ASSOCIATION OF CAREGIVING STRESS, OPTIMISM, AND HEALTH OUTCOMES BY RACE AMONG CAREGIVERS WITH CHRONIC HEALTH PROBLEMS

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Abstract

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People in American society are affected in two areas the longer they live: developing chronic health problems (CHPs) and becoming an informal caregiver (CG). These two areas have the potential to impact American society. There has been limited knowledge about Black older adult caregivers whom themselves have CHPs. This point is essential as older Blacks are one of the fastest-growing minority groups in America. This study had two aims in examining Black older caregivers with chronic health problems. The first aim examined racial differences among Black and Non-Black caregivers in stress, optimism, and health outcomes. The second aim explored the effect of race on the relationships between stress, optimism, and health outcomes among Black and Non-Black caregivers. This study performed a secondary data analysis using data collected as part of the American Changing Lives survey (ACL) project. The current study utilized an exploratory, non-experimental cross-sectional design. The study analyzed the data using t-tests, correlations, hierarchal regression, and binary logistic regression to examine the questions and hypotheses. Findings indicated the variables of marital status, age (in years), education (in years), income, and number of CHPs were significant to health outcomes. Implications from the current study highlight the need for more research to examine the role chronic health problems play among caregivers. It is also vital to expand examination on overall health and optimism among Black caregivers with chronic health problems to ensure current interventions are appropriate for different races. Another implication is a need to develop interventions for caregivers that focus and include the positive aspects of the caregiving role, such as identifying meaning in their role.

Keywords: chronic health problems, older adults, caregivers, Blacks, optimism

Chapter 1

There are four kinds of people in the world: Those who have been caregivers, Those who are currently caregivers, Those who will be caregivers, And those who will need caregivers. ~Rosalyn Carter, Former First Lady (n.d.)

Introduction

As people age in the United States (U.S.), most will develop chronic health problems (CHPs) and/or become a caregiver (CG). Medical advances now allow individuals to live longer with CHPs that previously resulted in mortality and morbidity, such as cardiovascular disease (CVD), cancer, and diabetes (Centers for Disease Control [CDC] and Prevention, 2013). The probability of being diagnosed with one or more chronic health problems increases each decade of life. Current projections suggest one in four Americans lives with multiple CHPs (CDC, 2013; Hayward, Miles, Crimmins & Yang, 2000; Ski, King-Shier & Thompson, 2014). This ratio is projected to grow in the coming decades. By 2025, nearly 49% of Americans will have one or more chronic health problems (Anderson, 2010; Wu & Green, 2000). It is projected that between 2000 and 2030, 37% of Americans will have a CHP (Wu & Green, 2000), while during the same time frame, those 65+ will grow by 300% (U.S. Bureau of Census, 2000; 2013). By 2030, projections suggest among those 65+ and older that more than six of ten will have at least one chronic health problem (American Hospital Association, 2007).

Increases in chronic health problems place an additional strain on health care utilization in the U.S. as more people will continue to have both an increasing need of and more intense use of health care services during their lifetime than any time previously in American history. The rising number of Americans living with chronic health problems can place even more strain upon society's resources (e.g., financial and social), thus making this a significant public health concern. This chapter briefly introduces key concepts from the study with a more in-depth explanation and discussion in chapter two.

Chronic health problems can necessitate the need for intermittent hospitalizations followed by community-based care provided by a family member or close friends. This arrangement is commonly referred to as informal caregiving. To cut costs associated with chronic health problems care, hospitals shorten the length of patient stays, regardless of insurance coverage, ethnicity, and socioeconomic status, by discharging those with CHPs back to community living whenever possible (Chubinski, 2007; Shi, Chien-Chou, Nie, Nhu & Hu, 2014). This action results in patients with CHPs returning to the community where their care is often assumed and/or assisted by others, often referred to as caregivers (CGs) (Chubinski, 2007; Dunbar, Clark, Quinn, Gary & Kaslow, 2008).

The use of lay or professional caregivers in the U.S. has increased from 36.5 million in 2009 to over 40 million in 2015 (National Alliance for Caregiving [NAC]/AARP Public Policy Institute, 2009; NAC/AARP Public Policy Institute, 2015). This number is projected to continue to increase each year (Greene, Aranda, Tieman, Fazekas & Currow, 2012; Reinhard, Feinberg, Choula & Houser, 2015). By 2030, all baby boomers will be 65 and older. With the average life expectancy in the U.S. being around 80 years (AARP, 2020), this will require an increased need for caregivers well past 2050. As U.S. society rapidly ages, along with increasing numbers of individuals living with chronic health problems, the role of caregiver will become more important. It is projected that by 2030, there will be only four potential caregivers for each person age 80+, and by 2050, there will be fewer than three, as family sizes shrink, as well as the U.S. population grows older (National Academies of Sciences, Engineering, and

Medicine, 2016). Given the critical importance of caregivers now and in the future, this warrants research on crucial aspects of caregiver roles

Differences in aging experiences vary across racial and ethnic lines. Aging individuals are becoming a more significant segment of the American population, with racial groups such as Blacks increasing in age at higher percentages than their Non-Black counterparts. As an example of the racial differences, older adult Blacks are one of the fastest-growing groups over the age of 60 (Grady et al., 2000; McMurray & Stewart, 2000; Ortman, Velkoff & Hogan, 2014; Quinones et al., 2019; Rodriquez-Artalejo, Banegas & Guallar-Castillon, 2006). While many older adults develop chronic health problems, the longer they live, Blacks often have higher numbers of diagnosed chronic health problems than Non-Blacks (Hayward et al., 2000; Hayward & Heron, 1999; Mead, Curtwright-Smith, Jones, Ramos, Siegel & Woods, 2008; National Center for Health Statistics, 2011). Research that might enhance our understanding of these roles is underdeveloped in Black caregivers, particularly those with their own chronic health problems (Fonarow, Yancy, Hernandez, Peterson, Spertus & Heidenreich, 2011; Grady et al., 2000; Hayward et al., 2000; Lantig, Joung, Mackenbach, Lamberts & Bootsma, 2005; McMurray & Stewart, 2000; Rodriquez-Artalejo et al., 2006; Williams, Neighbors & Jackson, 2003). With limited clinical and practice knowledge existing about older Black caregivers with chronic health problems and the fact they are a rapidly growing group in the United States (Haub & Kaneda, 2013), there remains a need to expand our understanding with this group to improve their health as well as ensure they receive appropriate interventions, a key focus in this dissertation.

Two aspects of the aging process were the focus of this project. The first is that living longer brings an increased risk of developing at least one chronic health problem and becoming a caregiver. These role and health changes can result in many individuals encountering, simultaneously, two severe life stressors. These life stressors may negatively impact one another, leading to a decline in health for the one in the caregiving role. Additional research on these dual stressors, one's health, along with being a caregiver, is required. Second, there is a need to focus more research on Blacks, one of the fastest-growing aging groups which also can be diagnosed with at least one chronic health problem (Haub & Kaneda, 2013), to improve our understanding of how caregiving experiences of those with chronic health problems may vary by race. These two aspects were the focus of this research. The following sections of this chapter examine chronic health problems and the health of caregivers. This will then be followed by the research around caregiving and how it differs between Non-Blacks and Blacks. This chapter ends with the aims of the research undertaken.

Chronic Health Problems

The study of chronic health problems is challenging for one key reason: utilizing words used to identify ongoing conditions. The use of terms for chronic health problem(s) is itself problematic. Terms to discuss chronic health problems often differ within extant research. Terms such as chronic disease, chronic condition, or chronic health problem (Goodman, Posner, Huang, Parekh & Kohl, 2013; Moussavi, Chatterji, Verdes, Tandon, Patel & Ustun, 2007) are used interchangeably to describe ongoing health issues. When examining caregivers and other groups, most terms refer to only their physical outcomes. This is problematic since, similar to other aging groups, as more

Blacks age with chronic health problems, many will also assume the role of caregiver for someone. This current study applies existing work (Goodman et al., 2013; Lee, Cigolle & Blaum, 2009; Moussai et al., 2007) and combines both physical and mental aspects to refer to the overall health of caregivers. For this study, the term ***chronic health problem(s) [CHPs]*** was utilized. ***Chronic health problems*** are defined as various long-term, ongoing health conditions diagnosed by a physician, such as arthritis, high blood pressure, heart disease, diabetes, cancer, depression, or dementia (Goodman et al., 2013; Lee et al., 2009).

A key issue to address in the discussion on chronic health problems is whether the effects differ by racial groups. For example, Blacks in the United States are one of the largest ethnic groups to develop multiple chronic health diagnoses and experience higher mortality rates (Ory, Ahn, Jiang, Smith, Ritter, Whitelaw, & Lorig, 2013; Quinones et al., 2019; Watkins, Assari & Johnson-Lawrence, 2015; Yorke, Curtis, Shoemaker & Vangsnes, 2015). Blacks, as a group, are more likely to be diagnosed with and die from a CHP than their Non-Black counterparts (Hayward et al., 2000; Williams & Jackson, 2005; Williams & Mohammad, 2009). Older adult Blacks are at higher risk of developing and dying from chronic health problems, such as cancer (American Cancer Society, 2016; Williams & Mohammad, 2009), congestive heart failure (CHF) (Fonarow et al., 2011; Grady et al., 2000) and diabetes (CDC, 2014; Lantig et al., 2005). Among Blacks, 446 per 100,000 receive a cancer diagnosis compared to 440 per 100,000 for Non-Blacks (American Cancer Society, 2016).

Another example of how chronic health problems can affect Blacks more negatively is that of those who are diagnosed with some forms of cancers, such as lung, colon/rectal, and breast, are 24% more likely to die than their Non-Black counterparts with the same diagnosis (American Cancer Society, 2016). Overall, Blacks who develop CHF are 21% more like to die than their Non-Black counterparts (CDC: MMWR, 2018). Individuals with one chronic health problem are more likely to develop multiple diagnoses. Blacks, as a group, are more likely to develop multiple chronic health problems (American Cancer Society, 2016; CDC, 2014; Fonarow et al., 2011; Grady et al., 2000; Lantig et al., 2005; Williams & Mohammad, 2009). Expanding our understanding of Blacks with chronic health problems is essential as many, including older adults, can experience disparity in their overall health and receipt of healthcare to address their conditions (Alegria et al., 2008; Capers & Sharalaya, 2014; Chae et al., 2014; DeSantis, Naishadham & Jemal, 2013; Grubbs et al., 2013; Jimenz, Cook, Bartels & Alegria, 2013; Lukachko, Hatzenbuehler & Keyes, 2014; Shavers, Fagan, Jones, Klein, Boyington, Moten & Rorie, 2012; Snowden, 2012; Thorpe et al., 2013) resulting in poorer health outcomes overall for Blacks than other races. These findings indicate a necessity to deepen the understanding of older Blacks to meet their health needs better. Blacks who have overall poorer health that continues into their older adulthood results in lower life expectancy, even when controlling for socioeconomic status and access to health care (Anderson, 2015; Family Caregiver Alliance, 2016; Williams & Jackson, 2005). The increase in the number of older Blacks supports a need to expand the knowledge among different groups, specifically Blacks and Non-Blacks. This study focused on examining health outcomes among Black and Non-Black caregivers with chronic health problems.

Many older adults who have chronic health problems reside in community dwellings. It is expected that as people age then they will not only develop chronic health problems but may also take on the additional role of becoming caregivers of individuals with their own chronic health diagnosis(es) (Family Caregiver Alliance, 2016; Institute of Medicine, 2012). Chronic health problems among older adults have a financial impact on U.S. society. When one examines the Medicare costs associated with chronic health problems, especially with multiple diagnoses, there is a reason for concern. In 2011 (the last year of published major cost assessment for Medicare), two-thirds (67.3%) of all Medicare beneficiaries had two or more health problems (Buttorff, Ruder & Bauman, 2017; Lochner, Goodman, Posner & Parekh, 2013). Medicare beneficiaries with chronic health problems have higher rates of readmission to the hospital within 30 days of discharge. Of those without multiple chronic health problems, 8.9% were readmitted to a hospital within 30 days of discharge. This percentage increased to 19.1% for those with multiple chronic health problems, increasing to 25% for those with six or more chronic health problems.

The amount spent on Medicare beneficiaries is also a financial concern. The average Medicare spending per beneficiary in 2017 was $10,739. This amount increased dramatically for those with five or more CHPs. For those with zero to one chronic health problem, the cost was $1,973. For those with 1-2 CHPs, the cost was $5,272; for those with 3-4 CHPs, $8,867; and those with five or more, $17,640. This reflects potential increasing costs to society for Medicare payments related to chronic health problems in older adults. This is important to note as those age 65 and older make up almost 83% of all Medicare beneficiaries. It stands to reason as more individuals age and enroll in

Medicare, there would be increases in these costs. Within the older adult age group, over 22% were dually enrolled in both Medicare and Medicaid. It is important to note both the Centers for Medicare and Medicaid Services (CMS) and the Department of Health and Human Services (DHHS) created national objectives (CMS, 2016; US DHHS, 2010) to address the growth of the aging adults with chronic health problems, which will be reviewed later in the discussion.

Overall Health

Older caregivers often experience declines in their overall health as a result of taking on this role (Pinquart & Sorensen, 2003; 2007; Schulz & Sherwood, 2008). Overall health will be indicated here with a more in-depth overview in the next chapter. Caregiver research often examines only one aspect of overall health, mental health [for example, presence of depressive symptoms]. There is a smaller literature group that focuses on overall caregiver health by exploring both physical and mental aspects. Caregiver research suggests there are differences among racial/ethnic minorities in overall health, such as Blacks may have poorer physical outcomes yet identify as having less stress (Chen, Mair, Bao, & Yang, 2015; Elliott, Burgio, & DeCoster, 2010; Fredman, Daly, & Lazur, 1995; Knight, Longmire, Dave, Kim, & David, 2007; Pinquart & Sörensen, 2005). The most commonly examined mental health concepts are depression (depressive symptoms) or psychological distress. Research among Black caregivers examining mental health concepts commonly focuses on those caring for Alzheimer's patients measuring depressive symptoms (Janevic & Connell, 2001; Taylor, Taylor, Nguyen & Chatters, 2018). Blacks have been indicated as having fewer depressive symptoms than other caregivers of those with Alzheimer's (Janevic & Connell, 2001).

Another focus of caregiver research has been to identify what protective factors Blacks may use to decrease their depressive symptoms (Pinquart & Sorensen, 2003; Taylor et al., 2018). This shows the limited research examining what may be moderators in the overall health of Black and Non-Black caregivers. Self-rated health and depressive symptoms were used in this study as proxies for overall health.

Caregivers

There are two types of caregivers: formal (paid) or informal (unpaid). Comprising nearly one-third of community-based care, formal caregiving is often a paid relationship such as an agency-employed home health aide (Kahana, Biegel & Wykle, 1994; Kane & Penrod, 1995; National Alliance for Caregiving [NAC & AARP, 2009). Formal caregiving is not the focus of this study. This study and all further discussion will only cover informal caregiving. Informal caregiving is the more commonly experienced type comprising 80% of all caregiving activities (NAC & AARP, 2009; Reinhard et al., 2015). Informal caregiving is typically reliant upon some form of personal relationship, either a family member or friend, between the person receiving care and the caregiver (Agren, Evangelista & Stromberg, 2010; Bachner & Carmel., 2009; Devereaux-Melillo & Futrell, 1995; NAC & AARP, 2009). The informal type is also the most researched form of caregiving in the U.S. (Bakas, Pressler, Johnson, Nauser & Shaneyfelt, 2006; Brannan & Heflinger, 2002; NAC & AARP, 2009).

Since the 2000s, some forms of medical care, such as wound maintenance, tube feeding, and operating medical equipment, have shifted from being done by professionals in health care facilities to caregivers (Reinhard, Levine & Samis, 2012). This shift in providing these forms of medical care in community settings has resulted in a lack of preparedness by those giving care (Reinhard, Feinberg, Choula & Houser, 2015). However, there has not been adequate resources, training, education, and services to these caregivers now providing medical care in community dwellings.

The transfer of some forms of medical care to community caregivers has resulted in practitioners and other professionals identifying the need to increase understanding of the complexities of the caregiving role especially relating to caregiver's overall health outcomes (Talley & Crews, 2007; Williams, Sethi, Duggleby, Ploeg, Markle-Reid, Peacock, & Ghosh, 2016). Understanding the caregiving role has been incorporated into public health policy (Talley & Crews, 2007; Williams et al., 2016) as seen by nationally developed objectives. For example, DHHS, in the development of Healthy People 2020, included a national objective that focused on person-centered care planning including caregivers (DHHS, 2010). Within the Healthy People 2020 initiative, one objective was to reduce the proportion of unpaid caregivers of older adults who report an unmet need for support services associated with caregiving. Unfortunately, The Healthy People 2020 caregiver initiative was archived after the launch due to limited ability to capture the data. Another national objective was developed when the Center for Medicare and Medicaid Services (CMS) created objectives related to personal and family engagement strategy. The CMS objectives focus proactively engaged families and caregivers in defining, designing, and delivering care to increase understanding of how those in the caregiving role were affected by their role and further develop interventions to assist them (CMS, 2016). Recent legislation is the Recognize, Assist, Include, Support, and Engage Family (RAISE) Caregivers Act of 2017, which became law in January 2018 (AARP, 2019; Administration on Community Living [ACL], 2020). The RAISE Act directs the

Secretary of Health and Human Services to develop a national family caregiving strategy (ACL, 2020). These national objectives reflect the growing understanding of the importance of increasing our knowledge of caregivers and their roles.

Informal caregiving has a significant impact on the United States economy. Caregivers spend an estimated $190 billion per year on out-of-pocket care-related expenses (Bank of America & Age Wave, 2017). For older caregivers living on fixed incomes, these additional expenses may prove burdensome with the possibility of extending their participation in the labor force, thereby decreasing entry-level positions traditionally filled by younger generations. In 2013, the dollar amount for the total care provided by caregivers exceeded the total values of Medicaid and paid home care in that year, a total of $470 billion (Stringfellow, 2018). As informal caregivers increase in number, these amounts will undoubtedly increase. The increased overall health of caregivers can reduce the numbers who would need to leave community-dwelling, thus reducing the possible economic impact on the U.S.

As caregiver research has expanded, a consistent concern emerging is related to the adverse health outcomes of those providing care (Burton et al., 2012; Pressler et al., 2009). The caregiving role is a complex process, composed of both positive and negative aspects of the requirements of the care provided as well as in the personalities of caregivers (Brannan & Heflinger, 2002; Gaugler et al., 2003; Gordon & Peronne, 2004; Hooker, Grigsby, Riegel & Bekelman, 2015; Hwang, Luttik, Dracup & Jaarsma, 2010; Kim & Schulz, 2008; Spillers, Welisch, Kim, Matthews & Baker, 2008; Stephens, Townsend, Martire & Druley, 2001; Tang, 2011; Williams et al., 2016). Current caregiver research often focuses primarily on specific negative aspects such as stress, burden, poorer mental health (usually measured by examining depressive symptoms), and poorer physical health (often measured by self-rated health, stress related to roles, or assessing the quality of life) (Aschbacher, 2009; Bevan & Sternberg, 2012; Northouse et al., 2010; Pinquart & Sorenson, 2011; Roth et al., 2015; Schulz et al., 1997; Schulz & Beach, 1999; Siemens & Hazelton, 2011). The effects of these concepts on the caregiving role are explored by measuring either the existence or absence of negative symptoms. Although the focus of caregiver research has traditionally been towards the negative aspects, there has been an emergence of research into the positive aspects such as personality components, specifically optimism, that indicates a need for further examination (Jones, Winslow, Lee, Burns & Zhang, 2011; Lincoln, Taylor, Chae & Chatters, 2010; Pinquart & Sorenson, 2003; Pruchno, Burant & Peters, 1997; Usita, Hall & Davis, 2004). This research helps to highlight the complexity of the caregiver role, being the more often examined unidimensional negative concepts in extant research, thereby supporting the need to expand our knowledge base.

Limited examination of positive concepts of caregivers, such as optimism, as a part of this complex role is largely overlooked in the existing literature. ***Optimism*** was used in this study and defined as individuals who favor positive expectancies in their life (Scheier, Carver & Bridges, 1994). Optimism is the belief held by an individual that things will be favorable and good things will happen (Scheier & Carver, 1985). This optimistic belief, in any situation, translates into positive outcomes for that individual. Optimism has been associated with mediating negative caregiver effects, such as stress (Scheier & Carver, 1992). Optimism has been reflected in improved health and more positive mood and coping strategies among caregivers (Affleck, Tennen & Apter, 2001).

Negative aspects, such as stress in older adults, including caregiving older adults (Hirsch, Walker, Chang & Lyness, 2012; Holtzman, Abbey, Singer & Ross, 2009), have been noted to be moderated by optimism. Including the concept of optimism into an examination of the caregiver role may enable and facilitate practitioners and/or policymakers to expand interventions and policies to enhance health outcomes to older adults who provide caregiving.

Along with needing to increase knowledge beyond the negative aspects of caregiving, there is a need to explore these relationships further beyond the often commonly explored racial group (Whites) to include Blacks and other ethnic groups. To date, there is a limited systematic inquiry into how different races may assess, appraise and react to their role as a caregiver (Dilworth-Anderson, Williams & Gibson, 2002). Existing research examining the cultural differences between White and minority caregivers with chronic health problems is sparse (Dilworth-Anderson et al., 2004; Fingerman, VanderDrift, Dotterer, Birditt & Zarit, 2011; Sheridian, Burley, Hendricks & Rose, 2014). When investigated, most research often focuses on the negative aspects of the caregiver role among racial groups. Dilworth-Anderson and associates (2002) examined 20 years of caregiving research to explore race, ethnicity, and culture issues to synthesize what is already known about caregivers among diverse groups and identify gaps in the knowledge to inform future research. Limited understanding exists related to the role of caregiving among diverse groups, such as Blacks (Dilworth-Anderson et al., 2002, Fingerman et al., 2011; Williams & Gibson, 2002). Dilworth-Anderson et al. (2002) identified a limitation related to the commonality of definitions, measurements as well as samples among the reviewed studies and suggested a need to expand knowledge to include cultural influences. Expanding the body of knowledge on the health effects of the caregiving role along with optimism warrants further examination to understand better if different racial groups have more optimistic views related to different caregiving situations. This would allow a deeper understanding if optimistic views can affect caregivers with chronic health problems in different areas, such as their health outcomes (Dilworth-Anderson et al., 2002; Fingerman et al. 2011; Williams & Gibson, 2002). This study supports the need for further exploration to compare how Non-Blacks and Blacks identify with their caregiving role and assess differences between these two groups related to overall health.

Specifically, it is necessary to expand research into how older adults with chronic health problems provide caregiving and if an optimistic view of the role influences caregivers' health outcomes across racial groups. As previously indicated, the caregiver role is complex, comprised of both negative and positive experiences. While there is a significant focus in caregiver research on negative experiences, little work exists exploring the positives associated with the caregiving role. Limited knowledge of positive aspects of the caregiver role reduces understanding if more optimistic approaches serve as a buffer for the caregiving role and/or enhance caregivers with chronic health problems in ways that may improve the overall health. Moreover, increasing our understanding about older Black adults, as a group, can improve our knowledge to assist in ensuring there are effective interventions and research to allow for further caregiver policy development for those in this caregiving role. Further examination of older Black caregivers with chronic health problems would allow for improved understanding and the ability to create appropriate methods for this specific group to provide the necessary caregiving care while maintaining their own health. Further information on how Black caregivers with chronic health problems define stress and optimism could reveal whether specific intervention strategies can alleviate depressive symptoms and decrease the effects of chronic health problems among them. It would allow for a deeper understanding to identify if Blacks view more positive outcomes in their caregiving role. It will be important to compare Black caregivers with chronic health problems to their commonly examined White counterparts to improve our understanding of how this role may affect each thus allowing for the development of improved current and new interventions as needed specific for different groups as well as to enhance existing caregiver policies and if needed, to develop new appropriate ones.

This study aims to further examine Black older caregivers with chronic conditions, including:

Aim 1: Examine racial differences among Black and Non-Black caregivers in stress, optimism, and health outcomes.

Aim 2: Examine how race impacts the relationships between stress, optimism, and health outcomes among Black and Non-Black caregivers.

Chapter 2

Conceptual Framework, Extant Literature, Concepts, Definitions, and Measures

As the population in the U.S. ages and age-related health conditions become more common, there is a growing need for informal caregivers to provide assistance to help the aging population remain at home. Most states have public policies and services designed to help older populations stay-at-home or in the least restrictive setting. Both formal and informal services exist to prevent older populations from having to live in residential settings such as nursing homes. Placement prevention services often take place within the community and, typically, in private homes. While there are formal services, most caregiving happens informally. One of the difficulties with many informal caregivers is that, in addition to caring for other people, they also may have their own Chronic Health Problem[s] [CHP]. While previous research has focused primarily on the negative aspects associated with the caregiving role (e.g., stress, strain), the focus of this study examines positive aspects related to the caregiving role and how the positive aspects affect overall caregiver well-being, particularly physical and mental health. Racial differences and overall caregiver health are examined in this study also.

This chapter begins with a discussion of the theoretical framework used in this study. Then an overview of applicable literature related to caregivers and caregiving outcomes is presented. The end of the chapter identifies the major concepts and the research questions.

Conceptual Framework/Theory

Theory of Optimism

Scheier and Carver (1985) developed the theory of optimism, positing that individuals with optimistic attitudes tend to have positive expectations towards situations. They focused on how optimism affected the individual's overall mental and physical well-being (Scheier & Caver 1992). The theory of optimism is premised upon a continuum of attitudes. This continuum ranges from optimism that leads to more positive outcomes to pessimism, leading to more negative outcomes.

The theory of optimism has a general interest in the processes that underlie behavior. It posits that people's actions are influenced by their expectations about the deeds or actions they take (Scheier & Carver, 1992). Simply, if you go into caregiving feeling positive about your activities, then personal outcomes or effects from the experience will be positive. On the other hand, if you go into caregiving feeling negative about your activities, then personal outcomes or effects from the experience will be negative.

The theory of optimism is rooted in positive psychology. Positive psychology focuses on how humans do well; it is strength-based and investigates characteristics such as emotional well-being, happiness, resilience, and virtues (Snyder, Lopez & Pedrotti, 2011). It is an individual's appraisal of their own life. Psychological well-being has been identified as self-acceptance, personal growth, life purpose, personal mastery, environmental mastery, autonomy, and positive relations with others (Dilworth-Anderson, 1989; Halm & Bakas, 2007; Roepke et al., 2008; Snyder et al., 2011) as well as resilience, flexibility, and optimism. Physical well-being is good health without chronic health problems or issues. Optimism, a positive aspect of personality, is associated with believing goals are attainable. Optimism is measured with instruments that measure a person's belief in attaining their goals, as evidence by the Life Orientation Test-Revised (LOT-R) (Scheier & Carver, 1987). Optimism is reflected in coping behaviors, problem-solving abilities, and positive attitudes during adversity (Scheier & Carver, 1992). Without specifying the exact process, the theory of optimism suggests that optimism improves health outcomes (Chopik, Kim, & Smith, 2015). Overall, the theory suggests optimism leads to overall well-being in every domain.

Also, the theory of optimism suggests optimism/positive attitudes can lessen the effects of stress on individuals (Scheier & Carver, 1985; 1992). Optimism changes how an individual defines and reacts to stressful situations. Optimism allows a person to focus on positive thoughts. Positive thoughts enable someone to respond to or manage stress in more constructive ways. Reacting to and managing stress successfully can result in greater well-being (Wrosch, Jobin & Scheier, 2016). The opposite of positive thoughts would be those feelings along the depression spectrum.

It is not clear how well the theory of optimism applies to diverse groups of people. Many of the theories in the social sciences were not developed by diverse scholars, often representing a white male perspective. Social science theories are developed for majority cultures and just applied to minorities or used to critique the minority experience. A good theory should be observable, measurable, replicable, and applied to the diversity of human experience. Most applications of the theory of optimism have been applied with caregivers, predominantly with Whites (Chung et al., 2016; Diaz Ponsoda & Belena, 2020; Hajek & Konig, 2019; Pinquart & Duberstein, 2005; Ruisoto et al., 2018). Exploration of optimism among caregivers evolved in the 1990s, focusing on different chronic conditions, such as rheumatoid arthritis, cancer, dementia, and stroke (Hooker et al., 1992; Carver, Pozo, Harris, Noriega, Scheier, 1999; Beckham et al., 1995). A continued gap in the caregiver research using optimism is the inclusion of Black caregivers to increase the body of knowledge with this specific grouping of caregivers.

Even with limitations, optimism theory informs the research project for this study. It was chosen because it relates to the central question of how caregivers who are optimistic are different from those that are not optimistic. The dependent variables, or what this project is trying to understand, are caregiving health outcomes comprised of caregiver physical and mental health with a specific focus on depression. The independent variables, based on optimism theory and previous research, are stress and caregiver optimism. These are the variables expected to affect the dependent variables. The term *control variable* refers to variables that are not of primary interest but important to hold constant while examining associations between dependent and independent variables. The control variables in this study are caregiver chronic health problems, marital status, race, age, gender, income, and education.

Dependent Variables

Given the vital role that caregivers play in helping the ill and the elderly remain in their homes, it is essential to understand the literature about their physical and mental health. Also, it is vital to explore how well the theory can be used to apply to the literature and how it applies to non-majority populations. This helps to identify gaps or inconsistent findings. Physical health refers to the somatic well-being of an individual

(Capio, Sit & Abernethy, 2014). Mental health refers to emotional, psychological, and social functioning that affects how one thinks, feels, and acts (USDHHS, 2020). Depression, the specific mental health focus used in this study, refers to a serious mood disorder that causes persistent feelings of sadness and loss of interest; it affects how a person thinks, feels, or handles their daily activities (https://www.nimh.nih.gov/health/topics/depression/index.shtml). The World Health Organization (https://www.who.int/news-room/fact-sheets/detail/depression) indicates depression is a leading cause of disability worldwide.

Physical Health of Caregivers

Caregiver health is affected by several factors. One factor is the type of illness the person receiving care has. A second factor is the level of care provided to the person receiving care, including the number of hours caregivers provide care. A third factor is the caregiver's ability to manage the demands of the role. This third aspect is discussed as part of caregiver mental health, focusing on depression in caregiving.

One factor that may affect caregiver health is the type of illness of the person receiving care, although there are some mixed results. Caregiving for people who had a stroke results in more significant stress due to the role demands in helping the ill person perform activities of daily living (Collins & Swartz, 2011). Caregivers of people with chronic heart failure (CHF) demonstrate higher anxiety related to the unknown progression of the heart condition (Pressler et al., 2009). Burton and colleagues (2012) compared the experiences of caring for people with cancer (n=51), chronic heart failure (n=46), or chronic obstructive pulmonary disease (n=42). There were no differences among stress levels among these three different conditions. Hoffman, Burgard, Mendez-

Luck, and Gaugler (2019) studied the relationship between caregiver and care-receiver health in 4,632 community-dwelling dyads. Findings indicated illness among care receivers co-occurred with increased illness in caregivers. They suggest that as the person receiving care has worsening health, then often caregiver health gets worse. The specific processes in this dynamic are unclear.

Caregivers have increased health risks themselves. Roth, Friedman, and Haley (2015), in their review of caregiving studies, indicated increased health problems for caregivers as well as exacerbation of pre-existing caregiver health problems. They suggest that caregiver health problems are physical or physiological responses to stress. Worsening caregiver health increases the likelihood of caregiver hospitalization and entrance into a nursing/rehabilitation facility. One consequence is that the person they were caring for is left without any care and is increasingly likely to be hospitalized or confined into residential care, particularly if no one else can provide caregiving. It is understandable that as a person who provides care grows more ill, their quality of care can become compromised. This results in the recipient getting less than optimal care that can result in worsening of their health problems. Understanding caregiver health, and the interventions that might prevent caregiver health from worsening, is essential in the continuance of community-based care.

In addition to these descriptive studies, there are some comparison studies. Acton (2002) compared 46 caregivers and 50 non-caregivers. Findings indicated that caregivers participated in less health-promoting behaviors compared to non-caregivers. However, one critique of this study is that the sample was 99% white. This results in an inability to generalize to any other diverse group of caregivers.

The second factor affecting caregiver health is the level of care provided to the person receiving care, including the number of hours caregivers provide care. Schulz and Sherwood (2008) summarized caregiver literature and concluded that the more time a caregiver provided care and the degree of caregiving required by the care receiver affected caregiver stress. High stress increases the likelihood of depression (Atienza, Stephens & Townsend, 2002; Aschbacher, 2009; Beach, Schulz, Williamson, Miller, Weiner & Lance, 2005; Camak, 2015; Denno, Gillard, Graham, DiBonaventura, Goren, Varon & Zorowitz, 2013; Ferrara, Langiano, DiBrango, DeVito, DiCioccio & Bauco, 2008; Gilhooley, Gilhooley, Sullivan, McIntyre, Wilson, Harding, … & Crutch, 2016; Grant, Clay, Keltner, Haley, Wadley, Perkins, & Roth, 2013; Haley et al., 1987; Haley et al., 2003; Kim, 2017; Kurtz et al., 2004; Pierce, Thompson, Govoni & Steiner, 2012; Pinquart & Sorensen, 2007; Pinquart & Sorensen, 2003). In other words, if more demands were placed on the person providing care because the person needs more time or more help, this increases stress in the caregiver.

It is important to understand the relationship of the number of hours of caregiving to the experience of stress. The growing body of literature indicates there is a relationship between the number of caregiving hours and levels of stress of caregivers (Cohen, Sabik, Cook, Azzoli & Mendez-Luck, 2019; Cook, Snellings & Cohen, 2018; Dich, Lange, Head & Rod, 2015; Kent & Dionne-Odom, 2018; Lin, Shih & Ku, 2019; Lynch, Shuster & Lobo, 2018; Roth, Brown, Rhodes & Haley, 2018). Cook et al. (2018) examined the associations between caregiving intensity [hours, length of caregiving, activities of daily living, and instrumental activities of daily living] and quality of life among 1014 caregivers of aging parents. Findings indicated that higher stress was significantly related to hours of care. Cook et al. (2018) also examined the differences among races of caregivers, with Blacks indicating less stress in the role. Older adult caregivers were found to experience higher stress in their role, yet there was no separation among older adults by race to identify any difference in stress levels (Cook et al., 2018). This limitation highlights a need for further research into older adult stress by race.

The third factor affecting caregiving health is the caregiver's ability to manage the demands of the role especially related to their mental health, depression. Caregivers frequently engage in poor health behaviors when providing care for someone else, resulting in increased mental health problems, especially depression (Brown & Brown, 2014; Hoffman, Lee & Mendez-Luck, 2012). Caregivers will not make or keep their health care appointments, often experience poorer sleep, and report increased feelings of stress (Acton, 2002; Blum & Sherman, 2010; Roth, Friedman & Haley, 2015; Schulz & Sherwood, 2008; Willette-Murphy, Todero & Yeaworth, 2006). Willette-Murphy and associates (2006) examined 37 older women caregiving for someone with dementia. They found caregivers had poorer sleep which in turn predicted mental health difficulties. In a systematic review, Schulz and Sherman (2008) found across studies that caregivers experience impaired health, neglect their health care, and experienced depression. These results are also found in studies about diverse caregivers. Cucciare et al. (2010) examined 89 female Latinx caregivers for individuals with dementia. Caregivers who reported worsening health also had increased depression.

Overall, the caregiver role affects the health of the people providing the care. Many caregivers can experience worsening physical health themselves, often directly linked to their caregiving obligations. There is a need to examine what aspects of caregiver physical health are affected by giving the care to determine early intervention that might help caregivers and consequently those receiving care. While the previous section focused on aspects of physical health, the following section focuses on caregiving mental health.

Mental Health of Caregivers: Depression

The American Psychiatric Association defines depression as a medical illness that affects emotional expression, cognition, and behavior (https://www.psychiatry.org/patients-families/depression/what-is-depression). According to NIMH (https://www.nimh.nih.gov/health/topics/depression/index.shtml), depression can include:

- Persistent sad, anxious, or "empty" mood
- Feelings of hopelessness or pessimism
- Irritability
- Feelings of guilt, worthlessness, or helplessness
- Loss of interest or pleasure in hobbies and activities
- Decreased energy or fatigue
- Moving or talking more slowly
- Feeling restless or having trouble sitting still
- Difficulty concentrating, remembering, or making decisions
- Difficulty sleeping, early-morning awakening, or oversleeping
- Appetite and/or weight changes
- Thoughts of death or suicide, or suicide attempts
- Aches or pains, headaches, cramps, or digestive problems without a clear physical cause and/or that do not ease even with treatment

Depression is also the most common mental health problem indicated among older adults (Blackburn, Wilkins-Ho & Wiese, 2017). Just as several factors affect caregiver health, several factors affect caregiver mental health. While physical and mental health is intertwined, there are some unique aspects to caregiver depression. The factors that affect caregiver health include age, education level, income, social support, ability to maintain personal health-related activities, and pre-existing physical or mental disorders (Grady & Rosenbaum, 2015; Lee, Lee, Wang, Chien, Fang & Lin, 2017, Manskow, Sigurdardottir, Roe, Andelic, Skandsen, Damsgard... & Anke, 2015).

Much of the research on caregiver mental health has focused on how the role can affect depression (Khalaila & Cohen, 2016; Marfil-Gomez, Morales-Puerto, Leon-Campos, Morales-Asencio, Morilla-Herrera, Timonet-Andreu… & Garcia-Mayor, 2020; Mohammadi et al., 2016; Pinquart & Sorenson, 2007; Pruchno & Resch, 1989; Schulz, O'Brien, Bookwala & Fleeissner, 1995; Schulz et al., 1997; Vitaliano, Russo, Young, Becker & Maiuro, 1991). Depression in caregivers could reflect underlying vulnerabilities that existed before taking a caregiving role. Some of the areas associated with developing depression include neglecting one's health, decreased social lives, increasing care provided to recipients, and increased burden on caregivers. Another underlying vulnerability could be related to an individual's personality, such as self-esteem. Other aspects related to depression levels among caregivers include increasing age, lower education as well as level of support of other family members.

Caregiving stress is defined as the outcome of the emotional and physical strain of caregiving (Office of Women's Health [OWH]/DHHS, 2015). Another way to define caregiving stress is the difficulties created by the demands of care that exceed a caregiver's ability to adapt (Aneshensel et al., 1995). One reason caregiver stress develops is due to the amount of care provided (OWH/DHHS, 2015). Caregiver stress is often connected with the amount of time spent and the level of assistance providing care (AARP and National Alliance for Caregiving, 2020). Outcomes of stress can manifest in multiple ways in caregiver health (physical and mental) (Amirkhanyan & Wolf, 2003). Blacks have been identified as providing higher numbers of caregiving hours than their white counterparts (AARP and National Alliance for Caregiving, 2020). This supports the rationale to further examine Black and White caregivers related to their stress in the current study.

The more time a caregiver has to provide care affects their stress levels. Stress has been associated with the level of caregiving being provided (Schulz, Beach, Czaja, Martire & Monin, 2020; Ying, Yap, Gandhi & Liew, 2018). The more time a caregiver had to provide care and the degree of caregiving required for the care receiver affected caregiver stress (Kim, 2017: Lin et al., 2019). The older age of the caregiver and the amount of time spent giving care result in higher stress. Lin et al (2019) examined caregivers of those assisting people with dementia. Data were collected in two waves from the 186 dyads. Findings indicated caregiving hours mediated the stress levels of caregivers (Lin et al., 2019).

The degree of caregiving required for the care receiver affected stress (Gilhooly et al., 2016; Lin et al., 2019). The evidence is compelling. Gilhooly et al. (2016) conducted a meta-review of 45 systematic reviews on stress among caregivers. Findings across studies indicated caregivers experienced high stress when providing care for individuals with dementia. High stress increases depression (Ferrara, Langiano, DiBrango, DeVito, DiCioccio & Bauco, 2008; Gilhooley et al., 2016; Haley et al, 2003; Kim, 2017). Kim (2017) examined 108 caregivers for correlations with depression and stress. Findings indicate depression was positively correlated with stress. Female caregivers were also found to have higher depressive ratings (Kim, 2017).

Stress and depression are dynamic concepts in the caregiving role; stress can culminate in the development or exacerbation of depression (Camak, 2015; Denno, Gillard, Graham, DiBonaventura, Goren, Varon & Zorowitz, 2013; Pierce, Thompson, Govoni & Steiner, 2012). Research findings often indicate depression and stress occur simultaneously in caregivers (Capistrant, 2016; Kim, 2017; Malhotra, Chei, Menon, Chow, Quah, Chan & Matchar, 2015; Ying et al., 2018). Up to 62% of caregivers sustain high stress levels due to stressful caregiving situations (Geng et al., 2018). Reported high levels of stress have been indicated as a factor affecting caregiver depression. Geng et al.'s (2018) meta-analysis review on caregivers of cancer who experience high-stress levels also experiences correlating depression. Bernabeua-Mora et al. (2016) examined 87 caregivers of patients with COPD for depression at the time of patients' hospitalization and three months after discharge. Findings indicate caregivers providing more caregiving hours had higher depressive symptoms (Bernabeu-Mora et al., 2016).

Role strain and role burden are both related to caregiver stress. Role strain is defined as the stress or strain experienced by a person when incompatible behavior, expectations, or obligations are associated with a single social role (https://www.dictionary.com/browse/role-strain). Role strain in literature is often defined as the result of many demands placed on an individual (Moen et al., 1995). Goode (1960) originally defined it as difficulty fulfilling role obligations.

Role burden is defined as a multidimensional response to various stressors associated with the caregiver role (Manskow et al., 2015). Burden affects caregivers' social, physical, emotional, and psychological aspects (Manskow et al., 2015). The most common definition of caregiver burden is the all-encompassing challenges felt by caregivers concerning their emotional and physical well-being, work and family status, family relations (Pearlin et al., 1990). While research often discusses these two concepts, the current student will focus only on caregiver stress.

Control Variables in the Study

Control variables are factors that are not of primary interest in a study and whose influence is to be controlled (Salkind, 2010). This study used gender, income, education level, marital status, chronic health conditions, and race as control variables (see table 1 for definitions) of caregivers. Control variable allows the researcher to reduce its influence across the key variables.

Racial Differences in Caregiving

Racial disparities across the lifespan are documented (Calvin, Winters, Wyatt, Williams, Henderson & Walker, 2003; Colen, Ramey, Cooksey & Williams, 2018; Lewey, Colditz, Berman & Kawachi, 2003). Whites are the most frequently researched as caregivers (Agren et al., 2010; Atienza et al., 2002; Capistrant, 2016; Glueckauf et al., 2012; Rhee et al., 2008; Sheridian et al., 2014). There is less understanding of the caregiving role with other racial groups (Kurylo, Elliott, DeVivo & Dreer, 2004; Northouse et al., 2010). It becomes more critical to enhance the research on minority caregivers, particularly Black caregivers, because more Blacks live beyond 70 years old (United States Census Bureau, 2013). In addition, caregiving operates differently between Blacks and Non-Blacks (Dilworth-Anderson et al., 2004; Fingerman et al., 2011).

One aspect of differences between the races of caregivers is social and family support. Brummett et al. (2012; 2006), in their longitudinal study of caregivers for people with Alzheimer's', indicated that as social support decreases, there is an increase in depression in all caregivers. However, depression was higher among White caregivers. It is unclear why this would happen, but it underscores the need to include race as a control variable.

A second aspect of difference is in the area of mental health. The mental health of caregivers includes how they adjust and react to the stressors of the role. Black caregivers providing help to people with mental illness experience less stress than other racial groups (Stueve, Vine & Struening, 1997; Sheridian et al., 2014). One reason why Blacks indicate experiencing less stress in the caregiving role could be cultural differences in how stress impacts them (Dilworth et al., 2002; Pinquart & Sorensen, 2003; Vitaliano, Zhang & Scanlan, 2003). McCallum and associates (2007) reported the difference was due to Blacks having a stronger emphasis on the family than on the individual. Haley et al. (2004) compared Black (n=295) and White (n=425) caregivers from across four cities around the United States. Blacks reported less stress than White caregivers (Haley et al., 2004). Cox and Monk (1996) examined Black (n=76) and Hispanic (n=86) caregivers to investigate if race plays a mediating role in stress/strain.

In summation, Blacks are underrepresented in the caregiver literature. The literature that does engage Blacks in the sample indicates conflicting outcomes related to the caregiver role. Blacks often take on additional roles such as caregiving with existing health conditions compared to Whites. Black caregivers indicate experiencing less stress in this role compared to Whites. Due to the different factors that affect Black caregivers differently than their White counterparts, as well as limited ability to know all areas that could impact the outcome of this study, race was used as a control variable.

To ensure a clear knowledge of how their role can impact caregivers' health (physical and mental), it is essential to hold any known variables constant that could affect any possible relationship between health and caregivers. Age, income, education, and ethnicity are frequently applied in research as control variables due to the ability of anyone or a combination of these to impact the outcomes of a study. Age can impact someone's stress level (Pinquart & Sorensen, 2003; Omranifard, Hagighizadeh & Akouchekian, 2018). The findings in the literature are conflicting as some indicate older adults experience less stress within caregiving situations, which in younger individuals results in stress (Carter, Lyons, Stewart, Archbold & Scobee, 2010; Pinquart & Sorensen, 2007), while others suggest that older caregivers may experience more stress the older their age (Omranifard et al., 2018). Education and income allow for improved access to care related to one's health, especially as one ages. This study wants to ensure any relationship between health and caregivers would be independent of the identified control variables.

Chronic Health Problems of Caregivers

Caregivers who provide care often have their own health-related problems, sometimes related to aging but other times related to genetic and environment risks. Chronic health problems are long-term health conditions diagnosed by a physician, such as diabetes, cancer, and chronic heart disease. One aspect of the difference between Whites and Black caregivers is the disparate health outcomes of caregivers by race (Dilworth-Anderson et al., 2004; Glueckauf et al., 2012; Knight & Sayegh, 2010; Lazarus, 2000). Black caregivers are consistently reported as having poorer health and have a higher number of chronic health conditions than their Non-Black counterparts

(Mosher, Bakas & Champion, 2013; Shi et al., 2014). Black caregivers experience poorer health overall, and more chronic health problems are indicators of health disparities that exist in health care. As the number of Blacks becomes older, there will be an increase in the need for both formal and informal caregivers, some that provide care in spite of having their own significant health problems (NAC/AARP Public Policy Institute, 2015; Williams, 1999).

Caregiver Marital Status

Marital status is defined as self-defined relationship status. Married caregivers report having improved physical health than those not married (Robards, Evandrou, Falkingham & Vlachantoni, 2012). Married caregivers can also report having less depression than unmarried caregivers (Williams, Zhang & Packard, 2017). Married individuals have been shown to have lower mortality than unmarried individuals. Married individuals often have increased economic resources, which are associated with increased health. Married individuals often have a larger pool of potential persons who can serve as social resources (Liu & Umberson, 2008). Therefore, it is important to include caregiver marital status in the study.

Caregiver Age

Age is defined as a person's number of years lived since birth. Per the Bureau of Labor and Statistics, older adults refer to individuals age 55 and above (Toosi & Torpey, 2017). Older adult caregivers have more health issues. Older caregivers may be less able to manage stress, which then has a subsequent negative effect on their health (Pinquart & Sorenson, 2003). Being older can result in fewer social resources that provide a buffer related to stress and negative health outcomes (Neri, Yassuda, Fortes-Burgos, Mantovani, Arbex, Torres, Perracini & Guariento, 2012; Pinquart & Sorensen, 2003). Given all these factors, it is important to include caregiver age in the study.

Caregiver Gender

Gender in this study is defined as male or female. While females remain the highest percentage of those who become caregivers, males are increasingly assuming this role (Sharma, Chakrabarti & Grover, 2016). However, female caregivers often report higher depressive symptoms than their male counterparts (Gallicchio, Siddiqi, Langenberg & Baumgarten, 2002; Sharma et al., 2016, Xiong, Biscardi, Astell, Nalder, Cameron, Mihailidis & Colantonio, 2020). Female caregivers were experiencing more depressive symptoms and increased stress (Xiong et al., 2020). Women caregivers report poorer physical health and more stress compared to their male counterparts which can result in poorer health outcomes for females in this role.

Caregiver Income

Income is the amount of dollars an individual receives. A primary reason for poorer health is due to socioeconomic status (SES) and not individual health risk behaviors (Hayward et al., 2000; Jackson et al., 2010); it is a structural problem of being poor and not a personal decision. The health of Black caregivers is more connected to being in lower SES levels which generally is related to less access to healthcare, resulting in poorer health. Income is also often included in caregiver research, along with gender, age, and education.

Caregiver Educational Level

Education level is the overall number of years a person has attend any academic setting. Education has been associated with caregiver stress (Fields, Rodakowski, James & Beach, 2018; Oedekoven, Amin-Kotb, Gellert, Balke, Kuhlmey & Schnitzer, 2019). Education levels have been indicated in caregivers' burden levels, with those with higher education experiencing higher burden levels. (Fields et al., 2018; Oedekoven et al., 2019). Education levels are also often applied in caregiving research models, and this study seeks to follow established literature and use similar variables.

Gaps in the Literature

The existing knowledge of caregivers has several limitations. One shortcoming is most studies commonly examine concepts (specifically, stress) defined by research with only primarily White samples. This results in a limited understanding of how minority groups may differ on these same concepts. Concepts measured in one population cannot assume to generalize to different racial groups. Dilworth-Anderson et al. (2004) suggested the existing measures do not allow for a clear understanding of how different groups, such as Blacks, identify with their role. This results in limitations to any conclusions drawn from studies with homogenous groups to other ethnic groups like Blacks. Another shortcoming in the body of Black caregiver research exists specifically with the common use of small sample sizes (Glueckauf et al., 2012). Using small sizes means any findings are limited at best in further use with any groups.

Another understudied area with Black caregivers pertains to how they define and/or adjust to this role that also includes effects on their overall health. Additional investigation with Blacks could reveal if they differ in their definition of the caregiver role. Further exploration should examine if, as a group, Black caregivers with higher positive aspects, such as optimism, have different health outcomes in the role than their Non-Black counterparts. In 1995, Haley et al. indicated there was a need to examine Blacks to better understand how they differ from Non-Blacks in defining and thereby adjusting to the caregiving role. Yet over 20 years later, this focus in research has been slow to emerge.

The lack of consistent explanations between different racial groups relating to commonly examined terms, such as stress, used in caregiver research is another shortcoming in the existing research literature (Dilworth-Anderson et al., 2004; Sheridian et al., 2014). A key limitation noted has been the lack of diversity among groups examined, along with an indicated need for further research to be with more diverse groups such as Blacks (Pinquart & Sorenson, 2003). Expanding caregiver knowledge will be important moving forward to increase the number of Black caregivers with CHPs included in studies.

In a review of the empirical research among caregivers, specifically research using his stress-coping model, Lazarus (2000) indicated several ways to expand the knowledge base. The first area he indicated within caregiver research is that there are contrary findings as to what is done in practice among caregivers and what is found in empirical studies. Lazarus (2000) hypothesized researchers do not always acknowledge the complexity of caregivers' jobs in their research, making it difficult to apply findings in practice since studies often comprise only one aspect of caregiving. Lazarus (2000) also noted, in a second area, a concern over the type of research designs used. He indicated there is a lack of rigorous research designs in caregiver studies; many relied upon an overuse of coping questionnaires. Lazarus' point is supported when reviewing caregiver research, which reflects primarily the application of one common theoretical model (stress-coping model) to the absence of others, such as positive psychology, that can reflect a balanced approach to examine complex roles like caregiving (Awadalla, Ohaeri, Tawfiq & Al-Awadi, 2006; Belasco et al., 2006; Ciechanowski et al., 2001; Clark et al., 2009; Hwang et al., 2010). Lazarus (2000) supports this by further suggesting a need to apply different methodologies and theoretical frameworks in future research, including expanding more focus on positive coping aspects, i.e., optimism, of caregivers. One limitation of Lazarus's definition in his original model is the presumption all stress is negative or bad. Lazarus's original model defined stress as a negative outcome. This dissertation study proposed to examine the caregivers' roles, examining differences between races when exploring how caregivers' overall well-being, with both stress *and optimism* (italics added), may be related to their health outcomes.

Existing empirical literature indicates that to address gaps, future research should include how different racial groups define and relate to their caregiving role (Pressler et al., 2009). In Pressler and colleagues' (2009) exploration of family caregiver outcomes, they suggested a need for additional studies to examine how other races and ethnic groups identify their needs as caregivers (Pressler et al., 2009). Other authors suggested a need to expand research to different ethnic groups outside of the commonly examined Non-Blacks (Kurylo et al., 2004). Still, other authors suggested the need to examine how Black caregivers adapt to their caregiving role and its effect on their health (Dilworth-Anderson et al., 2004; Dilworth-Anderson & Anderson, 1994), which is not often studied. The limited body of research supports the need to expand the knowledge base of older Black caregivers, including those with chronic conditions, as they are likely to experience heightened symptoms due to the stress of caregiving.

Another critical gap in current research is to examine caregivers with CHPs, specifically other racial groups besides Whites. Campbell and colleagues (2006) highlighted that Blacks as caregivers are under-represented in research studies resulting in a need for this to be further developed. There is a limited application using different theoretical frameworks with caregivers with CHPs. One suggested area to explore is to utilize a framework applying positive predictors, specifically optimism, to caregivers (Mellon, Northouse, & Weiss, 2006) (see Figure 1). Few studies examine caregiving as a positive, rewarding experience using optimism (Northouse et al., 2010).

As a summary, previous research suggests three common areas to expand the knowledge base. The first is the need to expand caregiver research to other racial groups, such as Blacks. Second, include other theoretical frameworks than the commonly applied stress coping models. Third, explore more aspects of a caregiver, such as optimism and their health outcomes, to expand understanding of the caregiving role. These gaps have been indicated in the previously outlined research summarizing how caregiving research can be expanded to enhance and increase understanding of older Black caregivers with CHPs.

Study Variables

Based on the previous discussion, the variables are presented. Table 1 presents the major variables along with definitions, operationalization of variables, and levels of measurement for each variable.

Table 1: Major Variables Used in this Study

POPULATION/SAMPLE	
Caregiver	Individuals, on an informal basis, who have a relationship with a person needing assistance with their personal care. The variable used were respondents who identified as providing caregiving services was selected for this study.
DEPENDENT VARIABLES	
Self-Rated Health	An individual's self-rated level of somatic well-being. This study used self-rated health as one of proxies for overall health. This was measured at an interval level using an indicator on self-perceived health with five possible categories with a range of 1-5.
Depressive Symptoms	Psychological well-being of an individual. This study used depressive symptoms as another proxy for overall health. This was measured in this study at an interval level using Center for Epidemiological Studies Depression (CES-D) 11-item with a range of responses of 12-29. (See Appendix B.)
PREDICTOR VARIABLES	
Stress	Stress is any phenomena related to a person's health outcomes, applying the definition from social epidemiology developed by Cassel and colleagues (Bronfenbrenner, 1979; Cassel, 1974; 1976; Engel, 1977; Krieger, 2001). This study used **caregiving hours as a proxy of stress.** It was measured in this study at an interval level using the self-rated indicator of caregiving hours provided in the dataset that collected the self-identified number of caregiving hours provided in the past year with a range of responses from less than 20 hours a year through more than 160 hours a year.
Optimism	Optimism is defined as a dispositional attitude that favors positive expectancies (Scheier & Carver, 1985; 1987;1992). Optimism was measured at an interval level using the three optimism questions from the Life Orientation Test-Revised (LOT-R) with a range of responses from 3-12. (See Appendix A for full LOT-R and Appendix C for optimism only questions used in ACL.)
CONTROL VARIABLES	
Chronic Health Problems (CHPs)	CHP is a condition based on a physician's diagnosis of a health condition considered to be ongoing, e.g., arthritis, cardiovascular disease, cancer. It was measured in this study at an

	ordinal level using a variable that asking the respondent to identify their number of CHPs.
Marital Status	Individual's self-defined relationship status: married, not married, widowed, cohabiting, or single. It was measured in this study at a nominal level using a variable that asked respondents to select their relationship status.
Race	The United States Census Bureau (2013) defines race as a self-identified social construct. This was measured in this study at a nominal level using a created variable by the authors of the dataset using two categories: Blacks and Non-Blacks (all other racial groups).
Age	Self-identified number of years lived. This measured in this study at ratio level using a variable where respondents self-identified number of years.
Gender	Self-identified as either male or female. This was measured in this study at a nominal level using a variable where respondents self-identified gender.
Socioeconomic Status (SES)	Financial income of an individual in dollars. This was measured in this study at a ratio level using a variable where respondents self-identified their annual income in dollars.
Education	Overall number of years achieved in academic settings. This was measured in this study at a ratio level using a variable where respondents self-identified their total years of education.

Research Questions

This study sought to build on these gaps and examine the following questions related to caregivers with CHP(s):

R1: Is there a difference in caregiver stress between Blacks and Non-Blacks?

R2: Is there a difference in optimism between Black and Non-Black caregivers?

R3: Is there a difference in health outcomes between Black and Non-Black caregivers?

R4: What are the relationships between caregiver stress, optimism, and health outcomes for caregivers collectively and separately for Black and Non-Black caregivers?

R5: Does race moderate the relationship between caregiver stress and health outcomes among caregivers?

R6: Does race moderate the relationship between optimism and health outcomes among caregivers?

Chapter 3 Methodology

This study performed secondary data analysis using the Americans' Changing Lives (ACL) database. The ACL is a nationally representative longitudinal survey that began in 1986 by the University of Michigan's Institute for Social Research and is funded by the National Institute on Aging (Herzog, House & Morgan, 1991; House et al., 1992; House, Lantz & Herd, 2005). The ACL was initially set to collect data for five years until 1991. The ACL was re-authorized once the initial funding timeframe ended and has continued through 2021. The ACL study is the longest-running nationally representative study in the U.S. (House, 2018; Institute of Social Research, 2012). The ACL collects data on a range of topics on middle and older-age Americans' daily lives, specifically sociological, psychological, mental health, and medical information.

ACL data has been collected in six Waves: 1986, 1989, 1994, 2001/2002, 2011, and 2021. The ACL used a multistage stratified area probability sample of the continental U.S. household population aged 25 and older, with an oversampling of Black respondents and adults aged 60 and older. The oversampling in the ACL was a ratio of 2:1 (two Black respondents selected for every one Non-Black). The ACL's longitudinal design with its oversample of those 60 years and older allows ongoing examination of older CGs (House, 2018; House et al., 2005). The designers of the ACL used this approach to include specific understudied groups, specifically Black and older age populations. There was also an additional sampling of the U.S. Black household population. The researchers intended to study over the adult life span the influence that social, psychological, and behavioral factors (e.g., such as serving as a CG) along with aspects of medical care and environmental exposure have on health and the way health changes with age (House, 2018; House et al., 1992; House et al., 2005). Data only on Black and Non-Black respondents (N = 3,477) were analyzed in this study. Wave 1 (Year 1986) included analytic samples of (N = 3,617) with subsequent Waves including samples of N = 2,780 (83% of survivors) in Wave 2 (Year 1989); N = 2,331 (83% of survivors) in Wave 3 (Year 1994); N = 1,787 (76%-80% of survivors) in Wave 4 (Year 2001-2002) and N=1,427 (81% of survivors) in Wave 5 (Year 2011/12). Each Wave sampled all respondents from all proceeding Waves.

This study used Wave 5 (N=1,427) data to use the most recent CG collection of information. Caregiver information has been collected since Wave 2. This study selected only respondents who indicated they were caregivers of the entire Wave 5 respondents. This study selected only caregivers who responded to all variables of interest in the ACL. The overall CGs from the ACL dataset totaled N=465. As the ACL contains households where multiple respondents exist, this study only used households with one respondent to avoid any nesting effects. To ensure only households with one respondent were used in this study, 21 households with duplicate respondents were identified and removed from the analysis. This step reduced the sample for this study to a final N=440. There are 141 Black (32%) and 299 Non-Black (68%) respondents meeting the inclusion criteria, reflecting the limited number of overall caregivers indicated in the ACL.

The ACL collected data on Blacks, Whites, Asians, American Indians, and Hispanics. The ACL researchers collapsed the race variable into a two-category race variable (i.e., Black and Non-Black). The ACL's race variable collapsed all Non-Black respondents (Whites, Asians, American Indians, and Hispanics) into the Non-Black variable Non-Black. The ACL researchers indicated this to be able to examine specific differences between Blacks and Non-Blacks. As the current study sought to examine differences between Blacks and Non-Blacks, this variable was used to explore the data. Blacks comprised 32% of the CG respondents, which is higher than the 13% of the general population this group represents in the U.S. society.

Rationale for dataset use

The decision to use data from the ACL was motivated by several considerations. While the ACL was developed with guidance from the adaption/coping theory (House et al., 2005), it is one of the few national, longitudinal studies that implement data collection on positive aspects of caregiving, precisely optimism. Another strength of the ACL dataset is that it allows examination of older Blacks in a more representative fashion of the U.S. population than data collected in other studies (House, 2018; House et al., 2005). The ACL dataset accomplishes sampling Blacks at twice the proportionate rate for non-Black persons in their age group. The ACL also captures data on individuals' health status, specifically chronic health conditions, self-rated physical health, and depressive symptoms (House, 2018; House et al., 2005; Institute of Social Research, 2012). These data from the ACL allow examination of differences among racial groups, especially those over 60 years who are caregivers, to explore how the role may affect their health status.

Data Set

The ACL study seeks to understand the social disparities in health and aging among Americans (House, 2018; Institute of Social Research, 2012). With its inception in 1986, the ACL study conducted national face-to-face surveys of 3,617 adults ages 25 and up in the continental U.S. In 1989, face-to-face re-interviews were conducted on 83%

(n=2,867) of those still alive. Following the 1989 interviews, survivors have been re-interviewed by phone, or if needed, face-to-face in 1994, 2001/02, and 2011/12. During the first two waves of the ACL, the primary focus was to examine a range of psychosocial factors in maintaining one's health and effective functioning, including if the respondent was a CG and number of chronic conditions (Assari, 2019; Atienza et al., 2002; Burr et al., 2005; Martire, Stephens, & Townsend, 1998; Stephens & Franks, 1995; Tsai & Jirovec, 2005). These two foci continued to be examined in subsequent Waves of data collection. During the mid-1990s through the mid-2000s, the study had changes in the investigative team members. The team changes along with initial analyses of data from Waves one and two resulted in the development of two new overarching goals of the strategic plan of U.S. Public Services *Healthy People* 2010:

1. Extending healthy or active life expectancy, and;
2. Reduce/eliminate social disparities in health by socioeconomic position and/or race/ethnicity.

These two goals were the foundation of data collection in Waves three, four, and five. All ACL data are archived for public use with the Inter-University Consortium for Political and Social Research (ICPSR). Data with personal or location data that might allow for the identification of respondents has been removed to guarantee the confidentiality of respondents (Institute for Social Research, 2012). CWRU IRB permission was sought and received for this study to use the ACL data.

Design

Several empirical studies have used ACL data to examine CG stress and/or burden and the effect on women CGs (Christensen et al., 1998; Franks & Stephens, 1996; Martire et al., 1998; Rozario, Morrow-Howell, & Hinterlong, 2004; Stephens & Franks, 1995; Stephens & Townsend, 1997). Other studies have utilized the ACL to examine the health outcomes of older adults (Hinterlong, Morrow-Howell & Rozario, 2007; House et al., 2005; Jackson et al., 2010; Lantz, House, Mero & Williams, 2005). One common use of the ACL is to examine mastery of roles almost exclusively among women and identify any relationship to their well-being in a caregiving role (Christensen et al., 1998; Franks & Stephens, 1995; Martire et al., 1998; Stephens & Franks, 1995; Stephens & Townsend, 1997). Christensen et al. (1998) used the ACL data to examine mastery levels and well-being among women. Other studies examined caregiving with employment and volunteerism. Burr et al. (2005) used the ACL to examine if volunteerism and caregiving were related. Rozario et al. (2004) used ACL data to examine what impact multiple roles, specifically volunteerism and employment, had on older caregivers' well-being. Their well-being was measured using three variables: (1) self-rated health, (2) functional impairment, and (3) depressive symptoms. Findings indicated that the multiple roles only positively affected self-rated health (Rozario et al., 2004). These studies show how no known studies use the ACL, which examines caregivers explicitly by race using the variables of optimism, caregiving hours, and health outcomes. This dissertation expanded the ACL used by including caregiver optimism levels on the effects of their health outcomes by race. The study extracted only responses to optimism, caregiver stress (caregiving hours), and caregiver health outcomes from the dataset and examined and the associations between them by Black/Non-Black.

The current study utilized an exploratory, non-experimental cross-sectional design. A convenience sample of caregivers within the self-reported data as having one or more chronic health conditions was applied in the current analysis. This study applies a framework (see Figure 1) that contains the variables of stress (*caregiving hours*) and optimism to examine the relationship of the overall health outcomes (perceived *self-rated health* and *depressive symptoms*) of caregivers. The framework also identifies specific contextual factors (demographic: SES, gender, income, marital status, education level, and number of CHPs) used as control variables.

The use of the ACL is appropriate to examine these identified variables as it is supported that using secondary data analysis for topics that are not commonly investigated is applicable (Smith et al., 2011). When doing secondary data analyses, one must ensure the questions can be answered by variables found within a dataset (Smith et al., 2011). The research questions asked in this study were derived from variables contained within the ACL dataset. The current study focused only on households where only one respondent was also a caregiver. The exploratory nature of this study allows for the opportunity to expand the understanding of how optimism may impact health outcomes among older caregivers. Another contribution is to expand the knowledge on racial differences of caregivers as it relates to health outcomes by applying optimism, a positive construct.

Variables

This study used ten variables from the ACL dataset. There are two predictor variables and one dependent variable. The predictor variables were *optimism* and *stress (caregiving hours)*. The dependent variable was caregiver overall health outcomes (*self-rated health* and *depressive symptoms*). There were seven control variables: demographic (*gender, income, education level, marital status, age*, and *race*) and the *number of CHPs* (to understand caregiver perceived health accurately).

Predictor Variables

Optimism: The positive experience of being a caregiver is self-reported *optimism* level using the three optimism variables in the ACL: a subscale of the Life Orientation Test-Revised (LOT-R) (House et al., 1992; House et al., 2005) (See Appendix C). The LOT-R seeks to assess an individual's expectations for the future to indicate their dispositional optimism (See Table 1 for definition). The measure explores expectations on a continuum from optimistic to pessimistic using 10-items. However, only six items measure the two concepts; the remaining four are filler or neutral questions. The LOT-R has three items that measure optimism and three that measure pessimism. Optimism is measured along a continuum with an attitude that favors positive expectancies, whereas dispositional pessimism reflects an attitude that things will go wrong (Scheier & Carver, 1987) (See Appendix A). The three optimistic items are: "*I am always optimistic about my future*." "*I hardly ever expect things to go my way*." "*I rarely count on good things happening to me*." Scores range between three (3) and 12. *Optimism* is a continuous variable. The responses in the ACL range from 1) Agree Strongly, 2) Agree Somewhat, 3) Disagree Somewhat, 4) Disagree Strongly. The responses to these items range indicated that lower scores imply higher optimism. For the current study, the items were re-coded so that responses range from 1) Disagree Strongly, 2) Disagree Somewhat, 3) Agree Somewhat, 4) Agree Strongly, where higher values imply higher optimism.

LOT-R norms were initially based on a random sample of 2,055 undergraduate males and females across two universities when first developed (Scheier & Carver, 1987). Since the LOT-R development, it has been used in hundreds of other studies across various populations, including Blacks and Non-Blacks, since its development in 1985 as the LOT and the subsequent LOT-R beginning in 1994 (Chiesi et al., 2013; Segerstrom, Evans & Eisenlohr-Moul, 2011). The LOT-R has been used in studies with older adults (Bakas et al., 2006; Whelen et al., 1997) and CGs (Bakas et al., 2006; Scheier et al., 1994; Schneider, Steele, Cadell & Hemswoth, 2011; Schulz & Quittner, 1998; Tompkins et al., 1988). Other populations the LOT-R has been used with include women, men, opiated addicted adults (Hirsch, Britton & Conner, 2010), and adolescents (Monzani, Steca & Greco, 2014). The LOT-R has been translated into French, German, and Spanish. The LOT-R has been used in studies in countries such as Italy, Germany, Japan, Greece, and as well as within Latin America. The LOT-R scale has documented validity and reliability (Cronbach alpha = .78) (Scheier & Carver, 1985).

Stress: this variable was measured using a single indicator: *caregiving hours provided* (DeSalvo et al., 2009; Elo et al., 2003; Macias et al., 2015). The indicator asked, "*How many caregiving hours did you provide during the past year?*" The indicator used a five-point scale ranging from less than 20 hours to 160 hours plus more. The responses ranged from 1 (= Less than 20 hours), 2 (20-39), 3 (40-79), 4 (80-159), and 5 (= 160 hours plus more), with higher hours indicating more time spent providing caregiving activities. Stress, as measured by *caregiving hours provided*, is a continuous variable.

Dependent Variable

Caregiver overall health: Caregiver overall health was comprised of two dimensions: *self-rated health* and *depressive symptoms*.

*Caregiver self-rated health***:** was measured by using a single indicator. The indicator asked, *"How would you rate your health at present time?"* The ACL collected the responses for this variable, ranging from 1 = Excellent to 5 = Poor, with lower numbers indicating higher self-rated health. This study re-coded this variable, so the response range was 1 = Poor to 5 = Excellent so that higher numbers indicate higher self-rated health to align with how most studies use this question. A review of assumptions to run an OLS regression with a variable as the dependent variable has to be a continuous measure, be more than four or five categories, and have good variability across the categories. The ratings across the five response categories did not have good variability. This variable was re-coded into a dichotomous variable. Excellent, very good, and good ratings were coded as 0, and fair to poor health ratings coded as 1. The dichotomous variable resulted in the use of logistic regression to analyze data. *Self-rated health* data were not captured at a continuous level. A review of frequencies for the variable indicated there was not good variability across the categories. An additional review of skewness and kurtosis indicated some skewness (-.404). In examining the dispersion of responses across the five categories, the dispersion was not even across all five. A review was completed to examine if the first two categories (poor and fair) could be collapsed into one to increase the spread. This would have resulted in only four categories, not meeting requirements to run OLS and resulting in the decision to run a logistic regression to examine the *self-rated health*.

Single item indicators including self-reported health have been noted to be appropriate and advantageous in large samples and longitudinal studies (Burisch, 1984; Diener, 1984; Hays et al., 2009; Johnson & Wolinsky, 1993; Robins, Hendin & Trzesniewski, 2001; Sandvik, Diener & Seidlitz, 1993) both of which apply to the ACL study. Benefits in using single-item measures, when appropriate, have been noted by researchers (Burisch, 1984; Dunn, 2002, Elo, Leppanen & Jahkola, 2003; Rohrer, 2007) using nationally representative databases and other data with various foci: studying life satisfaction (Campbell, Converse & Rodgers, 1976), subjective well-being (Diener, 1984; Sandvik, Diener & Seidlitz, 1993), affect (Russell, Weiss & Mendelsohn, 1989), relationships (Aron, Aron & Danny, 1992), and attachment style (Hazan & Shaver, 1987).

Caregiver *Depressive Symptoms*: was measured using the 11-item Center for Epidemiological Studies Depression (CES-D) Scale (See Appendix B**).** The CES-D scale (Radloff, 1977) assesses mood and level of overall functioning in the last seven (7) days. The CES-D was initially developed as a 20-item unidimensional scale. The shorter 11-item CES-D version contains items on feeling depressed, restless, happy, lonely, and sad; "feeling that people dislike me"; people are unfriendly; "I enjoy life" and "I was happy" (reverse scored); "I have a poor appetite"; cannot keep going, and everything is an effort. *Depressive symptoms* will be defined as the absence and/or presence of assessed symptoms based upon the CES-D cutoff of 16 for the presence of symptoms (Radloff, 1977; Roberts, Vernon & Rhoades, 1989). Scores on the 11-item CES-D version can range from 11-33. Higher scores indicate increased levels of depressive symptoms. Depressive symptoms are often one indicator of mental health well-being for individuals (Kurtz et al., 2004; Pinquart & Sorenson, 2011; Rhee et al., 2008; Tsai & Jirovec, 2005). The items are rated on a 3-point scale from 1- "hardly ever," 2- "some of the time" to 3- "most of the time." The CES-D is a reliable measure for assessing the number, types, and duration of depressive symptoms across racial, gender, and age categories (Knight, Williams, McGee & Olaman, 1997; Radloff, 1977; Roberts, Vernon & Rhoades, 1989). High internal consistency has been reported with Cronbach's alpha coefficients ranging from .85 to .90 across studies (Radloff, 1977). Concurrent validity by clinical and self-report criteria, along with substantial evidence of construct validity, has been demonstrated (Radloff, 1977). However, there is evidence that the CES-D, while it is a valuable measure of the level of depressive symptoms, may not be a good tool for screening for clinical or major depression (Roberts et al., 1989). This dissertation only measured depressive symptoms, not clinically diagnosable depression.

Control Variables

Demographic: *Gender, income, education level, marital status, race*

Gender: The ACL defines gender as male or female as identified by participants. This is a categorical variable.

Income: The ACL defines income as the yearly salary in dollars for respondent and spouse (adjusted for inflation for 1986) as identified by participants. It is a continuous variable. This is a ratio-level variable.

Education: The ACL dataset defines education as the highest level of education years achieved, ranging from 3 to 17 years. This is a ratio-level variable.

Age: The ACL dataset defines age as the self-identified number of years and days the respondent has lived. This is a ratio level variable.

Marital Status: The ACL dataset defines marital status as married, not married, widowed, single, cohabit. This is a categorical variable.

Race: The United States Census Bureau (2013) defines race as a self-identified social construct. In the ACL dataset, all respondents, including caregivers, self-select their race. The ACL re-coded the race variable from five groups to two: Black and Non-Black. The two groups to be examined for this study will be caregivers who identify as either Black or Non-Black. This is a categorical variable.

Number of chronic health conditions: (e.g., arthritis, cardiovascular disease, cancer): The ACL defines this variable as caregivers' self-reported based on receipt of a physician's diagnosis of one or more chronic conditions captured in the ACL questionnaire. An index was created in the fifth Wave of data collection that is a nine-item index of the total number of CHP(s). This variable is measured by asking caregivers to identify the number of CHP(s) they have been diagnosed with during the past 12 months. The number of CHPs will be a ratio variable level as caregivers can indicate zero.

3.3 Data Analysis Approach

The Statistical Package for the Social Sciences (**SPSS version** 25) was used in data analysis. Univariate analysis was completed for the key variables of *race*, caregivers' *perceived self-rated health, optimism level*, *depressive symptoms (CES-D)*, and *caregiver stress (caregiving hours)*. Information is provided for the continuous variables: *number of caregiver CHP(s), number of hours served as a caregiver, age (in years), education (in years),* and *income for respondent and spouse (adjusted for inflation from 1986)* of the caregivers. The demographic information, specifically *gender, age, race, socioeconomic status, marital status,* and *number of CHPs*, are provided for caregivers as descriptive information. Descriptive information was also explored specific to each racial group. Specific to each Aim, the following data analysis approaches were utilized:

Aim 1: Examine racial differences among Black and Non-Black caregivers in stress, optimism, and health outcomes.

To examine research questions 1, 2, and 3 connected with Aim 1, *t*-tests were used to examine the difference between the caregivers based upon race in caregiver stress, optimism, and health outcomes. A detailed description of each question is discussed in the next chapter.

Research Question 1: Is there a difference in caregiver stress between Blacks and Non-Blacks?

H1: Blacks will have lower caregiver stress than Non-Blacks.

Research Question 2: Is there a difference in optimism between Black and Non-Black caregivers?

H2: Black caregivers will have more optimism than Non-Black caregivers.

Research Question 3: Is there a difference in health outcomes between Black and Non-Black caregivers?

H3: Black caregivers will have poorer self-rated health than Non-Black caregivers.

H4: Black caregivers will have lower levels of depressive symptoms than Non-Black caregivers.

Aim 2: Examine relationships among caregiver stress, optimism, and health outcomes in Black and Non-Black caregivers.

To examine research question 4 connected with Aim 2, correlations were used to examine the relationships between the caregivers based upon race in caregiver stress, optimism, and health outcomes. The correlations were also examined to assess relationships that may be race-specific. A detailed description is discussed in the next chapter.

Research Question 4: What are the relationships between stress, optimism, and health outcomes for caregivers collectively and separately for Blacks and Non-Black caregivers?

H5: Among Black caregivers, lower stress will be negatively associated with higher optimism.

H6: Among Non-Black caregivers, there will be no association between stress and optimism.

H7: Among Black caregivers, higher optimism will be associated with higher self-rated health.

H8: Among Non-Black caregivers, there will be no association between optimism and self-rated health.

H9: Among Black caregivers, higher optimism will be positively associated with lower depressive symptoms among caregivers.

H10: Among Non-Black caregivers, there will be no association between optimism and depressive symptoms.

Research Question 5: Does race moderate the relationship between caregiver stress and health outcomes among caregivers?

H11: Race will moderate the relationship between caregiver stress and self-rated health.

H12: Race will moderate the relationship between caregiver stress and depressive symptoms.

Research Question 6: Does race moderate the relationship between optimism and health outcomes among caregivers?

H13: Race will moderate the relationship between optimism and self-rated health.

H14: Race will moderate the relationship between optimism and depressive symptoms.

A three-step hierarchal regression and binary logistic regression were performed to examine the relationships among research questions 5 and 6 with Aim 2. A three-step hierarchal regression was conducted with questions 12 and 14 to predict if race moderates *stress*, *optimism*, and *depressive symptoms*. A binary logistic regression was conducted with questions 11 and 13 to predict *self-rated health* and *stress* being different between Blacks and Non-Blacks.

Research Question 5: Does race moderate the relationship between caregiver stress and health outcomes among caregivers?

H11: Race will moderate the relationship between caregiver stress and self-rated health.

A three-step binary logistic regression was conducted to predict *self-rated health* and *stress* being different between races. All control variables (*education level, age, gender, marital status, number of CHPs*) were included in the first step. The interaction effects of *race*stress* and *race*optimism* with *self-rated health* relationships were entered on the last step.

H12: Race will moderate the relationship between caregiver stress and depressive symptoms.

A three-step hierarchical linear regression was conducted to predict *depressive symptoms* and *stress* being different between races. All control variables (*education level, age, gender, marital status, number of CHPs*) were included in the first step. *Race, stress,* and *optimism* were entered in the second step. The third step examined the interaction between *race*stress, race*optimism,* and *depressive symptoms*.

Research Question 6: Does race moderate the relationship between optimism and health outcomes among caregivers?

H13: Race will moderate the relationship between optimism and self-rated health.

A three-step binary logistic regression was conducted to predict *self-rated health* and *stress* being different between races. All control variables (*education level, age, gender, marital status, number of CHPs*) were included in the first step. The interaction effects of *race*stress* and *race*optimism* with *self-rated health* relationships were entered on the last step.

H14: Race will moderate the relationship between optimism and depressive symptoms.

A three-step hierarchical linear regression was conducted to predict *depressive symptoms* and *stress* being different between races. All control variables (*education level, age, gender, marital status, number of CHPs*) were included in the first step. *Race, stress,* and *optimism* were entered in the second step. The third step examined the interaction between *race*stress, race*optimism,* and *depressive symptoms*.

Chapter 4 Results

This chapter presents the results from the six research questions associated with the aims examined in this dissertation. The study had two aims: 1) examine racial differences among Black and Non-Black caregivers in levels of *caregiving hours* [as a measure of stress], optimism and health outcomes [*self-rated health* and *depressive symptoms*], and 2) explore how race affects the relationships between caregiving hours, optimism and health outcomes among Black and Non-Black caregivers. The first section presents a detailed description of how the sample was identified for the present study. Sections one, two, and three present this analysis by individual race groups and collectively overall. Section two also presents the descriptive results of the sample's characteristics. Sections three and four presents the bivariate analysis (*t*-tests and correlations) used to examine the first aim. The final section presents the analyses for the second aim (*t*-tests, hierarchical linear regression, and binary logistic regression).

4.1 Sample and Demographics

While there were 461 caregivers in the overall sample for Wave 5, since the ACL collects data from households where there is more than one respondent living in the same house, this study chose not to include these 21 dyad households. The final sample size was 440, reflecting households with only one caregiver respondent (see Table 2). All respondents answered the questions related to the health outcome variables (self-rated health indicator and depressive symptoms: CES-D 11-item).

4.2 Univariate Descriptive Statistics

Table 2 presents the sample characteristics for the 440 respondents. Over two-thirds of the respondents were Non-Black. The average age of the respondent was 62 years, while the median was 60 (SD=± 9.07). The majority of the sample were females.

Table 2 Demographic Variables

Variables	N	%	M	SD	MEDIAN
Race					
Black	141	32			
Non-Black	299	68			
Age (in years)			62.01	9.07	60
Gender					
Male	161	36.6			
Female	279	63.4			
Marital Status					
Married	258	58.6			
Separated	11	2.5			
Divorced/Annulled	67	15.2			
Widowed	66	15			
Never married	38	8.6			
Chronic Health Problems			1.5	1.27	1
Zero (0)	114	25.9			
One (1)	125	28.4			
Two (2)	111	25.2			
Three (3)	55	12.5			
Four (4)	28	6.4			
Five (5)	6	1.4			
Six (6)	1	0.2			
Education (Highest Year)			13	2.4	13.33
Income of Respondent & Spouse (Adjusted for inflation from 1986)			33,842.81	33,851.53	22,256.00

*Data source from American Changing Lives survey, Wave V

Race in the ACL was collected across five categories, and the majority of responses fell within two racial groups: Non-Black and Black. The Black/Non-Black variable created in the ACL was used and reported in this study.

The highest years of education (measured at ratio level) attained by caregivers was 17. The average number of education years for caregivers was 13.33 years. As supported by most caregiver research, females comprised nearly two-thirds (63.4%) of the respondents in the study. The majority of the respondents reported being married (58.6%). The average income for respondents was almost $34,000, with the median income a little over $22,200. Incomes ranged from $882 through $294,000 per year. Caregiving hours were collected by asking the number of hours caregiving over the past year in five categories. The majority of caregivers (n=115) provided 160 hours or more each year (about 3 hours per week), followed by 95 caregivers who provided 20-39 hours per year (less than 1 hour per week).

A chi-square test of independence test indicated Blacks and Non-Blacks were significantly different on gender ($X^2 = 5.05$, df = 1, p = .03) (see Table 3), with more Non-Blacks being different genders. A chi-square test of independence test indicated Blacks and Non-Blacks were also significantly different on marital status ($X^2 = 33.00$, df = 4, p = .00)(see Table 4), with more Non-Blacks being married.

Table 3 The gender of respondents n=440, df = 1

	Gender			
Race	Males	Females	X^2	p
Black	41	100		
Non-Black	120	179		
Total	161	279	5.05	**0.03***

p< .05*
p<.01**

* Data source from American Changing Lives survey, Wave V

Table 4 The marital status of respondents n=440, df = 4

	Marital Status						
Race	Married	Separated	Divorced, marriage	Widowed	Never married	X^2	p
Black	56	6	28	30	21		
Non-Black	202	5	39	36	17		
Total	258	11	67	66	38	33.00	**0.00****

p< .05*
p<.01**

* Data source from American Changing Lives survey, Wave V

Table 5 presents univariate information on the predictor and dependent variables among all races in this dissertation. Tables 6 and 7 presents the univariate information on predictor and dependent variables by Blacks and Non-Blacks. The variable hours providing care was captured using the aforementioned categories (1=Less than 20, 2=20-39, 3=40-79, 4=80-159, and 5=160 and more), asking the respondent to indicate the number of provided caregiving hours over the past year. The largest category for hours providing care was 160 or more hours each year (26.1%). Just less than half of the caregivers (42.9%) provided 80 or more caregiving hours. *Caregiving hours* were used as a proxy for *stress* in this analysis. This study centered the hours providing care variable and used the centered variable for the regression models to allow the predictors to have a mean of zero, thus allowing for the intercept to be interpreted as the expected value. In the self-rated health variable, most of the caregivers indicated their health was either very good or excellent (51.4%). In the ACL dataset, the self-rated health variable had five categories (5 - poor, fair, good, very good, or 1 - excellent). In this study, these five categories were reverse coded (1-poor to 5-excellent). The majority of caregivers (66.4%) indicated moderate levels of depressive symptoms with ratings ranging between 16-22 (see Appendix E for rating cut-offs). Just under 26% of caregivers indicated low to no levels of depressive symptoms with ratings of 15 or less. With the optimism scale, scores ranged between three (3) and 12, with higher scores indicating more optimism. The largest range of respondents was between eight (21.1%) and nine (26.5%) out of a possible 12 (see Appendices A and B for optimism scale scoring).

Table 5 Key Predictor and Dependent Variables by All Races

Variables	N	%	M	SD	MEDIAN
Caregiving Hours					
(Hours in past year)			3.11	1.47	3.00
1. Less than 20	81	18.4			
2. 20-39	95	21.6			
3. 40-79	75	17.0			
4. 80-159	74	16.8			
5. 160 and more	115	26.1			
Self-Rated Health					
(Re-coded)			3.36	1.07	4.00
1. Poor	23	5.2			
2. Fair	75	17			
3. Good	116	26.4			
4. Very Good	171	38.9			
5.Excellent	55	12.5			
CES-D (Recoded)					
(11 items)			17.82	3.04	17.00
LOT-R (Recoded)					
(3 item Optimism)			7.69	1.74	8.00

* Data source from American Changing Lives survey, Wave V

Table 6 Key Predictor and Dependent Variables by Blacks

Variables	N	%	M	SD	MEDIAN
Caregiving Hours					
(Hours in past year)			2.94	1.48	3.00
1. Less than 20	34	24.1			
2. 20-39	27	19.1			
3. 40-79	24	17.0			
4. 80-159	26	18.4			
5. 160 and more	30	21.3			
Self-Rated Health					
1. Poor	11	7.8			
2. Fair	33	23.4			
3. Good	47	33.3			
4. Very Good	41	29.1			
5. Excellent	9	6.4	3.03	1.05	3.00
CES-D (Recoded)					
(11 items)			18.53	3.27	18.00
LOT-R (Recoded)					
(3 item Optimism)			7.34	1.92	8.00

* Data source from American Changing Lives survey, Wave V

Table 7 Key Predictor and Dependent Variables by Non-Blacks

Variables	N	%	M	SD	MEDIAN
Hours Caregiving					
(Hours in past year)					
1. Less than 20 hours	81	18.4			
2. 20-39 hours	95	21.6			
3. 40-79 hours	75	17.0			
4. 80-159 hours	74	16.8			
5. 160 and more hours	115	26.1	3.2	1.5	3.0
Self-Rated Health					
(Re-coded)					
1. Poor	12	4.0			
2. Fair	42	14.0			
3 Good	69	23.1			
4. Very Good	130	43.5			
5. Excellent	46	15.4	3.5	1.0	4.0
CES-D (Recoded)					
(11 items)			17.5	2.9	17.0
LOT-R (Recoded)					
(3 item Optimism)			7.9	1.6	8.0

* Data source from American Changing Lives survey, Wave V

4.3 Research Aim 1: Examine racial differences among Black and White caregivers in stress, optimism, and health outcomes.

To examine the three questions connected with Aim 1, *t*-tests were used to examine the difference between the caregivers based upon race in caregiving hours, optimism, and health outcomes. Table 8 presents information on the *t*-tests results reflecting the comparison of racial differences in caregiving hours, optimism, and overall health outcomes.

Table 8 *t*- test for Equality of Means by Race using Key Variables

			Race				
	Black			Non-Black			
	M	SD	Range	M	SD	*t* -value	*p* -value
Caregiving Hours	2.94	1.48	1-5	3.2	1.46	-1.67	0.99
LOT-R	7.34	1.92	3-12	7.86	1.63	-2.77	**0.01****
CESD	18.53	3.27	0-4	17.48	2.87	3.28	**0.02***
Self-rated Physical Health	2.97	1.05	1-5	2.48	1.04	4.63	0.38

p< .05*
p<.01**

* Data source from American Changing Lives survey, Wave V

Research Question 1: Is there a difference in caregiver stress between Blacks and Non-Blacks?

H_1: Blacks will have lower caregiver stress than Non-Blacks.

The hypothesis was *not* supported. There was no statistically significant difference between Blacks and Non-Blacks in stress (t=-1.68, df=438, p=.99, d=-.18). A detailed discussion will follow in the next chapter about these and other results.

Research Question 2: Is there a difference in optimism between Black and Non-Black caregivers?

H_2: Black caregivers will have more optimism than Non-Black caregivers.

The hypothesis was *not* supported. While there was a statistically significant difference between Blacks and Non-Blacks in optimism (t= -2.77, df=238.15, p=.00, d= -.30), Non-Blacks (M=7.86, SD=1.63) reported significantly higher average optimism scores than scores for Blacks (M=7.34, SD=1.93).

Research Question 3: Is there a difference in health outcomes between Black and Non-Black caregivers?

H$_3$: Black caregivers will have poorer self-rated health than Non-Black caregivers.

The hypothesis was *not* supported. There was no statistically significant difference between the self-rated health of Black and Non-Black caregivers (t= 4.63, df=438, p=.38, d= -.17). A detailed discussion will follow in the next chapter of all the results.

H$_4$: Black caregivers will have lower levels of depressive symptoms than Non-Black caregivers.

The hypothesis was *not* supported. There was a statistically significant difference between Black and Non-Black caregivers on the CES-D scale (t=3.28, df=244.52, p=.02, d=.34) for higher levels of depressive symptoms among Black caregivers. The average depressive symptoms score for Blacks (M=18.53, SD=3.27) was significantly higher than the score for Non-Black caregivers (M=17.48, SD=2.87). A detailed discussion will follow in the next chapter.

4.4 **Research Aim 2:** Examine relationships among caregiver stress, optimism, and health outcomes in Black and Non-Black caregivers.

Aim 2 has three research questions (4, 5, and 6). Pearson correlations were used to examine the relationships between caregiver race on stress, optimism, and health outcomes for question 4. The correlation analyses were also examined by racial group alone to determine if any relationships were specific to one group. Parameters to determine the level of relationship was the standard identified by Cohen (1992), who indicated .1 - .2 indicates a small relationship, .3 - .4 a medium relationship, and .5 or larger is a large relationship.

Research Question 4: What are the relationships between stress, optimism, and health outcomes among caregivers?

Prior to conducting multivariate analyses, preliminary analyses utilizing descriptive statistics were used to check for normality of distributions. Criteria for normal limits of skewness (<2) and kurtosis (>7) were used for all interval or quasi-interval levels of measures (Curran, West & Finch, 1996). To examine for outliers, frequency measures were used. Frequency statistics were also used to examine for adequate cell count. Correlations were conducted to identify any significant relationships among all study variables.

Table 9 presents findings from correlations between caregiving hours, optimism, and health outcomes (self-rated health indicator and depressive symptoms: CES-D) across races. Table 10, using Non-Blacks as a subgroup, presents findings from correlations between caregiving hours, optimism, and health outcomes (self-rated health indicator and depressive symptoms: CES-D) for this group. Table 11, using Blacks as a subgroup, presents findings from correlations between caregiving hours, optimism, and health outcomes (self-rated health indicator and depressive symptoms: CES-D) for this group.

Table 9 Correlations between Race, Dependent and Predictor Variables

Variables	1. Caregiver Stress	2. Self-Rated Hlth (recode)	3. LOT Optimism	4. CES-D
1. Caregiver Stress				
2. Self-Rated Health (Recode)	0.09			
5. LOT Optimism	0.07	**-0.20****		
6. CES-D	-0.02	**-0.46****	**-0.21****	

*Correlation is significant at 0.05 level (2-tailed)

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

* Data source from American Changing Lives survey, Wave V

Table 10 Non-Blacks Only: Correlations between Dependent and Predictor Variables

Variables	1. Caregiver Stress	2. Self-Rated Hlth (Recode)	3. LOT Optimism	4. CES-D
1. Caregiver Stress				
2. Self-Rated Health (Recode)	0.04			
3. LOT Optimism	0.02	**-0.16***		
4. CES-D	-0.01	**0.48****	**-0.24****	

*Correlation is significant at 0.05 level (2-tailed)

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

* Data source from American Changing Lives survey, Wave V

Table 11 Blacks only: Correlations between Dependent and Predictor Variables

Variables	1. Caregiver Stress	2. Self-Rated Hlth (recode)	3. LOT Optimism	4. CES-D
1. Caregiver Stress				
2. Self-Rated Health (recode)	-0.16			
3. LOT Optimism	0.12	**-0.18***		
4. CES-D	-0.01	**0.37****	-0.11	

*Correlation is significant at 0.05 level (2-tailed)

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

* Data source from American Changing Lives survey, Wave V

H_5: Among Black caregivers, lower caregiver stress will be negatively associated with higher optimism.

The hypothesis was *not* supported. A bivariate correlation was computed to investigate the relationship between caregiving hours/stress and optimism among races. There was no correlation between caregiving hours/stress and optimism (r= .07, p=.17) among races. Among the Black subset, there was no correlation between caregiving hours/stress and optimism (r=.12, p=.15).

H_6: Among Non-Black caregivers, there will be no association between stress and optimism.

The hypothesis was *not* supported. A bivariate correlation was computed to investigate the relationship between caregiving hours/stress and optimism among races. Among the Non-Black subset, there was no correlation between caregiving hours/stress and optimism (r=.02, p=.75).

H_7: Among Black caregivers, higher optimism will be associated with higher self-rated health.

The hypothesis *was* supported. A bivariate correlation was computed to investigate the relationship between optimism and self-rated health among caregivers. Optimism was positively correlated with self-rated health, indicating higher levels of optimism were related to higher self-rated health among races (r=-0.20, p=.00). With this significant finding, optimism was examined in Aim 2 and applied in both the OLS and binary logistic models. Among the Non-Black caregiver subset, there was a significant correlation between optimism and self-rated health (r=-.16, p=.00). Among the Black caregiver subset, there was also a significant correlation between optimism and self-rated health (r=-.18, p=.03).

H_8: Among Non-Black caregivers, there will be no association between optimism and self-rated health.

The hypothesis was *not* supported. A bivariate correlation was computed to investigate the relationship between optimism and self-rated health among caregivers. Optimism was positively correlated with self-rated health, indicating higher levels of optimism were related to higher self-rated health among races (r=-0.20, p=.00). Among the Non-Black caregiver subset, there was a significant correlation between optimism and self-rated health (r=-.86, p=.00).

H_9: Among Black caregivers, higher optimism will be positively associated with lower depressive symptoms.

The hypothesis was *not* supported. Among the Black caregiver subset, there was no correlation between depressive symptoms and optimism (r=-.11, p=.19). However, among the overall caregiver group, there was a significant correlation between lower caregiver depressive symptoms and increased optimism (r= -.21, p=.00).

H_{10}: Among Non-Black caregivers, there will be no association between optimism and depressive symptoms.

The hypothesis was *not* supported. There was a significant correlation between lower caregiver depressive symptoms and increased optimism (r= -.21, p=.00) among races. Among the Non-Black caregiver subset, there was a significant correlation between depressive symptoms and optimism (r=-.24, p=.00).

To further examine the associated relationships between health (*self-rated health* and *depressive symptoms*), *optimism,* and *race* using two hypotheses from two questions (5 and 6) connected with Aim 2, a hierarchal linear regression model was used to examine H_{12} (from research question 5) and H_{14} (from research question 6) to explore the impact of caregiver race on relationships between *caregiver stress, optimism* and *depressive symptoms* (CES-D). The control variables (*marital status, caregiver age, number of CHPs, income,* and *gender*) were entered in Step 1. *Depressive symptoms* (CES-D) [centered] on Step 2. Interaction terms were entered on Step 3 (*caregiver stress*race*) and Step 4 (*optimism*race*).

A binary logistic regression model was used to examine H_{11} (from research question 5) and H_{13} (from research question 6) to explore caregivers on the relationships between *caregiver stress, optimism,* and *self-rated health*. Control variables (*marital status, caregiver age, number of CHPs, income,* and *gender*) were entered in Step 1. *Race, optimism* [centered], and *caregiver stress* [centered] were entered on Step 2. Interaction terms (*optimism*race* and *caregiving hours*race*) were entered on Step 3.

Research Question 5: Does race moderate the relationship between caregiver stress and health outcomes among caregivers**?**

H_{11}: Race will moderate the relationship between caregiver stress and self-rated health.

Research Question 6: Does race moderate the relationship between optimism and health outcomes among caregivers?

H_{13}: Race will moderate the relationship between optimism and self-rated health.

Table 12 presents the results of the three-step hierarchal binary logistic regression analysis applied to research question 5 H_{11} and research question 6 H_{13}. The hypotheses

(H_{11} and H_{13}) were *not* supported. Four control variables (*income, education in years, age in years,* and *number of CHPs*) were found to be significant in all four blocks. The first block included control variables (*marital status, education in years, caregiver age in years, number of CHPs, income, and gender*) and *race*. *Income, education in years, age in years,* and *number of CHPs* were found to be significant predicators for self-rated health [Chi-Square=102.50, df=7 and p=.00 (<0.01)]. The other three control variables (*marital status, gender,* and *race)* were not significant. The five control variables explained 32% of the variability of self-rated health among caregivers. The Hosmer and Lemeshow Test was significant for good fit [Chi-Square=12.02, df=8, p=.15 (>.05). *Income, education in years, age in years* and *number of CHPs* were significant at the 5% level [*income* Wald=6.92 p=.01 (<0.05); *education in years* Wald=7.54, p.=.01 (<0.05); *age in years* Wald=6.42, p=.01 (<0.05); *number of CHPs* Wald=40.56, p=.00 (<0.01). The odds ratio (OR) for *income* was 1.16 (95% CI: 1.04 – 1.29). The odds ratio (OR) for *education in years* was 1.19 (95% CI: 1.05 – 1.35). The odds ratio (OR) for *age in years* was 1.04 (95% CI: 1.01 – 1.07). The odds ration (OR) for *number of CHPs* was 0.48 (95% CI: 0.38 – 0.60). The first model correctly predicted 36.7% of cases where there was poorer self-rated health and 95.3% of the cases where there was better self-rated health, giving an overall percentage correct prediction rate of 82.3%.

The second block held the included control variables (*marital status, education in years, caregiver age in years, number of CHPs, income, and gender*), *race,* as well as the variables of *stress* [centered] and *optimism* [centered]. The second block was not found to be significant in predicating self-rated health [Chi-Square=0.77, df=2, p=.68]. The Hosmer and Lemeshow Test for the second block was significant for good fit [Chi-

Square=13.03, df=8, p=.11 (>.05). *Income, education in years, age in years,* and *number of CHPs* were found to be significant predicators for self-rated health in the second block. The other three control variables (*marital status, gender,* and *race)* and key predictor variables (*caregiving hours* and *optimism)* were not significant. All nine variables in the second block explain 32% of the variability of self-rated health outcomes among caregivers. *Income, education in years, age in years* and *number of CHPs* were significant at the 5% level [*income* Wald=5.98, p=.01 (<0.05); *education in years* Wald=7.01, p.=.01 (<0.05); *age in years* Wald=6.38, p=.01 (<0.05); *number of CHPs* Wald=40.21, p=.00 (<0.01). The odds ratio (OR) for *income* was 1.15 (95% CI: 1.03 – 1.28). The odds ratio (OR) for *education in years* was 1.18 (95% CI: 1.05 – 1.34). The odds ratio (OR) for *age in years* was 1.04 (95% CI: 1.01 – 1.07). The odds ratio (OR) for *number of CHPs* was 0.47 (95% CI: 0.38 – 0.60). The second block in the model correctly predicted 36.7% of cases where there was poorer self-rated health and 95.6% of the cases where there was better self-rated health, giving an overall percentage correct prediction rate of 82.5%.

The third block included the control variables (*marital status, education in years, caregiver age in years, number of CHPs, income,* and *gender*), *race, stress* [centered], *optimism* [centered], and the interaction term *race*stress*. The third block was not found to be significant in predicating self-rated health [Chi-Square=1.56, df=1, p=.21]. The Hosmer and Lemeshow Test for the third block was significant for good fit [Chi-Square=10.29, df=8, p=.25 (>.05). *Income, education in years, age in years,* and *number of CHPs* were found to be significant predicators for self-rated health in the third block. The other control variables (*marital status, gender,* and *race*), key predictor variables (*stress* and o*ptimism),* and the interaction term (*race*caregiving hours*) were not significant. All the variables in the third block explain .32% of the variability of self-rated health among caregivers. *Income, education in years, age in years* and *number of CHPs* were significant at the 5% level [*income* Wald=6.18, p=.01 (<0.05); *education in years* Wald=6.73, p.=.01 (<0.05); *age in years* Wald=6.54, p=.01 (<0.05); *number of CHPs* Wald=40.61, p=.00 (<0.01). The odds ratio (OR) for *income* was 1.15 (95% CI: 1.03 – 1.28). The odds ratio (OR) for *education in years* was 1.18 (95% CI: 1.04 – 1.34). The odds ratio (OR) for *age in years* was 1.04 (95% CI: 1.01 – 1.07). The odds ratio (OR) for *number of CHPs* was 0.47 (95% CI: 0.37 – 0.59). The third block in the model correctly predicted 37.8% of cases where there was poorer self-rated health and 94.7% of the cases where there was better self-rated health, giving an overall percentage correct prediction rate of 82%.

The fourth block included the control variables (*marital status, education in years, caregiver age in years, number of CHPs, income, and gender*), *race, stress* [centered]*, optimism* [centered], and the interaction terms *race*caregiving hours* and *race*optimism*. The fourth block was not found to be significant in predicating self-rated health [Chi-Square=0.04, df=1, p=.84]. The Hosmer and Lemeshow Test for the third block was significant for good fit [Chi-Square=10.70, df=8, p=.22 (>.05)]. *Income, education in years, age in years,* and *number of CHPs* were found to be significant predicators for self-rated health in the fourth block. The other control variables (*marital status, gender, and race*), key predictor variables (*stress* and *optimism*) as well as the interaction terms (*race*stress* and *race*optimism*) were not significant. All the variables in the third block explain 32% of the variability of physical health outcomes among caregivers. *Income, education* in years*, age* in years and *number of CHPs* were significant at the 5% level [*income* Wald=6.21, p=.01 (<0.05); *education* in years Wald=6.62, p.=.01 (<0.05); *age* in years Wald=6.58, p=.01 (<0.05); *number of CHPs* Wald=40.56, p=.00 (<0.01)]. The odds ratio (OR) for *income* was 1.15 (95% CI: 1.03 – 1.29). The odds ratio (OR) for *education* in years was 1.18 (95% CI: 1.04 – 1.34). The OR for *age* in years was 1.04 (95% CI: 1.01 – 1.07). The OR for *number of CHPs* was 0.47 (95% CI: 0.37 – 0.59). The fourth block in the model correctly predicted 37.8% of cases where there was poorer self-rated health and 94.7% of the cases where there was better self-rated health, giving an overall percentage correct prediction rate of 82%.

To examine H_{12} from research question 5 and H_{14} from research question 6, hierarchal linear regression was to be used.

Research Question 5: Does race moderate the relationship between caregiver stress and health outcomes among caregivers?

H_{12}: Race will moderate the relationship between caregiver stress and depressive symptoms.

Research Question 6: Does race moderate the relationship between optimism and health outcomes among caregivers?

H_{14}: Race will moderate the relationship between optimism and depressive symptoms.

Table 13 presents the findings from the hierarchal linear regression for H_{12} and H_{14}. Hypotheses 12 and 14 were *not* supported. The model included control variables *(marital status, age, education, number of CHPs, income,* and *gender*), *stress* [centered], *optimism* [centered], and the interaction terms of *stress*race* and *optimism*race* across four steps. The overall regression model was not significant (F(1,428) = .47, p<.35). In step one, there was a predicted relationship between the control variables and depressive symptoms (CES-D) [F(7, 432) = 15.61, p<.00]. R^2 for the first step in the model was .45, and adjusted R^2 was .20. In step two, there was not any predicted relationship between the control variables, *optimism* [centered], *stress* [centered], and *depressive symptoms* (CES-D). In the subsequent steps (3 and 4) with the interaction effects, there were no predictive relationships. Tests for multicollinearity were reviewed. Variance Inflation Factors (VIF) detect multicollinearity, which may affect the accuracy of one's model but often can mean a loss of reliability when determining the effects of variables (Glen, 2015). The goal is to be at 1 with VIF with 2.5 suggesting possible multicollinearity among variables (Glen, 2015). Steps 1 and 2 indicated a very low level of multicollinearity present. In step 3, two variables (*stress* and *race*stress*) had a VIF above 2.5, indicating possible multicollinearity among stress and race. In step 4, four variables (*optimism, stress, race*stress,* and *race*optimism)* had a VIF above 2.5, indicating possible multicollinearity among race, optimism, and stress. Race was not found to be significant in terms of predicting differences among the relationship between caregiving hours and depressive symptoms (CES-D).

Table 12 Aim 2 3-Step Hierarchical Binary Logistic Regression Analysis (N=440) – Physical Health with race, stress, optimism and interaction effects (race*stress/ race*opti

	Model 1				Model 2				Model 3				Model 4			
	B	SE	Wald	OR	*B*	SE	Wald	OR	*B*	SE	Wald	OR	*B*	SE	Wald	OR
Constant	-4.15	1.46	8.07	**0.02***	-4.02	1.47	7.48	**0.02***	-3.96	1.5	7.3	**0.20***	-3.96	1.45	7.31	**0.02***
Income	0.15	0.55	6.92	**1.16***	0.14	0.06	5.98	**1.15***	0.14	0.06	6.18	**1.15***	0.14	0.06	6.21	**1.15**
Education (in Years)	0.17	0.06	7.54	**1.19***	0.17	0.06	7.01	**1.18****	0.20	0.06	9.75	**1.22***	0.16	0.06	6.62	**1.18***
Age (in Years)	0.04	0.02	6.42	**1.04***	0.04	0.02	6.38	**1.04***	0.04	0.02	6.54	**1.04***	0.04	0.02	6.58	**1.04***
# of CHPs	-0.74	0.12	40.56	**0.48****	-0.75	0.12	40.21	**0.47****	-0.76	0.12	40.61	**0.47****	-0.76	0.12	40.56	**0.47****
Gender	0.42	0.29	2.05	1.52	0.44	0.30	2.19	1.4	0.47	0.30	2.55	1.61	0.48	0.30	2.59	1.62
Marital	-0.10	0.10	0.97	0.91	-0.11	0.10	1.11	0.90	-0.11	0.10	1.27	0.89	-0.11	0.10	1.26	0.89
Race	0.33	0.28	1.44	1.40	0.33	0.28	1.4	1.39	0.30	0.28	1.1	1.34	0.29	0.29	1.00	1.33
Stress					-0.03	0.09	0.13	0.97	0.10	0.14	0.50	1.1	0.10	0.14	0.48	1.1
Optimism					0.06	0.08	0.66	1.06	0.06	0.08	0.59	1.06	0.08	0.11	0.46	1.08
Race*Stress									-0.23	0.18	1.54	0.80	-0.23	0.18	1.51	0.80
Race*Optimism													-0.03	0.15	0.04	0.97
*-2 Log Likelihood	364.20				366.43				361.99				361.83			
Block	102.50 **p<.00****				0.77 p<.68				1.56 p<.22***				0.04 p<.84			
Model	102.50 **p<.00****				103.27 **p<.00****				104.82 **p<.00****				104.87 **p<.00****			
Hosmer&Lemeshow	12.02 **p<.15*****				13.03 **p>.11*****				10.29 **p<.25*****				10.7 p<.22***			
Df	8				8				8				8			
Nagelkerke pseudo R2	0.32				0.32				0.32				0.32			

[a] Physical Health: Excellent, very good, and good ratings were coded as 0 and fair to poor health ratings were coded as 1

p<.05*

p< .01**

p>.05***

* Data source from American Changing Lives survey, Wave V

Table 13 Aim 2 3-Step Hierarchical Linear Regression Analysis (N=440) – Depressvie Symptoms with interactions (race*stress and race*optimism)

	Step 1			95% CI		Step 2			95% CI		Step 3			95% CI		Step 4			95% CI	
	B	SE	Partial	Lower	Upper	*B*	SE	Partial	Lower	Upper	*B*	SE	Partial	Lower	Upper	*B*	SE	Partial	Lower	Upper
Constant	**24.52****			21.47	27.04	**23.94****			21.16	426.7	**23.98****			21.20	26.76	**23.97****			21.18	26.75
Income	-7.7	-0.07	-0.08	0.00	0.00	-6.22	-0.07	-0.07	0.00	0.00	-6.2	-0.07	-0.07	0.00	0.00	-5.82	-0.07	-0.06	0.00	0.00
Education (in Years)	**-0.23****	-0.18	-0.18	-0.35	-0.11	**-0.21****	-0.16	-0.16	-0.55	0.56	**-0.21****	-0.16	-0.16	-0.32	-0.09	**-0.21****	-017	-0.17	-0.33	-0.09
Age (in Years)	**-0.06****	-0.18	-0.18	-0.09	-0.03	**-0.06****	-0.18	-0.19	-0.09	-0.03	**-0.06****	-0.18	-0.19	-0.09	-0.03	**-0.06****	-0.18	-0.19	-0.09	-0.03
# of CHPs	**0.79****	0.33	0.32	0.60	1.01	**0.78****	0.33	0.32	0.56	1.00	**0.78****	0.33	0.32	0.56	1.00	**0.77****	0.32	0.31	0.55	1.00
Gender	0.02	0.00	0.00	-0.53	0.58	0.01	0.00	0.00	-0.55	0.56	0.01	0.00	0.00	-0.55	0.57	0.05	0.01	0.01	-0.52	0.61
Marital	0.05	0.03	0.03	-0.15	0.25	0.07	0.03	0.03	-0.13	0.26	0.06	0.03	0.03	-0.14	0.26	0.07	0.03	0.03	-0.13	0.26
Race	-0.47	-0.07	-0.08	-1.06	0.11	-0.42	-0.07	-0.07	-1.00	0.16	-0.43*	-0.07	-0.07	-1.01	0.15	-0.45	-0.07	-0.07	-1.04	0.13
Stress						0.05	0.02	0.02	-0.35	-0.05	0.13	0.06	0.04	-0.18	0.43	0.11	0.05	0.03	-0.20	0.42
Optimism						**-0.20***	-0.12	-0.12	-0.35	-0.05	**-0.20***	-0.12	-0.12	-0.36	-0.05	-0.11	-0.07	-0.04	-0.36	0.13
Race*Stress											0.12	-0.05	-0.03	-0.50	0.25	-0.11	-0.04	-0.03	-0.48	0.27
Race*Optimism																-0.15	-0.07	-0.05	-0.46	0.16
p< .05*																				
p<.01**																				

* Data source from American Changing Lives survey, Wave V

Chapter 5

Discussion and Conclusion

This chapter presents and discusses the main findings from the six research questions examined in this study. It will also include a discussion of practice implications and policy recommendations. Finally, the study's limitations and directions for future research are presented.

Main Findings

Study Aim 1: Examine racial differences among Black and Non-Black caregivers in stress, optimism, and health outcomes.

There were three research questions related to this first Aim. Four hypotheses were associated with these three questions. Two of the four hypotheses were supported.

The first research question sought to examine differences between Blacks and Non-Blacks in caregiver stress. It was hypothesized that Blacks would have lower caregiver stress than Non-Blacks. There was no statistically significant difference between Blacks and Non-Blacks in stress (t=-1.68, df=438, p=.99, d=-.18). This hypothesis was not supported as no differences were found between race-related caregiver stress. The results in the current study suggest Blacks do not have lower stress than Non-Blacks. This finding appears to be counter to existing research with conflicting significant results indicating Blacks have different stress levels than Non-Blacks (Dilworth-Anderson et al., 2002; Dilworth-Anderson et al., 1994; Pinquart & Sorenson, 2005). While Black caregivers may experience stress, this could be connected to their history in the U.S., where they have learned to apply more than one coping method and embrace support roles using a different lens when viewing stressful situations such as caregiving. This hypothesis not being supported could suggest that existing measures used to assess perceived caregiver stress may be inadequate when used with Blacks, as reflected in existing research (Connell & Gibson, 1997; Dilworth-Anderson et al., 2002; Janevic & Connell, 2001), which have sought over time to determine if racial differences exist in caregiver stress levels. Increasing our knowledge and understanding of stress among different groups, specifically Blacks, would allow for the development and testing of potential measures to assess caregiver stress better. Improved measures of stress could enhance practitioners' ability to assess more accurately caregiver mental health. Besides, more accurate measures of stress could potentially assist in better understanding stress across all racial groups. If researchers can measure stress among all groups the same, this then allows for research to explore the effect of stress in a more uniform fashion across and between different groups.

This study's findings to the first question support a further need to examine and increase understanding of how stress is defined among racial groups. These findings also support the need to investigate if current instruments effectively measure concepts [i.e., stress] the same between Blacks and Non-Blacks. Future development would ensure any necessary, appropriate instruments are developed to measure this concept among Blacks and Non-Blacks. Ambiguous results within extant research indicate how stress is defined and measured between races could be related to how different cultural definitions affect individuals' perceptions of stress (Dilworth-Anderson et al., 2004; Dilworth-Anderson et al., 2002; Haley et al., 1995; Pinquart & Sorenson, 2005; 2011). The current findings continue to add to the ambiguity in this area of inquiry. This study's similar findings highlight the need for continued research into how stress is defined and measured across racial and ethnic groups.

The second research question examined whether optimism differed by race. The hypothesis was not supported, which is consistent with that of previous research. Previous research suggests disparities may exist in how racial groups define optimism which could be reflected in instruments used to measure this concept (Alarcon et al., 2013; Dilworth-Anderson et al., 2004). This study's findings support existing limitations in knowing how Black caregivers define concepts such as optimism (Dilworth-Anderson et al., 2004; Dilworth-Anderson et al., 2002). The findings in this study further support the continued need to examine how optimism in Black caregivers may act as a protective factor against the stressors associated with this role. Furthering this knowledge would allow research to ensure we appropriately measure optimism among Black caregivers, increasing confidence in future significant findings.

The third research question examined whether health outcomes (physical and mental) differed between Black and Non-Black caregivers. Based upon previous research (Alegria et al. 2008; Chae et al. 2014; Thorpe, Wilson-Frederick, Bowle, Coa, Clay, LaVeist & Whitfield, 2013; Williams et al., 2016), two hypotheses were developed. The first hypothesis was that Black caregivers would have poorer physical health than their Non-Black counterparts. The other hypothesis was that Black caregivers would have different levels of depressive symptoms than their Non-Black counterparts.

The hypothesis related to physical health was not supported as there was no significant difference between physical health ratings between races. There was no statistically significant difference between the self-rated health of Black and Non-Black caregivers (t= 4.63, df=438, p=.38, d= -.17). The hypothesis related to depressive symptoms was supported as there were different mental health ratings between Blacks and Non-Blacks. There was a statistically significant difference between Black and Non-Black caregivers on the CES-D scale (t=3.28, df=244.52, p=.02, d=.34) for higher levels of depressive symptoms among Black caregivers. This study's findings on the depressive symptom hypothesis under RQ3 indicated Blacks scored higher on the CES-D suggesting more symptoms of depression than Non-Blacks. This finding is particularly interesting as Blacks were also more optimistic, which would appear to be conflicting. This could suggest Blacks may view stressful situations differently from other groups, resulting in a different reaction to the caregiver role and resulting in increased stress and optimism levels. The findings in this dissertation were supported by existing literature, which suggests there is a disparity among races, specifically Blacks, in their health outcomes, such as having poorer outcomes with chronic health problems and being identified with more severe levels of chronic health conditions resulting in more deaths (Pinquart & Sorenson, 2005; Williams et al., 2016).

Also, Blacks have been identified as having a different view towards their lives, resulting in more positive connections with situations, such as caregiving, even with increased stress (Dilworth et al., 2005; Haley et al., 1996; Haley et al., 1995; James, 1994; Knight & Sayegh, 2010). Another limitation about the findings for this question is that there is no way to know the individuals' health levels before taking on the caregiver role, which could affect the self-ratings provided by each individual. This calls for longitudinal studies in the future. However, this study's findings suggest there was a difference among Black caregivers who had higher scores of depressive symptoms than their Non-Black counterparts. This adds to the ambiguous findings in existing research, which at times indicate Blacks do not identify with depressive symptoms as their Non-Black counterparts (Dilworth-Anderson et al., 2002; Haley et al., 2004; Pinquart & Sorenson, 2005) and other times that Blacks do identify as experiencing depressive symptoms (Brummett et al., 2012; McCallum et al., 2007). Blacks also indicated higher optimism levels. This finding supports existing knowledge supports there is a need for further examination in how Blacks define and identify with the concepts of stress, depression, and optimism. Furthering this research would allow us to know how these concepts (i.e., stress, depression, and optimism) may impact how this group perceives their world and determine how these may relate to overall Black caregivers' health outcomes. There is also a continuous identified need to clarify why these discrepancies exist.

The findings in this study support research indicating that Blacks experience depressive symptoms at higher rates than their Non-Black counterparts (Brummett et al., 2012; Dilworth et al., 2002; Haley et al., 1996). Further examination of the pathways towards depressive symptoms may illuminate potential paths of interventions. However, some limitations, such as the instruments used to assess symptoms as well as the need to expand further the understanding of how culture affects Blacks' reaction to caregiving as a mediator to depression, continue to prevent a clear understanding of the health outcomes and how they may differ between races among caregivers.

Study Aim 2: Examine how race impacts the relationships among caregiver stress, optimism, and health outcomes among Black and Non-Black caregivers.

The fourth question sought to explore the association between caregiver stress, optimism, and health outcomes (physical and mental) among caregivers. H_5 examined if lower caregiver stress would be negatively associated with higher optimism among Black caregivers. H_6 examined if there was any association between stress and optimism among Non-Blacks. H_7 examined if higher optimism was associated with higher self-rated health among Black caregivers. H_8 examined if there was any association between optimism and self-rated health among Non-Black caregivers. H_9 examined if higher optimism was positively associated with lower depressive symptoms among Black caregivers. H_{10} examined if there was any association between optimism and self-rated health among Non-Black caregivers. Caregiver stress was not found to negatively correlate with optimism, depression, nor self-rated health. However, higher optimism was positively associated with self-rated health and lower CES-D ratings among all caregivers and separately by race. Black caregivers in this study who had higher optimism levels also had increased CES-D ratings. These ambiguous findings run counter as previous research indicates caregivers with lower stress levels and higher optimism levels often have improved physical health (Andren & Elmstahl, 2008; Dilworth-Anderson et al., 2004). A limitation related to higher optimism in this study is that there is no way to know if these caregivers chose the role because of their optimism levels before or if optimism may have affected how they related to the role. One area that evolves from this research is that caregivers can see their world through the lenses of optimism, and this view may account for the significant correlation with health outcomes. Developing an understanding of how optimism affects caregivers by race will allow for improved interventions to use with these high-risk groups. Improving the understanding of optimism will also allow for an enriched understanding of the positive aspects that may exist in the care process.

The final two research questions (five and six) explored if race moderated the relationship between health outcomes and caregiver stress or optimism. The three-step binary logistic regression model did not provide support for the two hypotheses examined H_{11} and H_{13}). Findings indicated the only significance in the model were the control variables (*income, education in years, age in* years, and *number of* CHPs), which were significant in all three steps of the model. These findings suggest a further need to have research completed on Black caregivers to examine how these variables predicate changes in physical health. The first and second blocks correctly predicted 72.3% of the cases.

A hierarchal linear regression model was used to examine H_{12} for question 5 and H_{14} for question 6. Hypotheses 12 and 14 were *not* supported. Race was not found to be significant in terms of predicting differences among the relationship between caregiving hours and depressive symptoms (CES-D). There is research indicating other factors may moderate the relationship between Blacks and poorer health outcomes (Umberson et al., 2014) as well as having less stress than their Non-Black counterparts (Dilworth-Anderson et al., 2004; Pinquart & Sorenson, 2005). Further examination of the relationship between health outcomes, stress, optimism, and the effects of race on these relationships would allow for the advancement of appropriate interventions for race-specific caregivers.

Study Strengths

This study had several strengths: the dataset, use of optimism and stress to predict health outcomes, and examination of Black and Non-Black caregivers with chronic health problems. The dataset is drawn from a nationally representative study and was inclusive of all groups and specifically ensured an oversampling of Blacks' participation in the study. This current study completed a secondary analysis using data from the ACL dataset. The dataset only contains individuals who have participated in all five (5) Waves of collection. The use of this dataset verifies prior research findings that indicate the need to have more research to both explore Blacks and caregiver concepts (Dilworth-Anderson et al., 2002; Janvenic & Connell, 2001; Pharr, Francis, Terry & Clark, 2014; Pinquart & Sorenson, 2005; Sharma et al., 2016). The ACL dataset implemented several different instruments to assess different concepts, specifically stress, health, and optimism. The ACL used a multi-dimensional approach to measure change over the lifespan.

The associations used in the study were novel as there is limited work that explores how optimism and stress may correlate to health outcomes related to race among older caregivers. The continued growth among older caregivers will necessitate the need for continuous empirical research on caregiving across racial groups. This study's examination of Black caregivers presents a step forward in what is known about this group by examining how stress and optimism levels may be related to their overall health (physical and mental).

Study Limitations

Several limitations of the current study should be recognized. First, this study utilized a cross-sectional design, meaning no causal relationships can be established. Due to the cross-sectional design implemented in the current study, the data examined came from only one Wave of caregivers, even though this group has been examined since 1989. Another limitation with cross-sectional design is the lack of ability to limit the effects of extraneous variables. The conceptual model utilized in this study is exploratory and limited to these caregiver characteristics. This current study design does not allow for a complete examination of any potential control variables before individuals entered the study. This would allow for a better sense of possible influence upon this study's outcomes.

Another limitation is the sample. While the sample was moderate in size, it is restricted to those in the data set who met the inclusion criteria and may not be generalized to the whole sample. The overall number of participants in the dataset was over 1,400; however, this study utilized a smaller subset of caregivers (N=440). An improvement to this study would be to obtain a larger sample size of older adult caregivers to allow higher-level analysis to be performed to assess the different pathways of each of the variables related to health outcomes. A larger sample size would allow a purposive collection of more prominent numbers of Black caregivers to be included in a study. The limited size also restricted the analysis that could have been used to examine further the conceptual model, such as using structural equation model (SEM). A larger sample size would allow for more robust analysis such as structural equation modeling (SEM) to analyze structural relationships.

Along with the use of the sample, another limitation is the data collection of different variables. This dataset did not precisely measure caregivers, thus resulting in this study using a small number of variables from within the overall dataset. This was highlighted in the variables applied in the current study, including the reliability of hours provided over the last 12-month period [will be discussed later in this chapter], the rating of health, and the re-code variable of race.

Another limitation is the use of secondary data in analysis (Boslaugh, 2007; Smith et al., 2011). Since the data used were not collected to answer the questions in this study specifically, this resulted in not being able to have precise information related to caregiver stress and caregiving hours. The caregiver variables were collected as one of the hundreds of variables in the ACL dataset. Using specific variables to measure caregiver stress and optimism levels with caregivers of a different race would allow a more precise connection of understanding of any health effects. Another limitation to note is that there is no way to confirm where geographically the data were collected on caregivers to understand how diverse the living environments were. This could reflect significant differences based upon the locale of participants. Another area to note as a limitation is that since this was secondary data analysis, this study cannot verify the fidelity of the data collection, precisely that it was executed as planned. Another limitation is that this study cannot communicate if any respondents misunderstood any of the specific questions.

Another limitation of the dataset is how they measured the number of caregiver hours provided. Asking caregivers to give a total of provided hours for 12 months means relying upon a caregiver to quantify the specific amount of time caregiving was provided. It is not realistic to expect a person to remember over a 12-month time if they provided less than 20 hours of caregiving or over 160. There is the risk of over or underestimating the memory of recall. There needs to be a better framing of how caregivers are asked to recollect, realistically, the number of hours they provide caregiving. Another way future research could improve accuracy in collecting caregiving hours would be to have caregivers log their hours weekly and submit them, which would require follow-up.

Another way to improve this would be to ask caregivers to provide the number of hours of caregiving in the past 30 days.

This dissertation's exploratory approach is another limitation. The limitations to an exploratory approach include limited ability to generalize findings and not being able to make decisions from any findings to apply to any group (Salkind, 2010). An exploratory approach was applied to this dissertation because the applied variables were not specifically designed for only caregivers with limited development of the relationship of optimism and stress with overall health. The ACL study was not explicitly geared to assess and measure the change in factors related to caregiving, including differences between races—this limitation of the current dataset results in limited ability to evaluate caregivers. The ACL study does not explicitly measure caregiver stress or burden. This resulted in the current study identifying a relevant variable (caregiving hours) commonly used in other research to measure stress when trying to assess caregiving hours as a measure of burden or mental health well-being (Brouwer et al., 2004; Covinsky et al., 2003; Gaugler et al. 2003; Kim et al., 2012). This limitation supports the need for further research to collect data specifically on caregivers and assess their stress levels. Some options to collect caregiver data are using several methods, such as counting caregiving hours each week for 30 days and using a standardized instrument (i.e., Caregiving Stress Appraisal (CSA) scale) to ensure stress is being measured from multiple data sources.

The use of the dataset's re-coded race variable is another limitation that needs to be noted. While the re-coded variable allowed for the use of all respondents, it collapsed five categories (White, American Indian, Asian, Hispanic, and Black) into two (Black as one and all others into non-black). This put 3.5% of all responses that were not White or

Black into the category with Whites to create non-Whites. This increased the percentage in non-blacks to 67.9% from just the White category of 64.4%. This additional increase could have some impact on the findings.

Implications and Future Research

This study's findings and the limitations suggest several directions for future research, specifically with applied designs and sampling caregivers of other races, specifically Black. Future research studies need to apply longitudinal designs. Future research would benefit from applying more longitudinal designs to explore older adult Black caregivers to examine optimism, caregiver stress, and health over time. Due to the majority of extant research applying cross-sectional designs, more longitudinal designs would better understand how Black caregivers define optimism and stress over time. This facilitates further understanding of how Black caregivers are affected by how optimism and stress are specifically related to their overall health. This study's use of a cross-section design provides a limited understanding of how Black caregivers with chronic health problems are affected by the caregiving role. This study's non-supported findings in some of the hypotheses support existing recommendations to use more longitudinal approaches to examine optimism effects on different aspects of health (Dilworth et al., 2004; Prati & Pietrantoni, 2009) which cannot be measured using cross-sectional designs in studies. Regardless of the design used, future research would also want to use larger sample sizes of Black caregivers.

Expansion of research on how the caregiving role affects older adult Blacks would improve understanding of differences and similarities between different racial groups. As has been noted several times in this dissertation, there exist conflicting findings in the knowledge base on the impact of the caregiver role between races. Further exploration will want to expand how health disparities of Blacks may affect their caregiver stress. The research will also want to examine relationships of the caregiver role on older Blacks to improve understanding of how this may differ by race. One way to use this could be to include a comparison group when examining Blacks who are of the same age yet do not identify as a caregiver.

Additional research could ensure a consistent collection of data on variables related to stress, optimism, and the overall health of caregivers. Over time, this could explore how these concepts develop and/or change over time among Black caregivers. This would allow for a more in-depth understanding of any differences in perspectives between Blacks and other groups and how these affect health outcomes. The findings in this study support a need to develop further cultural understanding to clarify how Black caregivers identify and approach the caregiving role. It would also allow for the enhancement of any effects on the overall health of Black caregivers with chronic health problems. This additional knowledge would also allow for improved and, if needed, newly developed interventions to assist these caregivers. Further research would also want to build using more than one construct to measure physical health, such as assessing physical functioning along with self-rated health.

While examining optimism, much of the current research has focused on using optimism as a predictor variable related to coping with stress (Pinquart & Sorenson, 2005; Pruchno et al., 1997; Usita et al., 2004). This study supports prior suggestions that future research should examine the potential antecedents of optimism related to health outcomes (Affleck et al., 2001; Pinquart & Sorenson, 2005). There is also a need to ensure optimism is assessed appropriately across groups like Blacks and Non-Blacks. Existing caregiving research has not shown how culture affects how different racial groups apply positive coping to difficult situations. This study found that Black caregivers did identify as having more optimism, and they also had higher depressive symptoms. This supports the need for future research agenda that could focus on ensuring optimism is defined and measured the same among different races and create optimism scales able to be used across multiple races.

While the findings from this study support the need to expand further the knowledge base in how Black caregivers with chronic health problems are affected by their role, there also remains a need for more consistent examination as well as tools to accurately measure how Blacks identify and define concepts such as stress, depression, optimism. A diverse body of research exists presenting conflicting knowledge about whether Blacks experience similar levels of stress and depression-like Non-Black caregivers (Brummett et al., 2012; Dilworth-Anderson et al., 2004; Haley et al., 1995; McCallum et al., 2007). The findings in this dissertation did not show a difference between races related to stress or physical health since Blacks were seen to experience more stress and worse health. It will be essential for future research to include the specific development of tools to measure these concepts among different races to increase confidence in results from instruments used.

Future research and policy need to receiving funding to apply more longitudinal studies to examine Black caregivers with CHPs more in-depth and compare both groups (Black and Non-Black) over time. Research implementing longitudinal designs allows for more appropriate knowledge to be developed on any groups we have limited understanding of, such as Black caregivers with chronic health problems. Future policy development would want to include the expansion of creating opportunities for research and programs with Black caregivers to be used to develop interventions and evidence of effectiveness by allowing more funding to create these opportunities. Policy and intervention development would then be implemented to expand the practical work with different caregivers with chronic health problems, specifically Blacks, as they will continue to increase in numbers. It allows for future research to be implemented to ensure effective interventions are developed for Black caregivers. A future policy could address older adult caregivers in the civilian population by implementing a caregiver support program similar to one implemented in the Veterans Administration that provides support to caregivers of veterans regardless of the conflict period.

Caregivers have various needs in their roles. This study highlights the need to examine different racial groups further to understand better how stress and optimism are related to caregivers' overall health. A developing need exists to expand how Black caregivers define stress and optimism as these concepts have not been defined with this group. Further work needs to focus on Black caregivers to develop interventions specific to their overall health improvement.

Figure 1 Conceptual Model for Dissertation for Aim 1

Aim 1: Examine racial differences among Black and Non-Black caregivers in stress, optimism, and health outcomes.

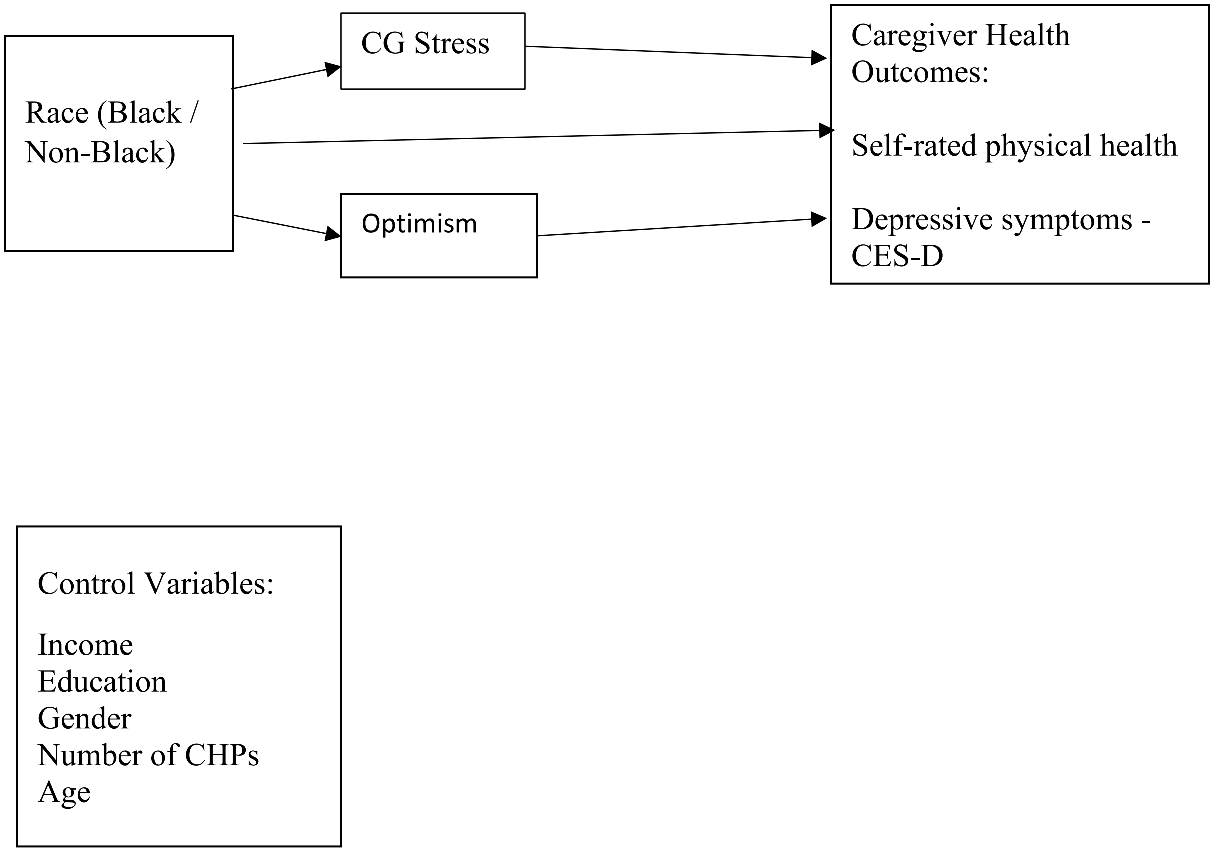
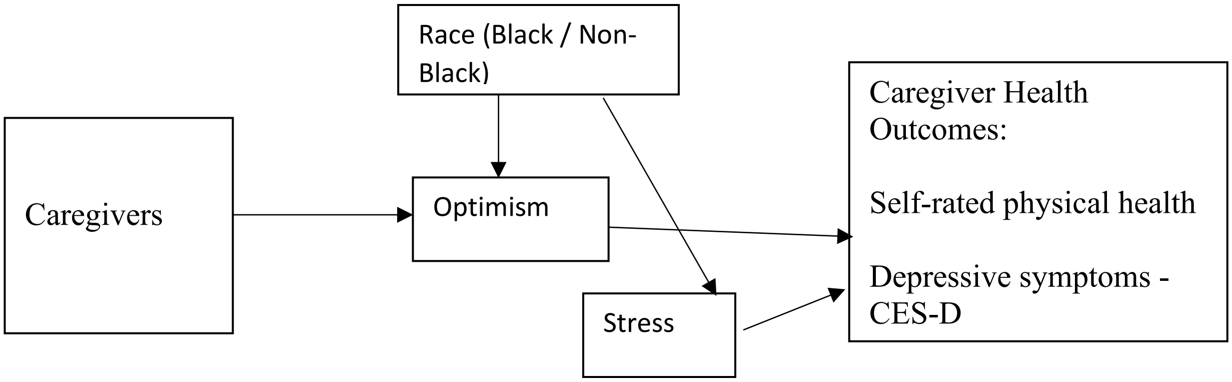


Figure 2 Conceptual Model 2 for Dissertation for Aim 2

Aim 2: Examine how race impacts the relationships between stress, optimism and health outcomes among Black and Non-Black caregivers.



Control Variables:

Income
Education
Gender
Number of CHPs
Age

APPENDIX A Life Orientation Test-Revised (LOT-R)

Please be as honest and accurate as you can throughout. Try not to let your response to one statement influence your responses to other statements. There are no "correct" or "incorrect" answers. Answer according to your own feelings, rather than how you think "most people" would answer.

A = I agree a lot
B = I agree a little
C = I neither agree nor disagree
D = I disagree a little
E = I disagree a lot

1. In uncertain times, I usually expect the best.
2. It's easy for me to relax.
3. If something can go wrong for me, it will. (R)
4. I'm always optimistic about my future.
5. I enjoy my friends a lot.
6. It's important for me to keep busy.
7. I hardly ever expect things to go my way. (R)
8. I don't get upset too easily.
9. I rarely count on good things happening to me. (R)
10. Overall, I expect more good things to happen to me than bad.

Scoring: Items 3, 7, and 9 are reverse scored (or scored separately as a pessimism measure). Items 2, 5, 6, and 8 are fillers and should not be scored. Scoring is kept continuous – there is no benchmark for being an optimist/pessimist.

Note: Items 2, 5, 6, and 8 are fillers. Responses to "scored" items are to be coded so that high values imply optimism. Researchers who are interested in testing the potential difference between affirmation of optimism and disaffirmation of pessimism should compute separate subtotals of the relevant items.

APPENDIX B CES-D 11 item version

1. I felt depressed -- How often have you felt that way during the past week?
2. I felt that everything I did was an effort --How often have you felt that way during the past week?)
3. My sleep was restless -- How often have you felt that way during the past week?
4. I was happy -- How often have you felt that way during the past week?
5. I felt lonely -- How often have you felt that way during the past week?
6. People were unfriendly - How often have you felt that way during the past week?
7. I enjoyed life -- How often have you felt that way during the past week?
8. I did not feel like eating. My appetite was poor -- How often have you felt that way during the past week?
9. I felt sad -- How often have you felt that way during the past week?
10. I felt that people disliked me -- How often have you felt that way during the past week?
11. I could not get "going." -- How often have you felt that way during the past week?

The response options for each item were:

1	Never or Hardly Ever
2	Some of the Time
3	Most of the Time

Scoring: Possible range of scores range from 11 through 33, wither higher scores indicating the presence of more symptomatology. Any score above 11 on a shortened CES-D form is considered to indicate depressive symptoms.

APPENDIX C Life Orientation Test-Revised (LOT-R) Optimism Items

The ACL used the three optimistic items from the ten item LOT-R. The items used were:

1. I am always optimistic about my future.
2. I hardly ever expect things to go my way.
3. I rarely count on good things happening to me.

The directions provided were by the ACL: Now please tell me how strongly you agree or disagree with the following statements as they apply to you.

The response options for each item were:

1 Agree Strongly
2 Agree Somewhat
3 Disagree Somewhat
4 Disagree Strongly

Responses to items are were coded in the ACL so that low values imply optimism. For the current study, the items were re-coded so that that high values imply optimism.

Appendix D Variables Used from ACL

The following variables were used from the ACL in this secondary data analysis.

Variable	**Variables in ACL**
CGs selected Yes (N= 440)	V16203
Race – Black/Non-Black	V2005
CG Stress: CG Hours Provided	V16204
Self Rated Health	V15822
Optimism	V15302-V15304
Depressive Symptoms (CES-D 11)	V16001-V16011
Marital Status	V15401
Income for Respondent & Spouse in Dollars (adjusted for income)	V17112
Education (in years)	V2007
Number of CHPs	V17002
Gender	V15101
Age (in years)	V15102

The following variables were combined and/or centered in this analysis:

CG Stress: CG Hours Provided	V16204 Centered=4408
Self-Rated Health	V15822
Optimism	V15302-V15304 Combined=V4405 Centered=4406 – used in regression models
Depressive Symptoms (CES-D 11)	V16001-V16011 Combined=4396

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