing no significance, were *caregiver age*, *caregiver gender*, *care to whom*, *education*, *ADL provision*, and *marital status*. Those variables that were significantly related to the indicator variables were used to help impute the missing data (Acock, 2010).

To impute the missing values, I used the dependent, independent, and control variables from my regression model, along with auxiliary variables determined by logistic regression that predicted missingness. All of these variables were included in the imputation model. Twenty imputations were performed resulting in 20 different sets of data. A new dataset was created with imputed values substituted for the missing values.

Analysis

Self-rated health.

A multiple regression analysis was performed using Stata 12 software to address how self-rated health is influenced by the predictor variables. When controlling for caregiver age, caregiver gender, education, employment,

and marital status, the regression model was significant, $F(10, 279) = 5.61, p < .001$. Table 3 represents the findings from this analysis. First, the control variables were entered into the model. Then, type of caregiver, ADL provision, family demands, and time caregiving were entered as the independent variables. Of the independent variables, only type of caregiver was found to be significant with regard to self-rated health, $t = 3.25, p < .01$. Activities of daily living provision, family demands, and length of time caregiving did not influence self-rated health.

Type of caregiver distinguished between caregiving parents and caregiving adult children. For every one unit of change in the caregiver relationship, self-rated health increased by 48% of one self-rated health unit. Because this is a dichotomous variable (*caregiving parents* are coded as 0 and *caregiving adult children* as 1), this is an awkward result to report. The type of caregiver coefficient is negative, suggesting that the self-rated health of parents is poorer than that of caregiving adult children. Thus, caregiving adult children have significantly better self-reported health than caregiving parents. Next, I tested whether social support mediated the relation identified between the type of caregiver and self-rated health. I followed Baron and Kenny's (1986) guidelines for mediation, which have been used extensively in social science research on health and well-being (Butterworth et al., 2010; Ferguson & Goodwin, 2010; Rogers & Hogan, 2003; Wallace et al., 2001). For mediation to be present, there would need to be a significant relation

Table 3.

Summary of Regression Analysis for the Relation Between Predictor Variables and Self-Rated Health (N = 293)

Predictor	Model 1			Model 2		
	Self-reported health			Self-reported health		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Demographic variables						
Caregiver age	.004	.006	.036	.002	.006	.02
Gender (1 = <i>female</i>)	.11	.13	.05	.13	.13	.06
Education	.21***	.06	.21	.20***	.05	.20
Employment (1 = <i>yes</i>)	-.28***	.07	-.25	-.25***	.07	-.22
Marital status (0 = <i>married</i>)	-.11**	.04	-.15	-.11**	.04	-.15
Independent variables						
Type of caregiver (1 = <i>caregiving adult child</i>)				.48**	.15	.20
ADL provision (1 = <i>yes</i>)				-.007	.11	-.003
Family demands (0 = <i>never</i> , 3 = <i>often</i>)				-.15	.08	-.12
Time caregiving				.006	.008	.04
R^2		.12			.18	
ΔR^2					.06	
<i>F</i>		7.97			5.57	
<i>df</i>		287			282	
ΔF					1.40	

* $p < .05$. ** $p < .01$. *** $p < .001$.

between the predictor and the outcome variable, between the predictor and the proposed mediator, and between the proposed mediator and the outcome variable. In this analysis, caregiver age, caregiver gender, education, employment, and marital status were entered as controls.

I tested whether social support mediated the relation between type of caregiver and self-reported health. I did not examine the other predictor variables to determine whether social support mediated their path with self-reported health, because the predictor variables of ADL provision, family demands, and time caregiving did not meet the first criteria of Baron and Kenny's guidelines of demonstrating a significant relation with the outcome variable. Type of caregiver (predictor) and self-rated health (outcome) were significantly associated, $t = 3.36, p < .01$. Next, I determined whether there was a significant relation between type of caregiver (predictor) and social support (mediator). Type of caregiver was regressed onto social support and no significance was found, $t = 0.80, p = .427$. Because there is no significant association between the predictor variable and the proposed mediator, no mediation is present

Although the type of caregiver variable was significant in predicting the self-rated health of caregivers, it only accounted for 6% of the variance in this model. The control variables of education and employment were significant at $p < .001$ and marital status was significant at $p < .01$. Combined, these three variables accounted for an additional 12% of the variance in this model.

Chronic health conditions.

A negative binomial regression analysis was conducted with the health outcome of total chronic conditions as the dependent variable and the control variables caregiver age, caregiver gender, education, employment, and marital status. A second model was performed adding the predictor variables type of caregiver, ADL provision, family demands, and time caregiving. Results from these analyses are found in Table 4. This model was found to be significant, $F(9, 6.5e+06) = 4.58, p < .001$.

As with the outcome of self-rated health, the total number of chronic conditions was influenced by type of caregiver. This association was significant with $t = -2.47, p < .05$. In this calculation, it was demonstrated that for every one unit of change in the caregiving relationship, there was a 34% decrease in chronic conditions. Or, stated differently, caregiving parents reported 34% more chronic health conditions than caregiving adult children.

Perceived family demands also were significant in influencing the number of chronic health conditions diagnosed in a family caregiver, $t = 2.67, p < .01$. This finding indicates that there is a positive association between family demands and the number of chronic conditions reported by the caregiver. The results suggested an expected increase in total chronic health conditions for every one unit increase in family demands is 18%.

Table 4.

Summary of Negative Binomial Regression Analysis for Total Chronic Health Conditions (N = 239)

Predictor	Model 1 Chronic Disease Index		Model 2 Chronic Disease Index	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Demographic variables				
Caregiver age	.001	.006	.004	.006
Gender (1 = <i>female</i>)	.18	.13	.15	.13
Education	-.11*	.06	-.10	.05
Employment (1 = <i>yes</i>)	.23***	.06	.20**	.06
Marital status (0 = <i>married</i>)	.07	.04	.07	.04
Independent variables				
Type of caregiver (1 = <i>caregiving adult child</i>)			-.34*	.14
ADL provision			.06	.12
Family demands (0 = <i>never</i> , 3 = <i>often</i>)			.18**	.07
Time caregiving			-.007	.009
<i>F</i>		5.60		4.58
<i>F Change</i>				1.02

* $p < .05$. ** $p < .001$. *** $p < .001$.

Checking for mediation, again using the Baron and Kenney guidelines, I used only the predictor variables that were significantly associated with the outcome variable. Control variables of caregiver age, caregiver gender, education, employment, and marital status were entered into the model. For these analyses, I tested whether social support mediated the relations identified between the predictors type of caregiver and family demands, and the number of chronic conditions. Type of caregiver and total chronic conditions were significantly associated, $t = -2.47, p < .05$ and family demands was associated with total chronic conditions $t = 2.67, p < .01$. Type of caregiver and family demands were then regressed onto social support to determine whether they were significantly associated. Neither of the two predictor variables had a significant association between; specifically, type of caregiver $t = .45, p = .65$ and family demands $t = -1.54, p = .12$. Therefore, the pathways from type of caregiver and family demands to chronic health conditions were not mediated by social support.

The regression model that examined total chronic conditions was statistically significant. Both type of caregiver and family demands were associated with the number of chronic conditions a caregiver reports. The first model was run with control variables only and found to be significant at $p < .001$. The second model included the control variables and predictor variables and also was significant at $p < .001$. A test of negative binomial regression does not provide an R^2 value to determine the actual explained variance.

Although most negative binomial regression analysis provide a ch^2 value, it is not provided when using multiple imputation, making an exact determination of explained variance impossible.

Summary of Results

The results highlighted significant influences on health outcomes for caregiving parents and caregiving adult children. Providing care to one's own child seemed to result in lower self-rated health and a higher number of chronic health conditions than providing care to a parent. Both caregiving parents and caregiving adult children reported a higher number of chronic health conditions when demands from other family members were high. Neither the provision of activities of daily living nor the length of time caregiving was associated with self-rated health or number of chronic conditions. Social support did not appear to mediate the associations between type of caregiver and either of the health outcomes; neither did it mediate the association between family demands and number of chronic conditions.

The control variables of education, employment, and marital status influenced self-rated health significantly. Being married, employed, and/or highly educated predicted an increase in self-rated health. Of the control variables, only employment significantly predicted a decrease in the number of chronic health conditions.

Discussion

Family caregivers are essential to those for whom they provide care. Providing care, however, often has health consequences for caregivers. Only by maintaining reasonable health can caregivers continue to provide care for those with long-term needs. Studying and understanding the health of family caregivers is important not only because caregiver health determines the potential for caregivers to continue to assist care recipients, but also to allow alternatives to family caregiving to be developed. Not all people have the skills, resources, or desire to provide care, and society should not expect that family members can manage the needs of a family member with a disability. Although family caregiving may be a solution for some families, other options are needed as well. Knowing that providing care negatively impacts the health of family caregivers should motivate policy makers to explore caregiving options outside family members.

Researchers have determined that caregivers have generally poorer health than noncaregivers (Blake, 2008; Douglas & Daly, 2003; Hoyert & Seltzer, 1992; Marks, 1996; Raina et al., 2004). The family relationship between the caregiver and the care recipient has an important role in influencing the health outcomes of caregivers. Previous research has reported that spouse caregivers have poorer outcomes than adult child caregivers (Corry & While, 2009; Seltzer & Li, 2000). In their study of spouse caregivers over the age of 66 years, Schulz and Beach (1999) found that

caregiving was an independent risk factor for mortality. Spouse caregivers who reported caregiving strain were 63% more likely to die within four years than noncaregivers. This mortality outcome was only linked to those caregivers who lived with the care recipient.

Another issue that arises with family caregiving is that of ambivalence. Ambivalence is the existence of simultaneous opposing structural constraints that place individuals in conflict in terms of role expectations and the associated mixed feelings that result from that conflict (Connidis & McMullin, 2002). Society is structured in such a way that individuals are not always able to choose the roles they wish to pursue. For example, when an aging parent becomes ill, not only does society assume family members will care for that individual, but often it is assumed a daughter will become the care provider. The caregiving daughter may then have feelings of ambivalence with regard to wanting the best for her parent, but needing and wanting to meet her other existing obligations. Structural ambivalence, although not measured here, certainly can contribute to poor caregiving outcomes and undermine well-being and quality of life for caregivers.

There is a wealth of research on the health outcomes of caregivers. The majority of this research has been conducted with either no identification of the family relationship with the care recipient, or with caregiving spouses. The most frequently studied consequence of caregiving is psychological well-being (Schulz & Sherwood, 2008). Consistently research has shown that

those caregivers of older age, low socioeconomic status, and limited support networks report poorer psychological and physical health than caregivers who are younger and have more economic and social resources (Schulz, 2008).

In a study of spouse caregivers over the age of 65 years, researchers found that having a care-receiving spouse who required assistance with activities of daily living resulted in caregivers having poor health behaviors for their own health (Burton, Newsom, Schulz, Hirsch, & German, 1997). The inability to engage in healthy behaviors increases the risk of morbidity and mortality to the caregiver. On a similar note, Schulz and Beach (1999) found that spouse caregivers who experience mental or emotional strain have significantly higher risk of mortality than noncaregivers.

Research is being conducted on caregiver health, although much of this research is not addressing physical health, and little research has explored how caregiving parents and caregiving adult children compare to other caregiving groups in their health outcomes. The present study attempted to determine how specific health predictors influenced the physical health outcomes of caregiving parents and caregiving adult children, and whether those influences were mediated by social support.

The stress process model provided a theoretical framework for my study, guiding the selection of independent, dependent, and mediator variables. The primary stressors of type of relationship, provision of activities of daily living, and time caregiving, were studied along with the secondary

stressor of family demands as to their influence on health outcomes of self-rated health and number of chronic conditions. Keeping within the framework of the stress process model, social support was assessed as a potential mediator between the independent and dependent variables.

Using multiple regression and negative binomial regression, I found a strong influence of family demands on health outcomes for both caregiving parents and caregiving adult children. I also found an association with the type of caregiver relationship and health outcomes in that caregiving parents had lower self-rated health than caregiving adult children. No association was found between provision of activities of daily living or length of time caregiving and health outcomes. Similarly, no mediation effect was found using social support as a proposed mediator.

Social Support as a Mediator

Social support is considered a mediator between stressors and caregiving outcomes in the stress process model. In this study, I was not able to determine a mediating effect of perceived social support between type of caregiver and self-rated health or between type of caregiver and number of chronic conditions. The existing literature on the mediating effect of social support with health outcomes is divided with some studies demonstrating mediation (Butterworth et al 2010; Ferguson & Goodwin, 2010; Taylor & Lynch 2004) and others not (Ekas et al., 2010; Wilks & Croom, 2008). Note that physical health as an outcome was not studied.

Although the current literature is divided with regard to the mediation effect of social support, most of the research used some type of standardized scale (e.g., Perceived Social Support Scale, Social Support Questionnaire) to measure social support. I used a combination of two questions that asked how much the caregiver could rely on family and friends for support. Using a standardized scale that has previously been determined as valid may have produced different results in my study. Taylor and Lynch (2004), however, did determine social support mediated the pathway between disability and depressive symptoms using only two questions very similar to the questions I used. The two questions I used for social support may have been adequate, but it may be that social support influences depressive symptoms differently from physical health.

Family Relationship Between Caregiver and Care Recipient

This study found that both self-rated health and the total number of chronic conditions were influenced by the family relationship between the caregivers and the caregiving recipients. Self-rated health was lower and the number of chronic health conditions were higher for caregiving parents than for caregiving adult children. Although little research has compared these two caregiving groups, what research exists has revealed that caregiving parents of children with a disability have poorer health and more physical symptoms (Brehaut et al., 2004; Setlzer et al., 2004; Seltzer, et al., 2009) than parents of individuals without a disability.

The stress process model suggests that the longer the length of time providing care, the poorer the health outcomes will be for a caregiver.

Caregiving parents typically provide care for a longer duration than caregiving adult children (Brim et al., 2011; Seltzer & Seltzer, 1992) which was found to be true in this study, with the average time caring for a child approximately three times greater time caring for a parent. I did not find an association between the duration of caregiving and health outcomes.

My results are similar to those of McConaghy and Caltabiano (2005) and Saunders (2009) who also found no correlation between duration of caregiving and physical health. McConaghy and Caltabiano hypothesized that family caregivers for persons with dementia, who had been providing care for a longer period of time, would have lower levels of physical health. Instead, they found that, in their sample of dementia caregivers, longer duration of caregiving had no correlation with physical health. Similarly, Saunders found that although caregivers had a higher number of illnesses, there was no relation between duration of caregiving and number of caregiver illnesses. Although the stress process model suggests that as a primary stressor duration of caregiving should lead to poorer health outcomes, this outcome was not found in my study.

Other researchers have found that the duration of caregiving does influence health outcomes (Rezende, et al, 2010; Soskolne et al., 2007; Sparks et al., 1998). These researchers examined spouses and adult children

as caregivers, and not parents. It might be that the duration of caregiving influences spouses more than children or parents. It is possible that caregiving parents who have provided care since the birth of their child may have adapted to the demands of caregiving over time. Spouses, however, have a different type of relationship with the care recipient and report poorer self-rated health after becoming a caregiver (McPherson et al., 2000).

Provision of Activities of Daily Living

Much like the duration of caregiving, provision of activities of daily living did not influence health outcomes in my study. I was unable to find empirical studies of the impact of the provision of activities of daily living on physical health. Researchers have studied the relation between providing activities of daily living and outcomes such as caregiver burden and depression. That research found that providing assistance with activities of daily living resulted in both increased burden (Faison et al., 1999; Rezende et al., 2010) and increased depression (Covinsky et al., 2003).

Because provision of activities of daily living is a primary stressor in the health process model, I anticipated it would be correlated with caregiver health outcomes, but, in my multidimensional model, it was not. Although my results were similar to those of Zarit et al. (2010) who also found no association between activities of daily living provision and physical health, the influence of providing activities of daily living provision on health outcomes is not well

researched. Other than the stress process model, I had little from which to predict my findings.

Perceived Family Demands

The limited prior research has shown inconsistent outcomes of health with regard to family demands. The previous studies that exist used objective measures of family demands such as number of residential family members, age of family members (Artazcoz et al., 2004; Regidor et al., 2010), and/or financial dependence (Melchoir et al., 2007). Inconsistencies in findings suggest that an objective measure of family demands may not reflect the family demands experienced by the caregiver.

My study found that perceived family demands were associated with the total number of chronic conditions for both caregiving parents and caregiving adult children. The caregiver was able to determine who was considered family, residential or not, and whether the presence of minors or dependents was a demand. No assumption was made as to what should be considered a “demand” by anyone other than the caregiver.

Perceived family demands was strongly correlated with total chronic conditions for both caregiving parents and caregiving adult children. Although I was unable to find any literature specifically on perceived family demands and health, I did find research that addressed the differences between subjective and objective measures of burden and support. Montgomery, Gonyea, and Hooyman (1985) examined caregiving burden with respect to

both objective and subjective measures. They found that although subjective and objective burden were correlated, the factors that contributed to objective burden and subjective burden were different. They also found that a family member may experience a high level of objective burden and a low level of subjective burden, or the reverse simultaneously. The distinction between objective and subjective measures may apply to the family demands that caregivers experience. It may be that the number of dependents in a household, or the number of family members under the age of 15 years, does increase family demands, but the family demands perceived by the caregiver may be of an entirely different nature and actually impact health more so. For example, the behaviors and needs of the care recipient may be more stressful and detrimental to the caregiver than the number of dependent people living within the home.

The influence of perceived family demands may be similar to the influence of perceived social support. Previous research has demonstrated that perceived social support influences the relation between disability and depression (Taylor & Lynch, 2004), is more helpful in predicting adjustment to stressful life events than received support (Wethington & Kessler, 1986), and reduces levels of depressive symptoms (Bozo et al., 2010). These same benefits are not found with received social support (Wethington & Kessler, 1986; Liu et al., 2012; Taylor and Lynch, 2004). It is conceivable that similar to perceived social support, perceived family demands influence the

caregiver's health more strongly than do objective measures of family demands.

Health Measurements

Self-rated health

Self-rated health is widely used in social science research to assess research participants' health (Douglas & Daly, 2003; Marks et al., 2008; Soskolne et al., 2007). In general, it is accepted that self-rated health is a good and reliable indicator of health (Idler & Benyamini, 1993; Jylha, 2009; Lundberg & Manderbacka, 1996). There has been discussion, however, regarding self-rated health being better in richer societies where income is equally distributed than in countries with unequal distribution of wealth (Barford, Dorling, & Pickett, 2010). Jen, Jones, and Johnston (2009) found that self-rated health is better in countries with more income disparities than in those with a more egalitarian distribution of wealth, even though life expectancy is lower in the less egalitarian countries. This finding leads to the question of what is being assessed by self-rated health. Barford et al. have proposed that there are differences in self-rated health reporting based on the societal income and distribution of wealth, although not as it might be predicted, in that those from more unequal societies report better health as a means to boost their self-image. Although Jen et al. acknowledged there are substantial international variations in self-rated health, they did not find these variations to be linked to income inequality.

It is reasonable to question what self-rated health assesses. As reported earlier, self-rated health is a better predictor of mortality than a medical diagnosis (Idler & Benyamini, 1997). Idler and Kasl (1991) suggested that when asked to rate their health, people consider their family histories, the longevity of their parents, and their own symptoms. Hooker and Siegler (1992) posited that self-rated health includes psychological well-being as well as the perception of one's physical health. In other words, self-rated health is a complex variable that may have issues of reliability and validity. Further exploration of this variable, both within and across social groups and societies seems important in determining its value for research on the physical health outcomes of caregivers.

Because my study included participants from throughout the United States, the issues of international research do not apply. Nevertheless, as noted by Barford and her colleagues (2010), it is possible that self-rated health was positively influenced by living in of our "relatively" income-equal society. Not surprisingly, although the income adequacy of the two groups in this study was not identical, it was similar. It seems premature to conclude that self-rated health was measured in this study as it needs to be to identify important dimensions that affect it.

Count of chronic conditions

Along with self-rated health, a total count of chronic conditions was used for this study to assess caregiver health. Although this type of measure

is used frequently in health research (Brehaut et al., 2009; Pruchno et al., 1996; Sparks et al., 1998), currently, there is not a consistent number of conditions or diagnoses used for research. The WHO defines health to include physical, mental, and social well-being. For this study, I used the 30-question list of chronic conditions provided by the MIDUS II survey (see Appendix A) to determine the number of chronic conditions for the participants. This list of conditions includes only one category for mental health conditions (anxiety/depression) and nothing on general well-being. Because I was specifically examining the physical health of caregivers, this absence was not a problem. If I were studying health in general, however, this measure would be problematic in that it lacked potential conditions related to mental health and well-being.

Limitations

As with all research, this study has limitations. When using an existing national dataset, the researcher is limited to the data available, and does not always have access to information that directly parallels the theoretical model being employed. I was unable, for example, to identify the diagnoses of the care recipients. The MIDUS II dataset provided some diagnosis information regarding the care recipient, but did not cross reference this information with the relationship to the caregiver. Thus, determining the diagnoses of sons, daughters, and parents receiving care was not possible.

Some research has suggested that the diagnosis of the care recipient had a negative role in the mental and possibly physical health of caregivers especially when caring for a person with dementia, mental illness, or behavioral issues (Hooker et al., 2002; Hooker, Manoogian-O'Dell, Monohan, Frazier, & Shifren, 2000; Ory et al., 1999; Pruchno et al., 1996; Seltzer et al., 2004). Yet, other research has concluded diagnosis of the care recipient was not as important as the chronicity or severity of the condition (Wallander et al., 1989). Also, it had been suggested that delineating the diagnostic categories is not necessary when examining caregiver health (Leonard, Johnson, & Brust, 1993). Instead, determining how the care recipient was impacted or limited better illustrated how the caregiver was affected over time (Perrin, et al., 1993).

Although the duration of caregiving was not found to be significantly associated with caregiver health outcomes in this study, it is possible that I was not able to assess it properly. Because duration differed between the two groups, most of the variance in caregiving duration may already have been accounted for by the relationship of the caregiver to the care receiver. Further attention should be given to caregiving duration as an influence on health outcomes, particularly given the long duration of providing care among caregiving parents.

Because of the relatively small sample size, I was unable to control for other potentially important influences on physical health outcomes. For

example, although I had information regarding whether the care recipient coresided with the caregiver, I did not have access to the duration of the living situation. It may be that detailed and nuanced information about the duration of caregiving and the duration of coresidence might influence caregiving outcomes in a way that could not be anticipated.

Although I found a significant relation between perceived family demands and the number of chronic conditions caregivers experience, there is not yet a valid and reliable measure of perceived family demands. To my knowledge, mine is the first research to use perceived family demands as an influence on health outcomes. Only one question in the MIDUS II dataset asked how often family members make demands on the caregiver. A combination of questions or a scale of perceived family demands may provide different results.

There also were limitations to the demographic information provided by the MIDUS II dataset. Caregivers only reported on providing care to one person but they may have been providing care to more than one person. Information on caregiving to multiple care recipients was not available. Similarly, I was unable to determine whether the participant was the only caregiver for the care recipient. Nor could I determine the extent of caregiving duties. Both of these factors could potentially influence the demands the caregiver experienced and the resultant health outcomes. Also, I was unable to determine the age of the care recipients. This information would have been

helpful in determining whether caregiving parents were providing care to a young child or an adult child with a disability.

Another limitation to this study was that the total number of participants was small. This sample issue was unavoidable as I examined two specific groups of caregivers as opposed to all caregivers in general. Much research has been conducted on caregivers as a whole, but as was found in this study, not all caregivers are the same or react to the stress of caregiving in the same way. Although the number was small, the information learned will be valuable in adding to the literature on caregiving parents and caregiving adult children. The small sample size may be because the number of self-identified family caregiver participants in the MIDUS II study was 10% of the total survey population. This is a low figure compared to the national estimates of 29% (National Alliance for Caregivers, 2009).

Both the MIDUS II and Caregiving in the U.S. surveys asked if care had been provided to a family member or friend within the past 12 months; both children and adults were included among care recipients. The surveys, however, differed in several ways. Along with random digit dialing to establish contact with potential participants, the Caregiving in the U.S. survey oversampled individuals over the age of 50 years. Interviews could be conducted in Spanish if the participant desired, and the estimated length of the survey was 20 minutes. The population and sampling approach in MIDUS was quite different, given that it was for English speaking people only and was

time intensive to complete. In other words, although caregiving was measured in the same way in both studies, differences in the population and sampling frames and in survey demands could account for the divergent proportion of the proportion of the population self-described as caregiving.

It must be recognized that caregivers who might add the most to this study may not have participated in the MIDUS II survey. This survey recorded roughly 3,500 variables using a phone interview, audio computer-assisted self-interview (ACASI), computer-assisted personal interview (CAPI), computer-assisted telephone interview (CATI), and mail questionnaire. To participate in this study, the caregiver needed to commit a substantial amount of time. It is conceivable that caregivers who were either very busy caregiving or in poor health might not have agreed to participate. This self-selection of survey volunteers who are healthier than others is known as the “healthy volunteer effect.” Pinsky et al. (2007) found that volunteers for health screenings were typically healthier than individuals in the general population. This health discrepancy in volunteers from the general public may limit the generalizability of research outcomes.

Strengths

The strength of this study lies in the examination of caregiving adult children and caregiving parents using a representative dataset. Much research has been done on how caregiving spouses fare in health and how they compare to other caregivers, but little research has focused on the

physical health outcomes of caregiving adult children. Similarly, the literature does not examine how caregiving adult children and caregiving parents compare. This study adds to the literature on the physical health outcomes of caregiving adult children relative to that of caregiving parents by demonstrating that caregiving parents have poorer health outcomes than caregiving children. This study also demonstrates the impact of family demands on the health of both types of caregivers.

Another strength of this study is that I attempted to determine whether, and if so, how, subjective family demands influenced caregiver health. Existing literature is vague about family demands, and most studies used an objective measure that allowed the researcher to decide how many family demands each caregiver faces. My study used the caregivers' report to determine the level of family demands they experienced. This approach eliminated the researcher's bias in determining what a caregiver experiences, which may lead to a more accurate assessment of demands.

Future Research Directions

This research has examined caregiver health outcomes and tested for possible mediation effects from social support with regard to health outcomes, in two subgroups of caregivers that have had little attention in the past. Although previous research has been conducted regarding the health of caregiving parents, the health of caregiving adult children has received little attention. Although it is easy to find literature on the health outcomes of

spousal caregivers compared to those of other family caregivers, the same is not true for caregiving parents or caregiving adult children. Additional research on the physical health outcomes of caregiving adult children and the influences on those outcomes would be helpful. This information could be valuable to both caregivers and the healthcare providers of caregivers, allowing caregivers to take a proactive approach to their health if providing care might compromise their health outcomes.

Further research on family demands also is necessary to help researchers understand how these demands influence health. There is a paucity of information on the influence of perceived family demands, with much to be learned on how it influences health outcomes. Although objective family demands have been studied, the research is limited and there appears to be no standardized method for measuring demands. Studying both objective and subjective family demands may help to explain the relationship between such demands and caregiver health.

Finally, research about caregiving options and resources is needed to assist caregivers in caring for themselves. For example, in 1995 the Resources for Enhancing Alzheimer's Caregiver Health (REACH) was established to research and provide interventions designed to enhance family caregiving for Alzheimer's Disease and related disorders. These interventions were conducted in various cities, with all interventions having shared goals, but different delivery techniques depending on the cultural environment for

each site (Schulz et al., 2003). A 2009 study of the REACH intervention found that caregivers who completed at least 3 or 4 sessions reported improved self-rated health, less depression, and less subjective burden (Burgio et al., 2009).

Interventions that supply caregivers with skills and knowledge about caring for a family member may prove to be useful. The REACH intervention is specifically designed around the needs of persons with Alzheimer's Disease, but similar types of interventions may benefit others who provide care to people with different diagnoses.

Interventions are not the only possible options for family caregivers. Other options need to be determined that allow caregivers to prioritize their own health. These options may include appropriate day care centers, in-home respite services, or skilled assistance. Research to determine the feasibility of such options along with what options would actually be used by caregivers would benefit both caregivers and care recipients.

Conclusion

Almost all research on caregiver health has found that caregivers have poorer health than noncaregivers. This study found that, within the caregiving population, caregiving parents have poorer health outcomes than caregiving adult children. There was no significant relation between caregiver health and the duration of care or the provision of activities of daily living. Instead, I found an association between the family relationship of the caregiver and the care recipient, with caregiving parents having poorer health outcomes of both self-

rated health and number of chronic conditions than caregiving adult children. Similarly, a significant relation was found between perceived family demands and the number of chronic conditions for both caregiving parents and caregiving adult children. This finding demonstrated an association between family demands, self-rated health, and the total number of chronic conditions. I checked for evidence of social support acting as a mediator between the significant predictors and health outcomes, but found none.

This study adds to the current literature on the physical health outcomes of two types of family caregivers. By understanding the variables that influence health, caregivers may be able to prevent or diminish some of the negative aspects of caregiving on their health. Although there is nothing caregivers can do to change their family relationship with the care recipient, they may be able to implement strategies to decrease family demands to help offset negative health effects. By learning and sharing with other family members, the influences on caregiver health, caregivers may be able to increase the time they are available to care for others.

Caregivers who are unable to address their health may be unable or unwilling to continue to provide care. With an understanding of how caregiving influences the physical health of caregivers, it may be that policy makers and service providers can begin to address the needs of caregivers, providing options that allow time for respite to take care of personal needs, and perhaps, making it possible for caregivers to opt out of the caregiving situation all

together. These options are not necessarily available and certainly not available to all caregivers currently. Society cannot continue to assume that family members can and should be caregivers, regardless of their personal health and resources.

Some societies outside the U.S. help family members take on such responsibility or routinely provide supports to those need care. Family caregiving may not always be in individual, family, or societal interest. Attention to quality of life for both caregivers and care receivers seems critical in assessing the appropriateness of family caregiving. In the meantime, examining the physical health outcomes of caregiving for caregivers can inform our understanding of candidates for change in policy and practice.

References

- AARP Public Policy Institute. (2008). Valuing the invaluable: The economic value of family caregiving, 2008 Update. Washington DC: Houser, A. & Gibson, M. J. Retrieved from http://assets.aarp.org/rgcenter/il/i13_caregiving.pdf
- Acock, A. C. (in press). What to do about missing values. In H. Cooper (Ed.), *APA handbook of research methods in psychology*. Washington, DC: American Psychological Association.
- Acock, A. C. (2005). Working with missing values. *Journal of Marriage and Family*, 67, 1012 – 1028. doi:10.1111/j.1741-3737.2005.00191.x
- Acock, A. C. (2010). *A gentle introduction to Stata*. College Station, TX: Stata Press.
- Alzheimer's Association (2011). 2011 Alzheimer's Disease Facts and Figures. Retrieved from http://www.alz.org/downloads/Facts_Figures_2011.pdf
- Aneshensel, C. S., Pearlin, L. I., Mullan, J. T., Zarit, S. H., & Whitlatch, C. J. (1995). *Profiles in caregiving*. San Diego, CA: Academic Press.
- Artazcoz, L., Borrell, C., Benach, J., Cortes, I., & Rohlfs, I. (2004). Women, family demands and health: the importance of employment status and socio-economic position. *Social Science and Medicine*, 59, 263 – 274. doi:10.1016/J.socscimed.2003.10.029
- Bainbridge, D., Krueger, P., Lohfeld, L., & Brazil, K. (2009). Stress processes in caring for an end-of-life family member: Application of a theoretical model. *Aging and Mental Health*, 13, 537 – 545. doi:10.1080/13607860802607322
- Barford, A., Dorling, D., Pickett, K. (2010). Re-evaluating self-evaluation. A commentary on Jen, Jones, and Johnston (68:4, 2009). *Social Science and Medicine*, 70, 496 – 497. doi:10.1016/j.socscimed.2009.10.059
- Barnes, C. L., Given, B. A., & Given, C. W. (1995). Parent caregivers: A comparison of employed and not employed daughters. *Social Work*, 40, 375 – 381. Retrieved from <http://www.naswpress.org/publications/journals/sw.html>

- Baron, R. M., and Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychology research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173 – 1182. doi:10.1037/0022-3514.51.6.1173
- Beach, S. R., Schulz, R., & Yee, J. L. (2000). Negative and positive health effects of caring for a disabled spouse: Longitudinal findings from the caregiver health effects study. *Psychology and Aging*, *15*, 259 – 271. doi:10.1037/0882-7974.15.2.259
- Biegel, D. E., Sales, E., & Schultz, R. (1991). *Family caregiving in chronic illness*. Newbury Park, CA: Sage.
- Birditt, K. S., Fingerman, K. L., & Zarit, S. H. (2010). Adult children's problems and successes: Implications for intergenerational ambivalence. *Journal of Gerontology: Psychological Sciences*, *65B*, 145 – 153. doi:10.1093/geronb/gbp125
- Birditt, K. S., Miller, L. M., Fingerman, K. L., & Lefkowitz, E. S. (2009). Tensions in the parent and adult child relationship: Links to solidarity and ambivalence. *Psychology and Aging*, *24*, 287 – 295. doi:10.1037.a0015196
- Blake, H. (2008). Caregiver stress in traumatic brain injury. *International Journal of Therapy and Rehabilitation*, *15*, 263 – 271. Retrieved from <http://www.ijtr.co.uk/>
- Blieszner, R., & Roberto, K. A. (2010). Care partner responses to the onset of mild cognitive impairment. *The Gerontologist*, *50*, 11 – 22. doi:10.1093/geront/gnp068
- Bogenschneider, K. (2000). Has family policy come of age? A decade review of the state of U.S. family policy in the 1990s. *Journal of Marriage and the Family*, *62*, 1136 – 1159. doi: 10.1111/j.1741-3737.2000.01136.x
- Bogenschneider, K., & Corbett, T. J. (2010). Family policy: Becoming a field of inquiry and subfield of social policy. *Journal of Marriage and Family*, *72*, 783 - 803. doi:10.1111.j.1741-3737.2010.00730.x

- Bozo, O., Anahar, S., Ates, G., & Etel, E. (2010). Effects of illness representation, perceived quality of information provided by the health-care professional, and perceived social support on depressive symptoms of the caregivers of children with leukemia. *Journal of Clinical Psychology in Medical Settings*, 17, 23 – 30. doi: 10.1007/s10880-009-9177-4
- Brehaut, J. C., Kohen, D. E., Garner, R. E., Miller, A. R., Lach, L. M., Klassen, A. F., & Rosenbaum, P. L. (2009). Health among caregivers of children with health problems: Findings from a Canadian population-based study. *American Journal of Public Health*, 99, 1254 – 1262. doi:10.2105/AJPH.2007.129817
- Brehaut, J. C., Kohen, D. E., Raina, P., Walter, S. D., Russell, D. J., Swinton, M., ... & Rosenbaum, P. (2004). The health of primary caregivers of children with cerebral palsy: How does it compare with that of other Canadian caregivers? *Pediatrics*, 114, e182 – e191. Retrieved from <http://www.pediatrics.org/cgi/content/full/114/2/e182>
- Brim, O. G., Baltes, P. B., Bumpass, L. L., Cleary, P. D., Featherman, D. L., ... & Shweder, R. A. (2011). National Survey of Midlife Development in the United States (MIDUS), 1995-1996 [Computer file]. ICPSR02760-v8. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2011-10-25. doi:10.3886/ICPSR02760.v8
- Brody, E. (1985). The Donald P. Kent Memorial Lecture: Parent care as a normative family stress. *Gerontologist*, 25, 19 – 29. doi:10.1093/geront/25.1.19
- Burgio, L.D., Collins, I. B., Schmid, B., Wharton, T., McCallum, D., DeCoster, J. (2009). Translating the REACH caregiver intervention for use by area agency on aging personnel: The REACH OUT program. *The Gerontologist*, 49, 103 – 116. doi:10.1093/geront/gnp012
- Burton, L. C., Newsom, J. T., Schulz, R., Hirsch, C. H., & German, P. S. (1997). Preventive health behaviors among spousal caregivers. *Preventive Medicine*, 26, 162 – 169. doi:org/10.1006/pmed.1996.0129
- Butterworth, P., Pymont, C., Rodgers, B., Windsor, T. D., & Anstey, K. J. (2010). Factors that explain the poorer mental health of caregivers: Results from a community survey of older Australians. *Australian and New Zealand Journal of Psychiatry*, 44, 616 – 624. doi:10.3109/00048671003620202

- Byrne, M. B., Hurley, D. A., Daly, L., & Cunningham, C. G. (2009). Health status of caregivers of children with cerebral palsy. *Child: care, health and development*, 36, 696 – 702. doi:10.1111/j.1365-2214.2009.01047.x
- Chen, S. C., Ryan-Henry, S., Heller, T., & Chen, E. H. (2001). Health status of mothers of adults with intellectual disability. *Journal of Intellectual Disability Research*, 45, 439 – 449. doi:10.1046/j.1365-2788.2001.00352.x
- Chiou, C. J., Chang, H., Chen, I. P., & Wang, H. H. (2009). Social support and caregiving circumstances as predictors of caregiver burden in Taiwan. *Archives of Gerontology and Geriatrics*, 48, 419 – 424. doi:10.1016/j.archger.2008.04.001
- Cho, S., Zarit, S. H., & Chiriboga, D. A. (2009). Wives and daughters: The differential role of day care use in the nursing home placement of the cognitively impaired family member. *The Gerontologist*, 49, 57 – 67. doi:10.1093/geront/gnp010
- Chou, Y., Lee, Y., Lin, L., Kroger, T., & Chang, A. (2009). Older and younger family caregivers of adults with intellectual disability: Factors associated with future plans. *Intellectual and Developmental Disabilities*, 47, 282 – 294. doi:10.1352/1934-9556-47.4.282
- Clemmer, S. J., Ward-Griffin, C., & Forbes, D. (2008). Family members providing home-based palliative care to older adults: The enactment of multiple roles. *Canadian Journal on Aging*, 27, 267 – 283. doi:10.3138/cja.27.3.267
- Cohen, C. A., Colantonio, A., & Vernich, L. (2002). Positive aspects of caregiving: rounding out the caregiver experience. *International Journal of Geriatric Psychiatry*, 17, 184 – 188. doi:10.1002/gps.561
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2002). *Applied multiple regression/correlation analysis for the behavioral sciences*. Nahwah, NJ: Rutledge.
- Connidis, I. A., & McMullin, J. A. (2002). Sociological ambivalence and family ties: A critical perspective. *Journal of Marriage and Family*, 64, 558 – 567. doi:10.1111/j.1741-3737.2002.00558.x

- Corry, M., & While, A. (2009). The needs of carers of people with multiple sclerosis: a literature review. *Scandinavian Journal of Caring Sciences*, 23, 569 – 588. doi:10.1111/j.1471-6712.2008.00645.x
- Covinsky, K. E., Newcomer, R., Fox, P., Wood, J., Sands, L., Dane, K., & Yaffe, K. (2003). Patient and caregiver characteristics associated with depression in caregivers of patients with dementia. *Journal of General Internal Medicine*, 18, 1006 – 1014. doi:10.1111/j.1525-1497.2003.30103
- Daire, A. P., Torres, J., & Edwards, N. N. (2009). Family caregivers: Psychosocial impacts and clinical needs. *Adultspan Journal*, 8, 67 – 80. Retrieved from <http://www.highbeam.com/doc/1G1-210367837.html>
- Davis, E., Shelly, A., Waters, E., Boyd, R., Cook, K., & Davern, M. (2010). The impact of caring for a child with cerebral palsy: quality of life for mothers and fathers. *Child: Care, Health, & Development*, 36, 63 – 73. doi:10.1111/.1365-2214.2009.00989.x
- Douglas, S. L., & Daly, B. J. (2003). Caregivers of long-term ventilator patients: physical and psychological outcomes. *Chest*, 123, 1073 – 1081. doi:10.1378/chest.123.4.1073
- Ekas, N. V., Lickenbrock, D. M., & Whitman, T. L. (2010). Optimism, social support, and well-being in mothers of children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 40, 1274 – 1284. doi:10.1007/s10803-010-0986-y
- Faison, K. J., Faria, S. H., & Frank, D. (1999). Caregivers of chronically ill elderly: Perceived burden. *Journal of Community Health Nursing*, 16, 243 – 253. doi:10.1207/S15327655JCHN1604_4
- Ferguson, S. J., & Goodwin, A. D. (2010). Optimism and well-being in older adults: The mediating role of social support and perceived control. *International Journal of Aging and Human Development*, 71, 43 -68. doi:10.2190/AG.71.1.c
- Fortin, M., Bravo, G., Hudon, C., Lapointe, L., Almirall, J., Dubois, M., & Vanasse, A. (2006). Relationship between multimorbidity and health-related quality of life of patients in primary care. *Quality of Life Research*, 15, 83 – 91. doi:10.1007/s11136-005-8661-z

- Gaugler, J. E., Linder, J., Given, C. W., Ritesh, K., Tucker, G., & Regine, W. F. (2009). Family cancer caregiving and negative outcomes: The direct and meditational effects of psychosocial resources. *Journal of Family Nursing, 15*, 417 – 444. doi:10.1177/1074840709347111
- Glantz, S. (2005). *Primer of biostatistics*. New York, NY: McGraw-Hill.
- Greenberg, J. S., Seltzer, M. M., & Greenley, J. R. (1993). Aging parents of adults with disabilities: The gratifications and frustrations of later-life caregiving. *The Gerontologist, 33*, 542 – 550. doi:10.1093/geront/33.4.452
- Grosse, S. D., Flores, A. L., Ouyang, L., Robbins, J. M., & Tilford, J. M. (2009). Impact of spina bifida on parental caregivers: Findings from a survey of Arkansas families. *Journal of Child and Family Studies, 18*, 574 – 581. doi:10.1007/s10826-009-9260-3
- Ha, J., Hong, J., Seltzer, M. M., & Greenberg, J. S. (2008). Age and gender differences in the well-being of midlife and aging parents with children with mental health or developmental problems: Report of a national study. *Journal of Health and Social Behavior, 49*, 301 – 316. doi:10.1177/002214650804900305
- Heller, T., Caldwell, J., & Factor, A. (2007). Aging family caregivers: Policies and Practices. *Mental Retardation and Developmental Disabilities Research Reviews, 13*, 136 – 142. doi:10.1002/mrdd.20138
- Heo, M. & Leon, A. C. (2005). Performance of a mixed effects logistic regression model for binary outcomes with unequal cluster size. *Journal of Biopharmaceutical Statistics, 15*, 513-526. doi:10.1081/BIP-200056554
- Hilgeman, M. M., Durkin, D. W., Sun, F., DeCoster, J., Allen, R. S., Gallagher-Thompson, D., & Burgio, L. D. (2009). Testing a theoretical model of stress process in Alzheimer's caregivers with race as a moderator. *The Gerontologist, 49*, 248 – 261. doi:10.1093/geront/gnp015
- Hooker, K., Bowman, S. R., Coehlo, D. P., Lim, S. R., Kaye, J., Guariglia, R., & Li, F. (2002). Behavioral change in persons with dementia: Relationships with mental and physical health of caregivers. *Journals of Gerontology: Psychological Sciences, 57B*, P453 – 460. doi:10.1093/geronb/57.5.P453

- Hooker, K., Manoogian-O'Dell, M., Monahan, D. J., Frazier, L. D., & Shifren, K. (2000). Does type of disease matter? Gender differences among Alzheimer's and Parkinson's disease spouse caregivers. *The Gerontologist, 40*, 568 – 573. doi:10.1093/geront/40.50568
- Hooker, K., & Siegler, I. C. (1992). Separating apples from oranges in health ratings: Perceived health includes psychological well-being. *Behavior, Health, and Aging, 2*, 81 – 92. Retrieved from <http://psycnet.apa.org/?&fa=main.doiLanding&uid=1993-05267-001>
- Hoyert, D. L., & Seltzer, M. M. (1992). Factors related to the well-being and life activities of family caregivers. *Family Relations, 41*, 74 – 81. Retrieved from <http://www.jstor.org/pss/585397>
- Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behavior, 38*, 21 – 37. Retrieved from <http://www.jstor.org/pss/2955359>
- Idler, E. L., & Kasl, S. (1991). Health perceptions and survival: Do global evaluations of health status really predict mortality? *Journal of Gerontology: Social Sciences, 46*, S55 – 65. doi:10.1093/geronj/46.2.S55
- Ingersoll-Dayton, B., Neal, M. B., Ha, J., & Hammer, L. B. (2003). Redressing inequity in parent care among siblings. *Journal of Marriage and Family, 65*, 201 – 212. doi:10.1111/j.1741-3732.2003.00201.x
- Jen, M. H., Jones, K., & Johnston R. (2009). Global variations in health: Evaluating Wilkinson's income inequality hypothesis using the World Values Survey. *Social Science and Medicine, 68*, 643 – 653. doi:10.1016/j.socscimed.2008.11.026
- Jyhla, M. (2009). What is self-rated health and why does it predict mortality? Towards a unified conceptual model. *Social Science and Medicine, 69*, 307 – 316. doi:10.1016/j.socscimed.2009.05.013
- Killian, T., Turner, J., & Cain, R. (2005). Depressive symptoms of caregiving women in midlife: The role of physical health. *Journal of Women & Aging, 17*, 115 – 127. doi: 10.1300/J074v17n01_09
- Kushner, K. E. (2007). Meaning and action in employed mothers' health work. *Journal of Family Nursing, 13*, 33 - 55. doi: 10.1177/1074840706297912

- Lantz, P. M., Lynch, J. W., House, J. S., Lepkowski, J. M., Mero, R. P., Musick, M. A., & Williams, D. R. (2001). Socioeconomic disparities in health change in a longitudinal study of US adults: the role of health-risk behaviors. *Social Science and Medicine*, *53*, 29 – 40. doi:10.1016/S0277-9536(00)00319-1
- Lee, T. A., Shields, A. E., Vogeli, C., Gibson, T. B., Woong-Sohn, M., Marder, W. D., ... & Weiss, K. B. (2007). Mortality rates in veterans with multiple chronic conditions. *Journal of General Internal Medicine*, *22*, 403 – 407. doi:10.1007/s11606-007-0277-2
- Leonard, B. J., Johnson, A. L., & Brust, J. D. (1993) Caregivers of children with disabilities: A comparison of those managing “OK” and those needing more help. *Children’s Health Care*, *22*, 93 – 105. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10171474>
- Liu, Y., Insel, K. C., Reed, P. G., & Crist, J. D. (2012). Family caregiving of older Chinese people with dementia. *Nursing Research*, *61*, 39 – 50. doi:10.1097/NNR.0b01e31823bc451
- Lundberg, O., & Manderbacka, K. (1996). Assessing reliability of a measure of self-rated health, *Scandinavian Journal of Social Medicine*, *24*, 218 – 223. doi:10.1177/140349489602400314
- Marks, N. F. (1996). Caregiving across the lifespan: National prevalence and predictors. *Family Relations*, *45*, 27 – 36. Retrieved from <http://www.jstor.org/stable/584767>
- Marks, N. F., Lambert, J. D., & Choi, H. (2002). Transitions to caregiving, gender, and psychological well-being: A prospective U.S. National Study. *Journal of Marriage and Family*, *64*, 657 – 667. doi:10.1111/j.1741-3737.2002.00657.x
- Marks, N. F., Lambert, J. D., Jun, H., & Song, J. (2008). Psychosocial moderators of the effects of transitioning into filial caregiving on mental and physical health. *Research on Aging*, *30*, 358 – 389. doi:10.1177/0164027507312998
- McConaghy, R., & Caltabiano, M. L. (2005). Caring for a person with dementia: Exploring relationships between perceived burden, depression, coping and well-being. *Nursing and Health Sciences*, *7*, 81 – 91. doi:10.1111/j.1442-2018.2005.00213.x

- McPherson, K. M., Pentland, B., & McNaughton, H. K. (2000). Brain injury – the perceived health of carers. *Disability and Rehabilitation*, 22, 683 – 689. doi:10.1080/096382800445489
- Melchoir, M., Berkman, L. F., Niedhammer, I., Zins, M., & Goldberg, M. (2007). The mental health effects of multiple work and family demands: A prospective study of psychiatric sickness absence in the French GAZEL study. *Social Psychiatry and Psychiatric Epidemiology*, 42, 573 – 582. doi:10.1007/s00127-007-0203-2
- Minnes, P., & Woodford, L. (2004). Well-being in aging parents caring for an adult with a developmental disability. *Journal on Developmental Disabilities*, 11, 47 – 66. Retrieved from <http://www.oadd.org/index.php?page=253>
- Moller, T., Gudde, C. B., Folden, G. E., & Linaker, O. M. (2009). The experience of caring in relatives to patients with serious mental illness: gender differences, health and functioning. *Scandinavian Journal of Caring Sciences*, 23, 153 – 160. doi:10.1111/j.1471-6712.2008.00605x
- Montgomery, R. J. V. (1992). Gender differences in patterns of child-parent caregiving relationships. In J. W. Dwyer & R. T. Coward (Eds.). *Gender, families, and elder care* (pp. 65 – 83). Newbury Park, CA: Sage.
- Mui, A. C. (1995). Caring for frail elderly parents: A comparison of adult sons and daughters. *The Gerontologist*, 35, 86 – 93. doi:10.1093/geront/35.1.86
- Murphy, N. A., Christian, B., Caplin, D. A., & Young, P. C. (2007). The health of caregivers for children with disabilities: caregiver perspectives. *Child: Care, Health and Development*, 33, 180 – 187. doi: 10.1111/j.1365-2214.2006.00644.x
- Narayan, S., Hepburn, K., & Lewis, M. (2004). Spouses and adult daughters: A comparison of perceptions of dementia caregiving. *The Gerontologist*, 44, 89 – 90. Retrieved from http://gerontologist.oxfordjournals.org/content/44/Special_Issue_I/1.full.pdf+html
- National Alliance for Caregiving in collaboration with AARP (2009). *Caregiving in the U.S.* Retrieved from <http://www.caregiving.org/pdf/research/CaregivingUSAllAgesExecSum.pdf>

- National Family Caregivers Association (2102). *Caregiving Statistics*. Retrieved from http://www.nfcares.org/who_are_family_caregivers/care_giving_statistics.cfm
- Ory, M. G., Hoffman, R. R., Yee, J. L., Tennstedt, S., & Schulz, R. (1999). Prevalence and impact of caregiving: A detailed comparison between dementia and nondementia caregivers. *The Gerontologist*, *39*, 177 – 185. doi:10.1093/geront/39.2.177
- Pagano, M., & Gauvreau, K. (2000). *Principles of biostatistics*. Pacific Grove, CA: Duxbury.
- Park, H. (2009). Factors associated with the psychological health of grandparents as primary caregivers: An analysis of gender differences. *Journal of International Relationships*, *7*, 191 – 208. doi:10.1080/15350770902852393
- Pearlin, L. I., Menaghan, E. G., Lieberman, M. A., Mullan, J. T. (1981). The stress process. *Journal of Health and Social Behavior*, *22*, 337 – 356. Retrieved from <http://www.jstor.org/stable/2136676>
- Pearlin, L. I., Mullan, J. T., Semple, S. J., & Skaff, M. M. (1990). Caregiving and the stress process: An overview of concepts and their measures. *The Gerontologist*, *30*, 583 – 594. doi:10.1093/geront/30.5.583
- Perrin, E. C., Newacheck, P., Pless, B., Drotar, D., Gortmaker, S. L., ...Weitzman, M. (1993). Issues involved in the definition and classification of chronic health conditions. *Pediatrics*, *91*, 787 – 793. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/8464668>
- Perruccio, A. V., Power, J. D., & Badley, E. M. (2007). The relative impact of 13 chronic conditions across three different outcomes. *Journal of Epidemiology and Community Health*, *61*, 1056 – 1061. doi:10.1136/jech.2006.047308
- Phillips, D. R., Siu, O. L., Yeh, A. G. O., & Cheng, K. H. C. (2008). Informal social support and older persons' psychological well-being in Hong Kong. *Journal of Cross-Cultural Gerontology*, *23*, 39 – 55. doi:10.1007/s10823-007-9056-0
- Pillemer, K., Suito, J. J. (2002). Explaining mothers' ambivalence toward their adult children. *Journal of Marriage and Family*, *64*, 602 – 613. doi:10.1111/j.1741-3737.2002.00602.x

- Pinquart, M., & Sorensen, S. (2006). Gender differences in caregiver stressors, social resources, and health: An updated meta-analysis. *Journal of Gerontology: Psychological Sciences*, 61B, P33 – P45. Retrieved from <http://psychsocgerontology.oxfordjournals.org/content/61/1.toc>
- Pinsky, P. F., Miller, A., Kriamer, B. S., Church, T., Reding, D., Prorok, P., Gelmann, E., Schoen, R. E., Buys, S., Hayes, R. B., & Berg, C. D. (2007). Evidence of a healthy volunteer effect in the prostate, lung, colorectal, and ovarian cancer screening trial. *American Journal of Epidemiology*, 165, 874 – 881. doi:10.1093/aje/kwk075
- Pnina, R. (2006). Care giving offspring to aging parents: How it affects their marital relations, parenthood, and mental health. *Illness, Crisis & Loss*, 14, 1 – 21. Retrieved from <http://baywood.metapress.com/app/home/contribution.asp?referrer=parent&backto=issue,1,5;journal,22,50;linkingpublicationresults,1:103734,1>
- Pruchno, R. A., Patrick, J. H., & Burant, C. J. (1996). Mental health of aging women with children who are chronically disabled: Examination of a two-factor model. *Journal of Gerontology: Social Sciences*, 51B, S284 – S296. doi:10.1093/geronb/51B.6.S284
- Pruchno, R. A., Kleban, M. H., Michaels, J. E., & Dempsey, N. P. (1990). Mental and physical health of caregiving spouses: Development of a causal model. *Journal of Gerontology: Psychological Sciences*, 45, P192 – 199. doi:10.1093/geronj/45.5.P192
- Radler, B. T., & Ryff, C. D. (2010). Who participates? Accounting for longitudinal retention in the MIDUS national study of health and well-being. *Journal of Aging and Health*, 22, 307 – 331. doi:10.1177/089826-4309358617
- Raina, P., O'Donnell, M., Schwellnus, H., Rosenbaum, P., King, G., Brehaut, J.,... & Wood, E. (2004). Caregiving process and caregiver burden: Conceptual models to guide research and practice. *BMC Pediatrics*, 4, 1 - 13. doi:10.1186/1471-2431-4-1
- Razani, J. B., Kakos, B., Orieta-Barbalace, C., Wong, J. T., Casas, R., Lu, P.,... & Josephson, K. (2007). Predicting caregiver burden from daily functional abilities of patients with mild dementia. *Journal of the American Geriatrics Society*, 55, 1415 – 1420. doi:10.1111/j.1532-5415.2007.01307.x

- Regidor, E., Pascual, C., de la Fuente, L., Santos, J. M., Astoasio, P., & Ortega, P. (2010). Socio-economic position, family demands, and reported health in working men and women. *European Journal of Public Health, 21*, 109 – 115. doi:10.1093/eurpub/ckq024
- Reinhardt, J. P. (1996). The importance of friendship and family support in adaptation to chronic vision impairment. *Journal of Gerontology: Psychological Sciences, 51B*, P268 – P278. doi:10.1093/geronb/51B.5.P279
- Rezende, T. C. B., Coimbra, A. M. V., Costallat, L.T. L., & Coimbra, I. B. (2010). Factors of high impacts on the life of caregivers of disabled elderly. *Archives of Gerontology and Geriatrics, 51*, 76 – 80. doi:10.1016/j.archger.2009.08.003
- Roberto, K. A. (1993). Older caregivers of family members with developmental disabilities. In K. A. Roberto (Ed.), *The elderly caregiver: Caring for adults with developmental disabilities* (pp. 39 – 50). Newbury Park, CA: Sage.
- Robinson, J., Fortinsky, R., Kleppinger, A., Shugrue, N., & Porter, M. (2009). View of family caregiving: Effects of caregiving and caregiver conditions on depressive symptoms, health, work, and social isolation. *Journal of Gerontology: Social Sciences, 64B*, 788 – 798. doi:10.1093/geronb/gbp015
- Ron, P. (2006). Care giving offspring to aging parents: How it affects their marital relations, parenthood, and mental health. *Illness, Crisis and Loss, 14*, 1 – 21. Retrieved from <http://baywood.metapress.com/app/home/contribution.asp?referrer=parent&backto=issue,1,5;journal,23,51;linkingpublicationresults,1:103734,1>
- Rubin, D. B. (1996). Multiple imputation after 18+ years. *Journal of the American Statistical Society, 91*, 473 – 489. doi:10.2307/2291635
- Salter, K., Zettler, L., Foley, N., & Teasell, R. (2010). Impact of caring for individuals with stroke on perceived physical health of informal caregivers. *Disability and Rehabilitation, 32*, 273 – 281. doi:10.3109/09638280903114394
- Saunders, M. M. (2009). Indicators of health-related quality of life in heart failure family caregivers. *Journal of Community Health Nursing, 26*, 173 – 182. doi:10.1080/07370010903259196

- Schulz, R., & Beach, S. R. (1999). Caregiving as a risk factor for mortality: the caregiver health effects study. *Journal of the American Medical Association, 282*, 2215 – 2219. Retrieved from http://www.ucsur.pitt.edu/files/beach/JAMACaregiving1999_000.pdf
- Schulz, R., Burgio, L., Burns, R., Eisdorfer, C., Gallagher-Thompson, D., Gitlin, L. N., & Mahoney, D. F. (2003). Resources for enhancing Alzheimer's caregiver health (REACH): Overview, site-specific outcomes, and future directions. *The Gerontologist, 43*, 514 – 520. doi:10.1093/geront/43.4.514
- Schulz, R. & Sherwood, P. R. (2008). Physical and mental health effects of family caregiving. *Journal of Social Work Education, 44*, 105 – 113. doi:10.5175/JSWE.2008.773247702
- Segovia, J., Bartlett, R. F., & Edwards, A. C. (1989). An empirical analysis of the dimensions of health status measures. *Social Science and Medicine, 29*, 761 – 768. doi:10.1016/0277-9536(89)90156-1
- Seltzer, M. M., Almeida, D. M., Greenberg, J. S., Savla, J., Stawski, R. S., Hong, J., & Taylor, J. L. (2009). Psychosocial and biological markers of daily lives of midlife parents of children with disabilities. *Journal of Health and Social Behavior, 50*, 1 – 15. doi:10.1177/002214650905000101
- Seltzer, M. M., Greenberg, J. S., Floyd, F. J., & Hong, J. (2004). Accommodative coping and well-being of midlife parents of children with mental health problems or developmental disabilities. *American Journal of Orthopsychiatry, 74*, 187 – 195. doi: 10.1037/0002-9432.74.2.187
- Seltzer, M. M., Greenberg, J. S., Floyd, F. J., Pettee, Y., & Hong, J. (2001). Life course impacts of parenting a child with a disability. *American Journal of Mental Retardation, 106*, 265 – 286. Retrieved from <http://www.aaidjournals.org/toc/ajmr.1/106/3>
- Seltzer, M. M., & Li, L. W. (2000). The dynamics of caregiving: Transitions during a three-year prospective study. *The Gerontologist, 40*, 165 – 178. doi:10.1093/geront/40.2.165
- Seltzer M. M., & Seltzer, G. B. (1992). Aging in persons with developmental disabilities. In F. J. Turner (Ed.) *Mental health and the elderly* (pp. 136 – 160). New York, NY: Free Press.

- Singer, G. H. S., Biegel, D. E., Ethridge, B. L. (2010). Trends impacting public policy support for caregiving families. *Journal of Family Social Work, 13*, 191 – 207. doi:10.1080/10522151003773867
- Song, L., Biegel, D. E., Milligan, S. E. (1997). Predictors of depressive symptomatology among lower social class caregivers of persons with chronic mental illness. *Community Mental Health Journal, 33*, 269 – 286. doi:10.1023/A:1025090906696
- Soskolne, V., Halevy-Levin, S., & Ben-Yehuda, A. (2007). The context of caregiving, kinship tie and health: A comparative study of caregivers and non-caregivers. *Women and Health, 45*, 75 – 94. doi:10.1300/J013v45n02_05
- Sparks, M. B., Farran, C. J., Donner, E., & Keane-Hagerty, E. (1998). Wives, husbands, and daughters of dementia patients: predictors of caregivers' mental and physical health. *Scholarly Inquiry for Nursing Practice: An International Journal, 12*, 221 – 234. Retrieved from <http://www.highbeam.com/doc/1P3-1472207901.html>
- Spitze, G., Logan, J. R., Joseph, G., & Lee, E. (1994). Middle generation roles and the well-being of men and women. *Journal of Gerontology: Social Sciences, 49*, S107 – S 116. doi:10.1093/geronj/49.3.S107
- StataCorp. 2011. *Stata statistical software: Release 12*. College Station, TX: StataCorp LP.
- Stephens, M. A. P., & Franks, M. M. (2009). All in the family: Providing care to chronically ill and disabled older adults. In S. H. Qualls & S. H. Zarit (Eds.) *Aging families and caregivers* (pp. 61 – 83). Hoboken, NJ: Wiley.
- Stevens, A. B., Lancer, K., Smith, E. R., Allen, L., & McGhee, R. (2009). Engaging communities in evidence-based interventions for dementia caregivers. *Family and Community Health, 32*, S83 – S92. doi:10.1097/01.FCH.0000342843.28477.72
- Subramanian, S. V., Huijts, T., & Avendano, M. (2010). Self-reported health assessments in the 2002 World Health Survey: how do they correlate with education? *Bulletin of World Health Organization, 88*, 131 – 138. doi:10.2471/BLT.09.067058
- Szinovacz, M. E., & Davey, A. (2007). Changes in adult child caregiver networks. *The Gerontologist, 47*, 280 – 295. doi:10.1093/geront/47.3.280

- Taylor, M. G., & Lynch, S. M. (2004). Trajectories of impairment, social support, and depressive symptoms in later life. *Journal of Gerontology: Social Sciences, 59B*, S238 – S246.
doi: 10.1093/geronb/59.4.S238
- Tobin, S. S. (1996). A non-normative old age contrast: Elderly parents caring for offspring with mental retardation. In V. Bengsten (Ed.), *Adulthood and aging: Research on continuities and discontinuities*, (pp. 124 – 142). New York, NY: Springer.
- Tolkacheva, N., Ban Groenou, M. B., De Boer, A., & Van Tilburg, T. (2011). The impact of informal care-giving networks on adult children's care-giver burden. *Aging and Society, 31*, 34 – 51.
doi:10.1017.S0144686X10000711
- Tooth, L., McKenna, K., Barnett, A., Prescott, C., & Murphy, S. (2005). Caregiver burden, time spent caring and health status in the first 12 months following stroke. *Brain Injury, 19*, 963 – 974.
doi:10.1080/2069905050011785
- Wallace, K. A., Bisconti, T. L., & Bergeman, C. S. (2001). The mediational effect of hardiness on social support and optimal outcomes in later life. *Basic and Applied Social Psychology, 23*, 267 – 279. Retrieved from <http://www.tandf.co.uk/journals/authors/hbasauth.asp>
- Wallander, J. L., Varni, J. W., Babani, L., Banis, H. T., DeHaan, C. B., & Wilcox, K. T. (1989). Disability parameters, chronic strain, and adaptation of physically handicapped children and their mothers. *Journal of Pediatric Psychology, 14*, 23 – 42.
doi:10.1093/jpepsy/14.1.23
- Wethington, E., & Kessler, R. C. (1986). Perceived support, received support, and adjustment to stressful life events. *Journal of Health and Social Behavior, 27*, 78 – 89. Retrieved from <http://www.jstor.org/stable/2136504>
- WHO (1946). Preamble to the constitution of the World Health Organization as adopted by the International Health Conference. New York.
http://www.who.int/kobe_centre/about/faq/en/

- Wilks, S. E., & Croom, B. (2008). Perceived stress and resilience in Alzheimer's disease caregivers: Testing moderation and mediation models of social support. *Aging and Mental Health, 12*, 357 – 365. doi:10.1080/13607860801933323
- Williams, S. R., Pham-Kanter, G., & Leitsch, S. A. (2009). Measures of chronic conditions and diseases associated with aging in the National Social Life, Health, and Aging Project. *Journal of Gerontology: Social Sciences, 64B*, i67 – i75. doi:10.1093/geronb/gbn015
- Willson, A. E., Shuey, K. M., Elder, G. H. (2003). Ambivalence in the relationship of adult children to aging parents and in-laws. *Journal of Marriage and Family, 65*, 1055 – 1072. doi: 10.1111/j.1741-3737.2003.01055.x
- Wright, L. K., Hickey, J. V., Buckwalter, K. C., Hendrix, S. A., & Kelechi, T. (1999). Emotional and physical health of spouse caregivers of persons with Alzheimer's disease and stroke. *Journal of Advanced Nursing, 30*, 552 – 563. doi:10.1046/j.1365-2648.1999.01124.x
- Yamaki, K., Hsieh, K., & Heller, T. (2009). Health profile of aging family caregivers supporting adults with intellectual and developmental disabilities at home. *Intellectual and Developmental Disabilities, 47*, 425 – 435. doi:10.1352/1934-9556-47.6.425
- Zarit, S. H., Femia, E. E., Kim, K., & Whitlatch, C. J. (2010). The structure of risk factors and outcomes for family caregivers: Implications for assessment and treatment. *Aging and Mental Health, 14*, 220 – 231. doi:10.1080/13607860903167861
- Zhang, J., Vitaliano, P.P., & Lin, H. H. (2006). Relations of caregiving stress and health depend on the health indicators used and gender. *International Journal of Behavioral Medicine, 13*, 173 – 181. doi:10.1207/s15327558ijbm1302_9

APPENDIX A

List of Chronic Conditions from the MIDUS II Survey

Within a self-administered questionnaire, participants were given the list of chronic conditions below and asked, "In the past twelve months, have you experienced or been treated for any of the following?" Participants checked conditions on the questionnaire as appropriate.

1. Asthma / bronchitis / emphysema
2. Tuberculosis ever
3. Other lung problems ever
4. Joint / bone diseases
5. Sciatica / lumbago / backache
6. Persistent skin trouble
7. Thyroid disease
8. Hay fever
9. Stomach trouble
10. Urinary / bladder problems
11. Constipated all / most
12. Gall bladder trouble
13. Persistent foot trouble
14. Varicose veins
15. AIDS / HIV
16. Lupus / autoimmune disorder
17. Persistent gum / mouth trouble
18. Persistent teeth trouble
19. High blood pressure / hypertension
20. Anxiety / Depression
21. Alcohol / drug problem
22. Migraine headaches
23. Chronic sleep problems
24. Diabetes / high blood sugar
25. Neurological disorder
26. Stroke
27. Ulcer
28. Hernia
29. Piles / hemorrhoids
30. Swallowing problems