THE MODERATING AND MEDIATING EFFECTS OF RELIGIOUS COPING ON QUALITY OF LIFE IN LONG-TERM SURVIVORS OF CANCER

A DISSERTATION

SUBMITTED TO THE GRADUATE SCHOOL

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE

DOCTOR OF PHILOSOPHY

BY

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DECEMBER 2011
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ACKNOWLEDGEMENTS

Completing my Ph.D. has been the toughest battle I have ever fought. The process has taught me so much about the world and myself – for this I will be eternally grateful. This learning process has prepared me to enter into the real world of psychology and to achieve those things which I set to accomplish when I was a junior in high school. The learning does not stop with the completion of this huge chapter in my life. It will continue until I decide to stop practicing the wonderful art and science of psychology. Until then, I will always have something else to learn and accomplish. As the great philosopher, Miley Cyrus, said, “There's always gonna be another mountain. I'm always gonna wanna make it move. Always gonna be an uphill battle. Sometimes I'm gonna have to lose. Ain't about how fast I get there, ain't about what's waitin' on the other side…It's the climb.” On my climb up the Ph.D. mountain, I have been accompanied by many porters, without which I would have quit at the base of the mountain.

First, I would like to acknowledge and thank my Lord and Savior, Jesus Christ. I’ve spent many hours breathing prayers for strength, guidance, and peace during this process. I have felt His love and grace through it all. Words cannot express my gratitude for His faithfulness and unconditional love for me. I trust that earning my Ph.D. is one step in my life’s purpose on this earth.

My husband, Nick, deserves all the accolades I can offer. As my biggest cheerleader and supporter, he has encouraged me to not give up and to stick with it until the end. His words and his actions truly show his undying love for me. I would also like to thank my precious daughter, Caroline Paige, for giving me time (occasionally) to finish this project. She was so very patient with me.
I would like to thank my parents, Larry and Betty Wood, who have been so understanding and supportive during the graduate school process. Rather it be lending an empathetic ear, giving me an encouraging word, or coding questionnaires, my parents have always been supportive. Their faith in my ability to achieve such a goal is priceless.

I would like to express my sincerest gratitude to my dissertation chair, Dr. Don Nicholas. He provided the perspective and patience I needed to endure this process. I will forever be indebted to him. I would also like to thank Shannon Christy and Phillip Keck for all of the time and energy they put into data entry. This project would not have been possible without their commitment and willingness to assist with the project. I would also like to thank Dr. Jim Jones for his patience and assistance in helping with the statistical analyses.

I would like to thank Leslie Broadway, my friend and editor. Her attention to detail, patience, and perfectionism were put to good use in the multiple revisions of this dissertation. I will be forever grateful for her willingness to sacrifice her time and expertise over the past 7 years to edit countless papers, a thesis, and a dissertation.

I am blessed to have wonderful friends who helped me complete this enormous project. I would like to thank the following people who helped code and stuff envelopes in preparation for all of the mailings: Emily Blackburn, Kara Skrzypczak, Kevin and Megan Clary, Jason and Nicole Cadwallader, Josh Mahoney, Courtney Simpson, Justin and Jill Widmer, Steve Griffin, Mike Helderman, and Vicki Modefferi.

Last, but not least, I would like to express my gratitude to the hundreds of cancer survivors who took time out of their busy lives to participate in this project. I hope that the results of this study will be beneficial to current and future survivors of cancer.
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Chapter 1

The Moderating and Mediating Effects of Religious Coping on Quality of Life in Long-Term Survivors of Cancer

Cancer is the general name for over 100 medical conditions involving uncontrolled and dangerous cell growth that can spread to organs, blood and even bones (Freidenberg, Grunwald & Kaplan, 2005). In 2009, cancer was the second most common cause of death in the United States, following closely behind heart disease (American Cancer Society, 2010). Not only is cancer a major problem because of its mortality rates, but it is also a problem due to the complexity of the treatment of the disease. Researchers have found that many individuals cope relatively well with a diagnosis of cancer, but 25% to 50% struggle with the psychosocial distress related to the illness (Kornblith, 1998).

The improved early detection and treatment of cancer has resulted in more long-term survivors of cancer. Long-term cancer survivorship is defined as five or more years post-treatment (Zebrack, Peterson, & Ganz, 2008). In 1930, one in five people diagnosed with cancer survived for at least five years. According to the most recent data available, the 5-year relative survival rate for all cancers diagnosed between 1996 and 2003 is 66%, up from 50% in 1975-1977. In 2004, there were approximately 10.8 million survivors of cancer in the United States (American Cancer Society, 2008). Cancer is currently considered a chronic illness, as it is often manageable or curable with treatment.
Therefore, it is important to study the long-term effects of cancer and its treatment on quality of life. The late effects of cancer and its treatments include but are not limited to fatigue, low energy, sleep disturbance, and pain (Kornblith et al., 2003). While these physical effects have been documented, researchers have been slower to study the implications of these late effects on quality of life in long-term survivors. One probable reason for this lack of research could be recent increases in the number of years people live after cancer (Gotay & Muraoka, 1998).

Those in the field of health psychology may work with individuals with cancer, as it is considered a chronic illness and survivors of cancer may deal with its late effects. Health psychology emerged in the 1970s after some major changes in the health care field. During this time, medicine was undergoing major changes and psychologists were beginning to rethink their identities (Matarazzo, 1980). The field of medicine was moving away from strict adherence to the biomedical model, as physicians were beginning to recognize that illness did not exist in isolation from psychosocial factors. The field of medicine also began to focus on the prevention and treatment of chronic illnesses instead of focusing only on treating acute illnesses (Alcorn & McPhearson, 1997). During this time the field of psychology was also undergoing changes, and a report was made to the American Psychological Association proposing that psychologists were in fact “health professionals” and could contribute knowledge and expertise to the health care setting (Schofield, 1969).

These changes in both psychology and health care resulted in a natural link between the two disciplines. Both physicians and psychologists began to embrace the
biopsychosocial model. This model was created and conceptualized by Engel (1980). This integrated model considers biological, psychological, and sociocultural factors to be important in health and illness. In fact, these factors interact to create health or illness. The biopsychosocial model helped facilitate communication between medicine, psychiatry, and psychology.

Psycho-oncology, the field of medical study and practice that combines psychology and oncology, is a good example of the utilization of the biopsychosocial model. Psycho-oncology considers the psychological, social, and behavioral aspects of the experience of cancer from two perspectives (Holland et al., 1998). The first, the psychosocial perspective, accounts for the psychological reactions of the individuals diagnosed with cancer, as well as the reactions of their family members or support system during all phases of the disease. The second perspective, the psycho-biological perspective, encompasses the psychological, behavioral, and social issues influencing morbidity and mortality (Holland et al., 1998). As such, psycho-oncologists are concerned both with the effects of cancer on an individual’s psychological well-being, along with the social and behavioral factors that may affect the disease process of cancer. Because psycho-oncology was embraced by the medical profession and the general population, psycho-oncology has become a significant subspecialty focused on increasing the quality of life of individuals with cancer and of survivors of cancer.

Quality of life (QOL) is a multidimensional construct that has been conceptualized in a variety of ways, consisting of various components. QOL may be influenced by biological, psychological, sociocultural, and spiritual factors. QOL varies
greatly from individual to individual, especially in the context of cancer. Originally, QOL was conceptualized as consisting of four components: affective states/personal attitudes, performance, support, and well-being (Padilla, 1983). One of the earliest measures of QOL was the Karnofsky scale (Karnofsky & Burchenal, 1949). This score is simply a physician’s rating of an individual’s activity level and ability to ambulate. Clinical interviews were and are effective ways to assess QOL (Padilla, 1983). Many early measures of QOL focused specifically on physical, emotional, social, and functional well-being (Cella et al., 2003; Padilla, 1983). However, research suggests that spiritual components may also be important to consider when assessing QOL in any population. Peterman and colleagues were among the first to develop a measure of spiritual well-being, called the Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being (FACIT-Sp; Peterman, Fitchett, Brady, Hernadndez, & Cella, 2002). Over time, researchers have become more aware of all of the biopsychosocialspiritual factors that may influence QOL (Hiatt, 1986).

Coping is a transactional process between the demands of one’s environment and one’s coping behaviors. Coping behaviors may involve cognitive, affective, physical, and behavioral attempts to deal with significant personal or situational demands (Lazarus & Folkman, 1984). Spirituality, religiosity, and religious coping have all been identified as significant components of people’s attempts to cope with chronic illnesses (Beggren-Thomas & Griggs, 1995). The construct of religious coping attempts to explain how individuals may use their belief in a higher power and/or their use of religious beliefs/practices to cope with stressful life events (Pargament, 1997). Religious coping is
based on an individual’s approach to problem solving in the context of a relationship with his or her higher power (Pargament, 1997). According to Soothill and colleagues (2002), religious coping includes praying, reading religious literature, praying in places of worship, seeking counseling with clergy and members of the church, meditation, and spiritual healing processes. Religious coping is important to understand, as simply “being religious” may not be sufficient for protecting against stress when faced with major life stressors. Instead, individuals may need to activate their religion and integrate beliefs into their coping responses to benefit from religious coping (Pargament, 1997). Researchers suggest that religious coping needs to be assessed within a broader situational, personal, and social context. Coping, no matter the type, cannot be studied singularly. It must be evaluated within the context of the individual’s problems (Pargament, 1997).

Religious coping is one of the most frequent methods of coping used in response to health-related stressors (Conway, 1985). Researchers have noted the importance of religious coping in helping those who are chronically ill; moreover, those who use religious coping report fewer emotional and social problems than those who do not use religious coping (Soothill et al., 2002). Serious illness can create significant life challenges to individuals’ well-being, which in turn, may cause them to draw on religious sources to cope (Miller, Pittman, & Strong, 2003). According to theoretical literature, health problems may encourage religious activities, as exemplified by “death-bed conversions” and with common sayings such as, “There are no atheists in fox holes” (Pargament & Hahn, 1986). Religious coping also serves as a coping strategy to help manage emotional distress (Koenig et al., 1992), and may be particularly relevant for
those dealing with situations of severe stress that involve a factor of personal harm or loss, like illness (McCrae, 1984). In fact, when coping with life-threatening illness, individuals emphasized the significance of their religious faith (Spilka, Spangler, & Nelson, 1983). Researchers have found that individuals are more likely to use religious activities for coping when their illness is perceived as being more life-threatening (Pargament, 1996). In fact, empirical studies conducted with individuals who have life-threatening illnesses have reported that many considered religious coping to be an important resource (McClain, Rosenfeld, & Breitbart, 2003; Siegel & Schrimshaw, 2002), and those with cancer frequently rank religious activities, like church attendance and prayer, as coping responses to their illness (Zwingmann, Writhz, Muller, Korber, & Murken, 2006).

A diagnosis of cancer may trigger several religious concerns for the individual (Greisinger et al., 1997), along with feelings of anxiety, hostility, discomfort, and social isolation (McIllmurray et al., 2003). In the same way, religious coping may assist the individual in coping with a diagnosis of cancer (Jenkins & Pargament, 1995). Individuals with varying types of cancer often voluntarily report that their religious faith is important to them in dealing with cancer (Flannelly, Flannelly, & Weaver, 2002). For many people with cancer, religious coping may help them deal with increased spiritual needs, and it may help them make sense of their illness (Mickley, Soeken, & Belcher, 1992). In a study of women, researchers found that 50% of women admitted to becoming more religious after diagnosis (Roberts, Brown, Elkins, & Larson, 1997). Religious coping and involvement with religious activities may help individuals maintain a sense of control,
hope, and purpose. It may also help them gain a sense of social support from their religious community (Levin, 1996).

Statement of the Problem

The strategies individuals use to cope with cancer can be important in attempts to better understand QOL (Lazarus & Folkman, 1984). The use of various types of religious coping has been associated with positive well-being and better QOL. However, prior research has not clarified the nature of the association between religious coping and quality of life. Religious coping has been conceptualized as a mediator in the relationship between religiousness and mental health and stressful events. It has also been conceptualized as a moderator between stressors and mental health (Fabricatore, Handal, Rubio, & Gilner, 2004). In order to gain a clearer understanding of the complex relationship between religious coping and QOL, this study tested a primary model which included religious coping as a mediating variable, and an alternative model that tested religious coping as a moderator. This practice of testing alternate models is suggested as it provides optimal validity and helps researchers to avoid confirmation bias (Kline, 2005). In addition, in prior literature, the complex relationships between disease-related and demographic variables, religious coping, and QOL have not been satisfactorily explored. Thus, this study included those disease-related and demographic variables previously identified as relevant to an understanding of QOL of long-term cancer survivors.

Purpose of the Study
The purpose of this study is to determine if religious coping functions as a mediator or moderator in the QOL of long-term survivors of cancer. This study will help to elucidate what role religious coping has in comparison to demographic variables and QOL. Extant research describes religious coping as both a moderator and a mediator for QOL. Testing both mediation and moderation will provide clarification regarding the role of religious coping in long-term survivors of cancer. Also, the results of this study may enhance the clinical importance of religious coping and have important ramifications on psychotherapeutic interventions when working with survivors of cancer.

**Definition of Important Terms**

1. **Long-term survivor** – Long-term cancer survivorship is defined as five or more years post-treatment (Zebrack, Peterson, & Ganz, 2008). In this study, years of survivorship data were gathered from the tumor registry and by participants on the demographic questionnaire.

2. **Age** – Chronological age is calculated by subtracting the birth date year reported by the participant from the date the questionnaire is returned.

3. **Adults** – According to the Behavioral Risk Factor Surveillance System (2008), young adult is defined as 15- to 24-years-old. As such, adult was defined as individuals 25-years-old and older.

4. **Stage** – Cancers are staged using the TNM system which was created to facilitate communication between professions regarding tumors (Dolinger et al., 1997). The TNM system was created to provide a recognizable and accepted structure for describing tumor size (T), the degree of spread to the lymph nodes (N), and the presence of metastasis (M).
The TNM has five cancer stages (0-IV). In this study, stage of cancer data was gathered from the tumor registry and by participants on the demographic questionnaire.

5. Time since diagnosis – For the purpose of this study, time since diagnosis was operationally defined as the number of years from the date of diagnosis from the primary site to the date of data collection.

6. Religious coping – A type of coping mechanism in which an individual turns to a higher power to cope with stressors. It also refers to the use of religious beliefs or practices to cope with stressful life events (Pargament, 1997). Religious coping includes praying, reading religious literature, praying in places of worship, seeking counseling with clergy and members of the church, meditation, and religious healing processes (Soothill et al., 2002). Religious coping can be classified into two broad types; positive and negative religious coping (Pargament et al., 1998). For the purposes of this study, religious coping was operationally defined as coping with stressors by turning to religious activities (e.g., prayer, worship) and was calculated by overall scores on the RCOPE and SBI-15R.

7. Quality of Life (QOL) – QOL may be defined as subjective well-being and an individual’s ability to enjoy normal life activities. QOL emerged as a term to describe the broad-based assessment of the combined impact of disease and treatment and the trade-off between the two (Cella et al., 1993). QOL originally encompassed affective states/personal attitudes, performance, support, and well-being (Padilla, 1983), with physical and spiritual components added more recently. Similarly to the term QOL, the term health-related QOL (HRQOL) is used in public health and medicine, and refers to
an individual’s perceived physical and mental health over time. Physicians often use HRQOL to measure the effects of chronic illness in patients to better understand how illness interferes with day-to-day life (Centers for Disease Control and Prevention [CDC], 2010). While the interface of illness and daily functioning is important, this study sought to assess the broader overall concept of QOL instead of HRQOL. For the purposes of this study, overall QOL was operationally defined as an individual’s degree of well-being and his or her ability to enjoy normal life activities as a cancer survivor, and was calculated by scores on the FACT-G and QOL-CS.

8. Mediation – Mediation outlines the causal pathways of relationships. A mediating variable is a variable in the middle; it serves as a mechanism through which one variable influences another. Mediator variables describe how or why such relationships occur (Baron & Kenny, 1986). Mediation was determined by using structural equation modeling.

9. Moderation – A moderating variable is one that influences the direction or the strength of the relationship between two variables (Baron & Kenny, 1986). Moderating variables help answer questions regarding when, under what conditions, and for whom. Moderation was determined by using structural equation modeling.

Research Questions

1. Does religious coping mediate the relationship between demographic variables and QOL?

2. Does religious coping moderate the relationship between demographic variables and QOL?
3. Is there a relationship between the demographic variables and QOL?

_Hypotheses_

1. Religious coping will mediate the relationship between demographic variables and QOL.

2. Religious coping will moderate the relationship between demographic variables and QOL.

3. There will be a relationship between the demographic variables and QOL.
Figure 1. Intended mediation model.

Note. PRCOPE = RCOPE Positive Religious Coping; NRCOPE = RCOPE Negative Religious Coping; SBI_bp = Systems of Belief Inventory Belief Practices; SBI_ss = Systems of Belief Inventory Social Support; FunctWell = FACT-G Functional Well-Being; EmotWell = FACT-G Emotional Well-Being; SocWell = FACT-G Social/Family Well-Being; PhysWell = FACT-G Physical Well-Being; QOL_PhysWell = QOL-CS Physical Well-Being; QOL_PsyWell = QOL-CS Psychological Well-Being; QOL_SocWell = QOL-CS Social Concerns; QOL_SpiritWell = QOL-CS Spiritual Well-Being
Figure 2. Intended moderation model.

Note. PRCOPE = RCOPE Positive Religious Coping; NRCOPE = RCOPE Negative Religious Coping; SBI_bp = Systems of Belief Inventory Belief Practices; SBI_ss = Systems of Belief Inventory Social Support; FunctWell = FACT-G Functional Well-Being; EmotWell = FACT-G Emotional Well-Being; SocWell = FACT-G Social/Family Well-Being; PhysWell = FACT-G Physical Well-Being; QOL_PhysWell = QOL-CS Physical Well-Being; QOL_PsyWell = QOL-CS Psychological Well-Being; QOL_SocWell = QOL-CS Social Concerns; QOL_SpiritWell = QOL-CS Spiritual Well-Being
The role of health psychology in today’s society is important. Because the causes of mortality and morbidity have changed over the past century, health psychology is essential. With the advent of vaccines and pharmaceuticals, the prevalence of infectious disorders has drastically decreased (Keith & Arnow, 2005), while the prevalence of “diseases of lifestyle” have increased. In fact, the three leading causes of death in 1900 were influenza and pneumonia, tuberculosis, and gastroenteritis. The three leading causes of death in 2006 were coronary artery disease, cancers, and strokes (CDC, 2010). Effective vaccines help explain the epidemiological shift from acute to chronic medical illnesses. Modern medicine, better hygiene and living conditions, and improved nutrition all are helping individuals live longer (Keith & Arnow, 2005). In the United States, because birth rates have decreased and people are living longer despite the presence of illnesses, older populations make up an increasingly larger percentage of the population (Keith & Arnow, 2005). Individuals are avoiding acute illnesses and staying alive longer. These factors have greatly increased the rates of chronic illnesses and have created a special niche for health psychologists working with the chronically ill.

This chapter will review the literature most relevant to the current study. The review starts broadly with an overview of the basic information regarding cancer and
quality of life. The focus then narrows as the subtle differences between spirituality, religion, religiosity, and religious coping are delineated. Next, a broad review of religion and health is presented, followed by more specific information regarding religious coping and chronic illness, and more specifically, religious coping in individuals with cancer. Perhaps most relevant to this study, existing research regarding quality of life and religious coping in long-term survivors of cancer will be highlighted. Next, the demographic variables of cancer type, stage of cancer, time since diagnosis, and age and how they relate to quality of life will be delineated. The chapter will conclude with a critique of the literature and a summary of the chapter.

Cancer

Cancer is currently considered a chronic illness, as it is often manageable or curable with treatment. Cancer is the general name for over 100 medical conditions involving uncontrolled and dangerous cell growth that can spread to organs, blood and even bones (Freidenberg, Grunwald & Kaplan, 2005). All cancers result from a dysfunction in DNA. This dysfunction, or genetic mutation, interferes with the normal processes of cell development and growth (i.e., mitosis) and planned or programmed cell death (i.e., apoptosis) (Kiberstis & Marx, 2002). In 2006, cancer was the second most common cause of death, following closely behind heart disease. Not only is cancer a major problem because of its prevalence, but it is also a problem due to the complexity of the treatment of the disease. There is no one single causative factor, therefore treatment is multimodal (Freidenberg, Grunwald & Kaplan, 2005). Researchers have found individuals to cope relatively well with a diagnosis of cancer, but 25% to 50% report struggling with psychosocial distress related to cancer (Kornblith, 1998).
The improved early detection and treatment of cancer has resulted in more long-term survivors of cancer. Long-term cancer survivorship is defined as five or more years post-treatment (Zebrack, Peterson, & Ganz, 2008). In 1930, one in five people diagnosed with cancer survived for at least five years. According to the most recent data available, the 5-year relative survival rate for all cancers diagnosed between 1996 and 2003 is 66%, up from 50% in 1975-1977. In 2004, there were approximately 10.8 million survivors of cancer in the United States (ACS, 2008). Therefore, it is important to study the long-term effects of cancer and its treatment on the quality of life of long-term survivors.

Researchers have found that survivors experience both positive and negative long-term effects. The residual effects of cancer and its treatments may be experienced by long-term survivors, and include but are not limited to fatigue, low energy, sleep disturbance, and pain (Kornblith et al., 2003). While these debilitating physical effects have been documented, researchers have been slower to study the implications of these residual effects on quality of life in long-term survivors. One probable reason for this lack of research could be that these increased survival rates are only relatively recent (Gotay & Muraoka, 1998).

Quality of Life

Quality of life (QOL) may be defined as subjective well-being and an individual’s ability to enjoy normal life activities. QOL represents the difference between the desires and expectations of an individual and his or her present experience. In long-term survivors of cancer, QOL may vary greatly as it is individualistic and fundamentally subjective (Cella et al., 1993). Many treatments for cancer may influence one’s ability to
experience good QOL after treatment is complete, while other treatments have no long-
term side effects to diminish QOL.

QOL emerged as a term to describe the broad-based assessment of the combined
impact of disease and treatment and the trade-off between the two (Cella et al., 1993).
QOL originally encompassed affective states/personal attitudes, performance, support,
and well-being (Padilla, 1983), with physical and spiritual components added more
recently. Similarly to the term QOL, the term health-related QOL (HRQOL) is used in
public health and medicine, and refers to an individual’s perceived physical and mental
health over time. Physicians often use HRQOL to measure the effects of chronic illness
in patients to better understand how illness interferes with day-to-day life (CDC, 2010).
While the interface of illness and daily functioning is important, this study seeks to assess
the broader overall concept of QOL versus HRQOL.

QOL is multidimensional and difficult to measure. One of the earliest measures of
QOL was the Karnofsky Performance scale (KPS; Karnofsky & Burchenal, 1949). The
KPS is simply a measure of overall functional ability. A score on the KPS signifies the
individual’s activity and ambulatory levels. Other early attempts to measure QOL
included four components: affective states/personal attitudes, performance, support, and
well-being (Padilla, 1983). Many early measures of QOL focused specifically on
physical, emotional, social, and functional well-being (Cella & Tulsky, 1993). However,
research suggests that spiritual components may also be important to consider when
assessing QOL. Peterman and colleagues were among the first to develop a measure of
Spiritual well-being, called the Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being (FACIT-Sp; Peterman et al., 2002).

Spirituality, Religion, Religiosity, and Religious Coping

Spirituality, religion, religiosity, and religious coping have all been identified as potentially having significant influences on one's health and adaptation to chronic illness (Beggren-Thomas & Griggs, 1995). Researchers have proposed theoretical distinctions between religiosity, spirituality, and religious coping.

Spirituality has been defined as a broad universal construct (Elkins, Hedstrom, Hughes, Leaf, & Saunders, 1988). The term spiritual is defined as “relating to, consisting of, or affecting the spirit, of or relating to sacred matters” (New Merriam-Webster Dictionary, 1989, p. 694). In fact, spirituality is “…more difficult to define, but it can be viewed best as efforts to consider metaphysical or transcendent aspects of everyday life as they relate to forces, supernatural and otherwise, that exist outside of the person. As such, spirituality encompasses religion as well as many beliefs and practices from outside the normally defined religious sphere” (Jenkins & Pargament, 1995, p. 52). Therefore, spirituality may exist outside or inside religious beliefs or paradigms (Vaughan, Wittine, & Walsh, 1998). In a review of nursing literature, Burkhart and Solari-Twadell (2001) found that many authors define spirituality in terms of finding purpose and meaning in life, which can be explored through self-reflection and relationships with others. Spirituality can also be defined as the amalgamation of purpose and meaning in life through connectedness with a higher power, nature, art, music, literature, and self (Burkhart & Solari-Twadell, 2001).
In an effort to better understand the construct of spirituality, Rose (2001) conducted a study in which religious and spiritual professionals answered open-ended questions about the definition of spirituality. Christian priests, Hindu priests or temple presidents, Jewish rabbis, Buddhist monks, imams, and mosque presidents were included in the study. For one question, respondents used a short phrase to concisely describe what the term “spirituality” meant. The two most common themes that emerged in the responses of the religious leaders were connection and awareness (Rose, 2001).

According to Rose (2001), connection involved “keeping in touch with, relating with, being filled with, engaging with, coming closer with, moving towards, and union with the Divine, in whatever way the Divine was envisaged” (p. 198). Conversely, awareness captured “deeper issues…God’s presence, that world as a unity of God, and recognition of the Divine” (Rose, 2001, p. 198). In this study, connection and awareness were also related to personal experiences versus any specific religion or doctrine. Interestingly, seven out of ten professionals acknowledged that religious belief was not essential to the experience of spirituality. According to four-fifths of the sample, the most necessary element for the experience of spirituality was love. Love was seen as a necessary element to spirituality, but not to religious belief. The researcher noted that while many of the professionals defined spirituality differently, they all suggested it was a unique and personal experience. Additionally, spirituality was described as a fluid and flexible coping mechanism, not a stable trait (Jenkins & Pargament, 1995; Rose, 2001).

In contrast to spirituality, religion has been defined as the “service and worship of God or the supernatural, a devotion to a religious faith, an organized system of faith and
worship” (New Merriam-Webster Dictionary, 1989, p. 617). Religiosity involves participation in certain activities, beliefs, and rituals which align with some traditional religions (Elkins et al., 1988). Thus, it is more closely linked to a societal subgroup and culture, and that subgroup’s specific beliefs and rituals (Pehler, 1997). In particular, religiosity is considered to be an “…organized system of beliefs and practices such as those found in formal religious denominations (e.g., Catholic, Protestant, Buddhist) or recognized as systems of theological beliefs (e.g., Calvinistic, Protestant, Evangelical Christian)” (Jenkins & Pargament, 1995, p. 52).

Under the same theoretical umbrella of religiosity is intrinsic and extrinsic religiousness, which are terms used to describe the primary motivation behind religiosity (Allport & Ross, 1967; Daly, 2005). Extrinsic religiousness is defined as a type of religiousness that serves practical and instrumental purposes, like social connectedness and sociability (Allport & Ross, 1967). It could also serve as a way of obtaining social status, personal security, or meet other social needs, (Mickley et al., 1992). Intrinsic religiousness, conversely, is considered the more spiritual side of religion. It refers to internalizing the beliefs, regardless of social pressures (Mickley et al., 1992). This type of religiousness includes prayer, meditation, and reading about one’s faith (Daly, 2005). Intrinsic religiousness tends to be emotionally meaningful and private. According to these ideas, religiousness can have both social and spiritual characteristics.

Religious coping is a specific facet of religiosity, and is the focus of this research. In general, coping is a transactional process between environmental demands and one’s coping behaviors which may involve cognitive, affective, physical, and behavioral
attempts to deal with significant personal or situational demands (Lazarus & Folkman, 1984). Coping is a series of transactions which take place over time between the individual, situational or life demands (e.g., cancer), personal constraints, as well as personal resources (Lazarus & Folkman, 1984). The term religious coping was coined as a way to explain how an individual may turn to a higher power to cope with stressors. It also refers to the use of religious beliefs or practices to cope with stressful life events (Pargament, 1997). Religious coping is based on an individual’s approach to problem solving in the context of a relationship with his or her god (Pargament et al., 1988).

According to researchers, religious coping includes praying, reading religious literature, praying in places of worship, seeking counseling with clergy and members of the church, meditation, and spiritual healing processes (Soothill et al., 2002). Religious coping is important to understand, because simply “being religious” (e.g., holding certain religious beliefs) may not be sufficient for protecting against stress when faced with major life stressors. Instead, the individual must activate his or her religion and integrate beliefs into coping responses to benefit from religious coping (Pargament, 1997). Researchers suggest that religious coping needs to be assessed within a broader situational, personal, and social context. Coping, no matter the type, cannot be studied singularly. It must be evaluated in the context of the individual’s problems (Pargament, 1997).

According to factor analytic studies, religious coping can be classified into two broad types, positive and negative religious coping (Pargament et al., 1998). Positive religious coping strategies are those which reflect a constructive and confident turning to religion for support. This type of religious coping appears to be beneficial for individuals
dealing with stressful life events (Pargament et al., 1998). Conversely, negative religious coping reflects engagement in religious struggle and doubt. Negative religious coping strategies are generally considered more maladaptive (Pargament, Koenig, Tarakeshwar, & Hahn, 2001).

Religion and Health

Religious coping and involvement in a religious community is most commonly linked to positive outcomes. Researchers have repeatedly found religious involvement, both on a personal level and within a faith community, to be related to decreased levels of psychological distress (Levin & Chatters, 1998). Existing explanations for these findings hypothesize that religious faith may create positive expectations of the future, religious worship may produce positive emotions with a therapeutic benefit, and religious fellowship may affect health through facilitating social support. These are all aspects of religious coping. Researchers have found religion to be related to healthier lifestyles and greater social cohesion (Levin, Chatters, & Taylor, 2006). Population-based findings that religiosity may foster better health outcomes are consistent between researchers and across decades. Researchers have found that religious involvement is positively associated with several measures of physical health. It has been studied in the context of heart disease (Friedlander, Kark, & Stein, 1986), high blood pressure (Levin & Vanderpool, 1989), stroke (Colantonio, Kasl, & Ostfield, 1992), suicide (Kark et al., 1996), and cancer (Jarvis & Northcott, 1987). These researchers found empirical support suggesting increased levels of religious involvement are related to increased self-ratings of health, survival rates, functional ability, and decreased prevalence of cancer and
hypertension. Religious dedication influences health through promotion of healthy behavior, like abstaining from smoking and drinking (Levin, Chatters, & Taylor, 2006).

Religious involvement, both in a faith community and individually, may also influence mortality. In a meta-analytic review of 41 studies of religious involvement and mortality, researchers found the odds of survival for people who scored higher on measures of religious involvement were much higher than those who scored lower on the same measures of religious involvement (McCullough, Hoyt, Larson, Koenig, & Thoresen, 2000). Religious involvement was associated with higher odds of survival and lower odds of death, which suggest a positive relationship between religious involvement and all-cause mortality. The researchers proposed that the religious involvement-all-cause mortality relationship is mediated by health-promoting behavior (e.g., abstaining from drugs and alcohol). The researchers called for more structural equation modeling to be done in studies of religion and spirituality (McCullough et al., 2000).

Religious Coping and Chronic Illness

Religious coping is one of the most frequent methods of coping used in response to health-related stressors (Conway, 1985). Researchers have also noted the importance of religious coping in helping those who are chronically ill; moreover, those who use religious coping report fewer emotional and social problems than those who do not (Soothill et al., 2002). Serious illness can create significant life challenges to an individual’s well-being, which may cause him or her to draw on religious sources to cope (Miller, Pittman, & Strong, 2003). Religious coping also serves as a coping strategy to help manage emotional distress (Koenig et al., 1992), and may be particularly relevant for
those dealing with situations of severe stress that involve a factor of personal harm or loss, like illness (McCrae, 1984). In fact, when coping with life-threatening illness, individuals emphasized the importance of their religious faith to help them cope (Spilka, Spangler, & Nelson, 1983). Researchers have found that individuals are more likely to use religious activities for coping when their illness is perceived as being more life-threatening (Pargament, 1996). In fact, empirical studies conducted with individuals who have life-threatening illnesses have reported that many considered religious coping to be an important resource (McClain, Rosenfeld, & Breitbart, 2003; Siegel & Schrimshaw, 2002).

Religious coping seems to have important implications for the level of anxiety experienced by individuals awaiting cardiac transplant (Sears & Greene, 1994). In a study of cardiac patients, 67.5% described private prayer to be the most frequently used practice out of a list of 21 nonmedical help-seeking or coping behaviors (Ai, Dunkle, Peterson, & Bolling, 1998). Other means of religious coping included having faith in God (73%), participation in church activities (52%), and religious service attendance (54%).

In one study, researchers selected individuals dealing with different types of chronic illness with the hopes of studying coping (Cigrang, Hryshko-Mullen, & Peterson, 2003). The groups consisted of individuals with cancer (n = 22), individuals from an outpatient cardiovascular rehabilitation program (n = 36), and individuals with chronic pain (n = 53). Each individual was given a questionnaire with open-ended questions, asking how they were coping with their illness. No mention of religious coping was present. Of the 111 participants surveyed, 26.1% listed at least one religious coping
response, although it was not prompted. The different groups had different levels of religious coping. In the cardiovascular group, 5.7% reported using religious coping, while 3.8% of those with chronic pain reported using methods of religious coping. The individuals in the cancer group had the highest percentage of religious coping, with 22.9% of the individuals reporting using religious coping.

Keefe and colleagues (2001) evaluated the role of daily religious coping in individuals with pain from rheumatoid arthritis (RA). Each participant ($n = 35$) was instructed to keep a structured daily diary for 30 days consecutively. Additionally, measures of spiritual experiences, spiritual/religious coping, spiritual/religious coping efficacy, joint pain, mood, and social support were taken daily. Researchers assessed for both positive and negative religious coping. Items that assessed for positive religious coping included, “I have thought about how my life is part of a larger spiritual force,” and “I have looked to God for strength, support, and guidance.” A few examples of negative religious coping were “I have felt that God is punishing me for my sins or lack of spirituality, I have wondered whether God has abandoned me” (Keefe et al., 2001, p. 105). The participants reported using positive religious coping strategies more often than negative religious coping strategies. The frequency of coping efforts was found to be related to social support and daily mood, but not to daily pain.

Negative aspects or difficulties with religious coping have received little attention in existing research (Chatters, 2000; Pargament et al., 2001). Negative religious coping reflects engagement in religious struggle and doubt. Negative religious coping strategies are generally considered more maladaptive (Pargament et al., 2001). Researchers in one
study examined how and if religious struggle could predict mortality among medically ill elderly individuals hospitalized for a variety of medical conditions (Pargament et al., 2001). The researchers wanted to determine if religious struggle with an illness increased the risk of mortality in a two-year period. The sample for this study consisted of 596 patients older than 55-years of age, and hospitalized. The design of this study was a longitudinal cohort study over a one-year period. Religious coping baselines were taken with the Brief Religious Coping (RCOPE) (Pargament et al., 2000). This measure is a 14-item questionnaire which assesses the degree to which the patient uses specific methods of religious coping.

After controlling for demographic, mental health, and physical health variables, the researchers found that higher religious struggle scores at baselines were predictive of greater risk of mortality. The authors explain that the effects were small, but remained stable and significant even after controlling for several possible confounding variables. Specifically, individuals who reported feeling alienated from or unloved by God and attributed their illness to the devil had a 19-28% increase in risk of dying during the two year follow-up period. The authors proposed that religious struggle was predictive of mortality while other variables associated with longevity were not. Religious struggle was predictive of greater risk of dying even after statistical adjustment for potential biases in patient attrition. The pathways for this finding are unclear. The authors suggest that maybe religious struggle causes poorer physical health, as an increase in religious struggle seems to be related to decreases in daily activities. Additionally, the researchers postulated that religious struggle may influence some other variable that was not
examined in this study (e.g., immunological functioning). According to the authors, this was the first empirical study to identify religious variables that increase the risk of mortality. The authors concluded by calling for more researchers to examine these and other potential mediating variables.

**Religious Coping in Individuals with Cancer**

A diagnosis of cancer may trigger several religious concerns for the individual (Greisinger et al., 1997), along with feelings of anxiety, hostility, discomfort, and social isolation (McI1lmmurray et al., 2003). In the same way, religious coping may assist the individual in coping with a diagnosis of cancer (Jenkins & Pargament, 1995). Across studies, individuals with different types of cancer often spontaneously reported religious faith to be important in dealing with cancer (Flannelly, Flannelly, & Weaver, 2002). For many people with cancer, religious coping may help them deal with increased spiritual needs, and it may help them make sense of their illness (Mickley, Soeken, & Belcher, 1992). Religious coping and involvement with religious activities may help individuals maintain a sense of control, hope, and purpose. It may also help them gain a sense of social support from their religious community (Levin, 1996). Additionally, the significance of religious coping may change with progression of cancer. In a study of women, researchers found that 50% of women admitted to becoming more religious after diagnosis (Roberts, Brown, Elkins, & Larson, 1997).

One study examined the religious needs and beliefs of individuals with cancer (McI1lmmurray et al., 2003). Participants for this study were at least 18-years-old and had one of four types of cancer (breast, colorectal, lymphoma, or lung). Of the 354
participants, 83% of the respondents reported having religious faith. A greater number of older individuals reported religious faith compared to younger individuals. After conducting a logistical regression, researchers found that those who reported having religious faith and who used religious coping, needed less help for dealing with feelings of guilt and sexuality, compared to those who said they had no religious faith and did not rely on religion for coping. They also had fewer unmet needs overall (32% v. 52%). The researchers concluded by highlighting the importance of the individual’s religious and spiritual beliefs in the experience of cancer. They proposed that having knowledge about the individual’s spirituality and religiosity should help service providers predict the psychosocial needs and respond appropriately.

Using qualitative methodology, Dein and colleagues (2006) examined the ways women with breast cancer used prayer to help them cope. The researchers conducted semi-structured interviews with 30 women regarding their use of prayer six months to five years following a diagnosis of breast cancer. Of the 30 participants, 23 reported using prayer as a way to help them cope with cancer. Researchers also found themes to the prayers. These themes included issues related to God’s nature and moral accountability, healing as a collaboration between God and the individual, God as a form of social support, praying to cope rather than be cured, and perceptions and beliefs about the efficacy of prayer. These findings suggest that participants utilized prayer as a way to elicit support and comfort from God and to help them cope with the diagnosis of cancer (Dein et al., 2006).
Gall (2004) sought to explore the potential role of religious coping in long-term adjustment to prostate cancer in men. Unlike most studies, the researcher found religious coping to be related to poorer role, social, and emotional functioning. Religious coping was related to positive aspects of cognitive appraisal and to both active and avoidance forms of general coping (Gall, 2004). In fact, in this study the strongest set of relationships was found between religious coping strategies and avoidance coping. The author postulated that religious coping may be used by survivors to “block out” everyday experiences of prostate cancer and its side effects.

*Negative religious coping in individuals with cancer.*

In the literature so far, negative religious coping has been defined as struggling with faith and religious doubt. More specifically, this may include questioning and bargaining with God, moving away from religiousness, and attributing cancer to a punishment from God (Pargament et al., 1998). It represents a struggle deriving from a negative view of life and feeling abandoned by God (Tarakeshwar et al., 2006).

Only a few researchers have investigated the role of negative religious coping in individuals with cancer. However, findings suggest that negative religious coping is negatively associated with adjustment to cancer, and is also related to depression, distress, and poorer QOL (Sherman, Simonton, Latif, Spohn & Tricot, 2005; Zwingmann et al., 2006). Sherman and colleagues (2005) assessed for both positive and negative religious coping in a sample of individuals with multiple myeloma who recently completed bone marrow transplantation. After controlling for demographic and medical confounding variables, researchers found negative religious coping was associated with
significantly poorer functioning. Negative religious coping was related to depression, distress, mental health, pain, and fatigue. Positive religious coping was not related to these variables. These results have important implication for cancer research. This study underscores the need to distinguish between patterns of negative and positive religious coping, and highlights the influence of negative religious coping on the adaptation process (Sherman et al., 2005).

In a prospective study, Sherman and colleagues examined the impact of negative religious coping, positive religious coping, and general religious orientation in 94 individuals with myeloma undergoing autologous stem cell transplantation (Sherman, Plante, Simonton, Latif, & Anaissie, 2009). Participants were surveyed during stem cell collection (i.e., baseline) and immediately after transplantation. Researchers found that after controlling for outcome scores at baseline and other significant covariates, negative religious coping at baseline predicted worse post-transplant emotional well-being, depression, anxiety, and transplant-related concerns. Moreover, results further indicated that religious struggle contributed to adverse changes in health outcomes for those undergoing transplant, thus highlighting the important implications of religious struggle and negative religious coping. Interestingly, researchers did not find strong effects for general religiousness or positive religious coping in this study (Sherman et al., 2009).

In a cross-sectional study of 156 individuals from Germany with breast cancer, researchers explored various aspects of negative and positive religious coping (Zwingmann et al., 2006). Two nonreligious coping styles, depressive coping (e.g., “brooding”) and active problem-focused coping (e.g., “deciding to fight against the
illness”), were also assessed. Researchers found that while positive religious coping could not be predicted by demographic variables (e.g., age, education) and cancer-related variables (e.g., time since diagnosis, tumor stage), negative religious coping was most commonly reported by women who were older, and were not living with a partner. Additionally, a structural equation model revealed that nonreligious coping, specifically depressive coping, seemed to be the most important mediating role between religious coping and outcomes. Depressive coping was also a strong predictor of depression and anxiety. Moreover, as depressive coping increased, positive religious coping decreased (Zwingmann et al., 2006).

While negative religious coping represents struggling with faith, positive religious coping represents drawing closer to faith and religious resources, and finding meaning in the cancer experience. Positive religious coping is most commonly related to positive outcomes, while negative religious coping is most commonly related to negative outcomes and considered maladaptive. It would be short-sighted to study the influence of one and not the other, as existing literature supports the importance of both. Researchers have called for more research to be done regarding the influence of positive and negative religious coping on illness adjustment and QOL in those with cancer (Lavery & O’Hea, 2010).

QOL and Religious Coping in Cancer

The strategies individuals use to cope with the effects of cancer can be important when predicting QOL (Lazarus & Folkman, 1984). Other studies have been conducted which examine how religious coping is associated with QOL in those with cancer. In one
study in particular, researchers looked at this association in those with advanced cancer (Tarakeshwar et al., 2006). Specifically, the purpose of the study was to delineate how positive and negative religious coping methods, among patients with advanced cancer, related to QOL. Researchers found greater use of positive religious coping was related to better overall QOL and higher scores on existential and support dimensions of QOL. They found greater use of negative religious coping was associated with worse overall QOL and lower scores on the psychological and existential dimensions of QOL. In addition, researchers found greater use of positive religious coping was related to more physical symptoms. In total, the researchers suggest these findings support assessing for religious coping, especially negative religious coping, as it appears to be important in understanding individuals who experience poorer QOL.

Long-Term Cancer Survivors and QOL

Researchers have recently acknowledged and begun to pay attention to cancer as a chronic stressor that influences QOL over one’s lifetime (Deimling, Sterns, Bowman, & Kahana, 2005). Much of the research thus far has focused on immediate and short-term effects of cancer, and longitudinal research with long-term survivors is limited. As cancer survivors begin to live longer, more research is needed to determine what the long-term QOL is like. Moreover, research regarding long-term survivorship contains many methodological weaknesses including relying on a few qualitative studies, focus group discussions, and small samples (Tomich & Helgeson, 2002). Researchers have repeatedly called for the use of more sophisticated research methodology, inferential statistics and the like to determine the QOL of long-term survivors. Because long-term survivorship is
a relatively new phenomenon, more research is needed to determine what long-term QOL
is like (Deimling et al., 2005; Tomich & Helgeson, 2002).

Research suggests that a variety of demographic variables and religious coping
have an effect on QOL, but exactly how religious coping influences the relationship
between demographic variables and QOL is unclear. Nicholas and Veach (2000)
proposed a conceptual model for considering a range of potential variables relevant to the
understanding of QOL. This model has not been tested empirically, but has been
proposed as a guide in doing a comprehensive psychosocial assessment of adult cancer
patients. Several demographic variables were proposed, that may influence QOL
throughout the clinical course of the cancer experience. The past history of the person
(e.g., mental disorders, personal experiences) and demographics (e.g., sex, age) in
relation to one’s interpersonal (e.g., social support) and intrapersonal (e.g., coping
strategies) resources all work together to influence overall adaptation. From this
perspective, religious coping may be viewed as both an interpersonal and an intrapersonal
resource that either helps or hinders adaptation, and subsequently QOL in long-term
survivors of cancer. When adapting to cancer, and the late effects of treatment,
individuals either become engaged in fighting the cancer, or they become disengaged,
give up and do not fight the cancer. According to the conceptual model of Nicholas and
Veach (2000), positive adaptation and active, continual engagement in fighting cancer
will have a positive influence on the individual’s overall QOL. Religious coping may be
one component of the intrapersonal process of coping style and strategies, as well as a
component of the interpersonal process of social support.
QOL and Cancer Type

A majority of research on long-term survivorship has been done with cancers with the most favorable prognoses. More than 80% of individuals with Hodgkin Lymphoma or with cancer of the thyroid, breast, prostate, uterus, or testis are more likely to live at least five years after diagnosis (Gotay & Muraoka, 1998). In a study of long-term survivors of breast cancer, researchers compared depression and anxiety scores of the survivors with a control group of women without breast cancer (Saleeba, Weitzner, & Meyers, 1996). Results indicated that long-term survivors had higher depression scores compared to control participants. A larger number of the long-term survivors scored in the mildly or moderately depressed category than control women. Although the anxiety scores were not statistically significant, it should be noted that 23% of the women in the survivors group scored in the mildly to moderately anxious range, while only 10% of the control group scored in this range (Saleeba, Weitzner, & Meyers, 1996).

In another study of QOL in long-term survivors of breast cancer, Dorval and colleagues (1998) compared QOL in the survivors to QOL in a control group. After controlling for recurrence, results indicated that the breast cancer survivors who did not experience recurrence had similar QOL levels compared to the control group (Dorval, Maunell, Deschenes, Brisson, & Masses, 1998). This study suggests that long-term cancer survivors who do not experience recurrence should have comparable reports of QOL to those who do not have a history of cancer. In another study of long-term survivors of breast cancer and their partners, participants reported several positive outcomes (Sorensen, 1994). These included higher levels of emotional intimacy,
discovery of emotional strength, and increased value of life. Interestingly, 38% of participants reported using alcohol or prescribed medication to help them cope (Sorensen, 1994). The researchers did not explore how alcohol and drug use influenced overall QOL.

A study of long-term survivors of esophageal cancer found that survivors reported significantly poorer physical functioning but significantly better mental health compared to age- and sex-matched national norms (Baba et al., 1997). In some aspects of QOL, like the ability to work, daily activities, and health perceptions, the long-term survivors did not differ significantly from the comparison group. In another study, researchers found that many survivors of esophageal cancer reported long-term side effects related to post-prandial dumping, dysphagia, and reflux symptoms; in fact, only 17% of participants were completely symptom free (McLarty et al., 1997).

Like survivors of esophageal cancer, survivors of prostate cancer also have consequences that influence QOL. Serious health consequences like sexual dysfunction and urinary problems are experienced by a significant percentage of those with prostate cancer (Talcott et al., 1998). Survivors of prostate cancer also reported problems with self-image, interpersonal problems, and marital problems (Clark et al., 1997). These factors may negatively influence long-term QOL, and may even be worse than the long-term QOL of survivors of colon and lung cancer (Schag et al., 1994).

In a study of long-term survivors of testicular cancer, Stoter and colleagues (1989), reported several important implications the cancer had on QOL. Indeed, 54% of the participants reported a decrease in physical function, specifically related to decreased
muscle strength, fatigue, and paresthesia. Forty percent of participants reported a decrease in the quality of their sexual lives, 31% reported ejaculatory dysfunction, and 21% reported a decrease in sexual desire (Stoter et al., 1989).

Researchers in one study compared scores of QOL in long-term survivors of Hodgkin’s Disease compared to an age-matched control group (van Tulder, Aaronson, & Bruning, 1994). Long-term survivors reported significantly poorer a) physical functioning, b) general health perceptions, and c) role functioning related to physical health, compared to the control group. The survivor group also had significantly more problems related to sexual function. They also reported more problems securing personal loans and/or mortgages because of their cancer history compared to the control group (van Tulder, Aaronson, & Bruning, 1994).

One study found 74% of survivors of bone marrow cancers described their QOL as the same or better than before bone marrow transplantation (Bush, Haberman, Donaldson, & Sullivan, 1995). Additionally, 88% of participants said the benefits of the transplant outweighed the negative side effects. Eighty percent rated their current physical health and QOL as good to excellent (Bush et al., 1995).

Dirksen (1995) conducted a study of QOL in long-term survivors of malignant melanoma. Analysis of open-ended questions of the 31 participants in the study found that 16 of the participants admitted to searching for meaning, which resulted in a reassessment of life. Interestingly, those who did not report searching for meaning in the illness experience did not report any changes in their QOL since diagnosis (Dirksen, 1995).
In a qualitative study of cancer experience in long-term survivors, researchers examined the influence of ethnicity, gender, and age (Foley et al., 2006). Based on qualitative interviews, researchers found no difference in themes based on cancer type. There were differences based on gender. Men tended to reflect on their cancer experience in a matter-of-fact way, while women were more likely to identify positive aspects of cancer. In another study of long-term survivors of cancer, males reported significantly higher QOL compared to women (Zebrack, Peterson, & Ganz, 2008). However, women were more likely to report greater positive effects of cancer.

Zebrack and colleagues (2008) postulated that the survivorship literature supports Rowland’s theoretical assumption that “regardless of the type of cancer, all people diagnosed with cancer experience altered relationships to some extent, dependence-independence issues, achievement disruption, impact on body and sexual image, and integrity, and existential issues” (Zebrack et al., 2008, p. 891). They further explain that cancer type, stage, treatment, and physical side-effects all contribute to survivors’ QOL.

Stage of Cancer

While the findings regarding disease stage are mixed and inconclusive, greater distress and more difficulties are typically reported in more advanced stages compared to early stages of cancer (Northouse et al., 1999). While some studies reported no significant influence of stage on adjustment and QOL (Kronblith, 1998), others have found a relationship between stage and adjustment (Mishel et al., 1984). Researchers who have found a relationship between stage and adjustment propose that individuals
diagnosed with later stages of cancer have poorer overall psychosocial adjustment to a cancer diagnosis.

Researchers have found stage to account for nearly 40 to 60 percent of the variance in predictions of psychosocial maladjustment in individual with advanced disease stages (Novotny et al., 1984). In one study, researchers found metastatic cancer to be related to dissatisfaction with health issues, occupation, and sexual life (Fasching et al., 2007). In a large study of individuals with several different types of cancer, researchers found those with recurrent disease reported poorer QOL (Parker, Baile, de Moor, & Cohen, 2003). Additionally, individuals with later stages of cancer tend to seek medical information less. Because of such mixed and inconclusive results regarding stage and QOL, it is important to include this variable in other studies. As such, stage of cancer will be included in this study.

*Time Since Diagnosis*

When diagnosed with cancer, individuals typically follow a clinical course outlined by Nicholas and Veach (2000), as adapted from Holland (1998). It begins with the finding of initial symptoms of the illness and subsequent medical testing and diagnosis. The diagnosis includes cancer site, stage, and prognosis. After diagnosis, the individual is required to make a series of decisions regarding treatment, but after treatment begins, the individual must deal with a wide array of possible side effects. After treatment completion, the individual enters the phase of rehabilitation. Once rehabilitation is reached, the individual may experience a disease-free period in which he or she is in remission. In this period, some individuals may have to deal with the possibility of long-term disability because of the cancer and/or its treatments. For others, the
period of rehabilitation may be thwarted with disease recurrence or metastasis, which may implicate the need for further treatment. The effectiveness of the treatment may demand more treatment to stymie further metastases; such treatments may be repeated several times. For those who do not benefit from treatment or who have widespread metastases, the clinical course may involve palliative care, with the goal of managing pain and dying with dignity (Nicholas & Veach, 2000).

As is noted above, the clinical course of cancer may be a difficult process for individuals. After the shock of diagnosis, the individual must decide what course of treatment to take, and must be willing to deal with the possible debilitating side effects. In the post-treatment period, the individual may have periodic visits with physicians, repeated testing at regular intervals, and must deal with the possible long-term side effects of cancer and its treatment. This period is often marred by the fear of recurrence and metastasis. How the individual copes with the experience of cancer may have long-term implications for his or her life after cancer. As such, the location on the clinical course and the length of time since completing treatment may have important implications for quality of life, and thus are important variables to include in any study of QOL. One way researchers have defined the location on the clinical course is by measuring time since diagnosis. Research on time since diagnosis and its impact on QOL has been mixed.

Researchers have found adjustment to cancer is more difficult at diagnosis than during the course of treatment (Irvine et al., 1991). However, Parker and colleagues (2003) found time since diagnosis to be unrelated to any of the measures of psychological adjustment and QOL. Weisman and Worden (1977) compared groups of individuals coping well or coping poorly in the first 100 days since diagnosis, and found a
relationship between adaptation and time since diagnosis. Vinokur and colleagues (1990) found no improvement in mental health for women with breast cancer one year after their diagnosis.

Wellisch and colleagues (1996) compared the QOL of long-term survivors of leukemia who either received chemotherapy or bone marrow transplantation. When controlling for other variables (e.g., age, sex) researchers found months since diagnosis was a statistically significant predictor of positive functioning. Researchers concluded that QOL is higher among those who had survived longer (Wellisch et al., 1996).

In one study, researchers surveyed individuals who were diagnosed with a first recurrence of breast cancer and compared them to women who were diagnosed with breast cancer for the first time (Yang, Thornton, Shapiro, & Andersen, 2008). Both groups were assessed with various measures of QOL at four points in time, up to a year after the diagnosis. Results indicated that in the recurrence group, physical health and functioning showed no improvement, but QOL and mood improved over time. Compared to the group dealing with breast cancer for the first time, those in the recurrence group had lower levels of anxiety and confusion. However, physical functioning was poorer in the recurrence group, and initial cancer-related distress was as high as the initially diagnosed group. Researchers conclude that those with recurrent disease show resilience in QOL and psychological adjustment to the illness during the year after diagnosis compared to those diagnosed for the first time (Yang et al., 2008).

A few studies have not found a relationship between QOL and time since diagnosis. In a sample of 502 individuals with cancer, Merluzzi and Martinez-Sanchez
(1997) found no relationship between time since diagnosis and QOL. Additionally, in a survey of 109 cancer survivors of various types of cancer, researchers did not identify a relationship between time since diagnosis and QOL (Schnoll et al., 2002). Thus, further study is needed.

Age and QOL

Age is an important variable to consider when examining QOL in long-term survivors of cancer. Half of all cancers occur in individuals older than 65-years-old (Greenlee, Hill-Harmon, Murray, & Thun, 2001). For survivors of cancer, risk for the development of a second cancer increases with age (ACS, 2008). Older adults who are survivors of cancer are particularly vulnerable because of other health problems related to aging, and the presence of comorbidities (Havlik et al., 1994). However, much research indicates that older individuals adapt better and report less psychological distress than their younger counterparts when diagnosed with cancer (Parker et al., 2003). For example, younger women diagnosed with breast cancer report more psychological distress than older women diagnosed with breast cancer (Wenzel et al., 1999).

Researchers postulate that age influences adjustment to cancer because of age-normative expectation regarding the increased likelihood of developing cancer as one ages. Older adults may expect to develop an illness like cancer, whereas younger adults may not (Derks, deLeeuw, Hordijk, & Winnubst, 2005; Meruzzi & Martinez-Sanchez, 1997). In fact, researchers have found efficacy for coping with cancer to increase as individuals grow older (Meruzzi & Martinez-Sanchez, 1997). These findings may be because young individuals with cancer may have problems adjusting to the illness due to the plethora of
responsibilities that exist in middle adulthood (Derks et al., 2005). This does not mean that older adults have an unfair advantage in adjusting to cancer. Older individuals with cancer may be at a disadvantage because they were raised in an era in which cancer was severely stigmatized, and they are commonly forced to deal with other health comorbidities that influence QOL. Dealing with comorbidities and overcoming the stigma of cancer, have been found to increase feelings of hopelessness and helplessness in older adults, which may negatively influence QOL (Roth & Modi, 2003).

In a study of individuals with head and neck cancer, younger adults reported engaging in active problem-solving, whereas older individuals reported relying on religious coping more frequently than younger adults (Derks et al., 2005). Older adults also reported engaging in more avoidance coping than younger adults, and in both groups, avoidance coping was related to decreased levels of QOL (Derks et al., 2005). Studies examining sociodemographic variables like age, gender, income, and employment as predictors have found earlier age of cancer onset to be correlated with significantly higher levels of posttraumatic stress (Widows, Jacobsen, Booth-Jones, & Fields, 2005).

One study compared QOL in long-term survivors of breast cancer as a function of age and time since diagnosis (Vinokur, Threat, Caplan, & Zimmerman, 1989). Researchers found significantly lower anxiety scores in women who were both younger than 65-years-old and more than five years post-diagnosis, compared to younger women with more recent diagnoses of cancer. For women 65-years-old and older, there were no
significant differences in anxiety and depression between short- and long-term survivors (Vinokur et al., 1989).

In the aforementioned qualitative study of long-term survivors of cancer, Foley and colleagues (2006) found difference based on age. Age at diagnosis was related to how the individual viewed the cancer experience. Specifically, older individuals perceived the cancer diagnosis as part of aging and frequently compared the diagnosis to other morbidities. Most considered their other morbidities as affecting QOL more than cancer did. Additionally, older adults reported difficulty distinguishing between the late-effects of cancer treatment and normal aging (Foley et al., 2006). Conversely, those diagnosed at younger ages described cancer as a life-changing experience and as something that reshaped their lives. They reported that these changes typically influenced work and/or personal relationships (Foley et al., 2006).

In a study of long-term survivors of cancer, Zebrack and colleagues (2008) found age to be an important variable in QOL. Younger participants were more likely to report better physical health and positive impacts of cancer, but reported worse mental health compared to older participants. Older participants were more likely to report better overall QOL and mental health. After controlling several variables (e.g., SES, ethnicity, type of cancer), age remained an important predictor of QOL. According to the researchers, these results indicate an association between long-term survivors’ perceptions of how cancer changed their lives and their physical and mental function, and QOL (Zebrack et al., 2008).

Critique of the Reviewed Literature
As the aforementioned evidence suggests, religious coping styles are predictors of well-being and better QOL. However, researchers are unclear if religious coping is a mediator or a moderator. In the analysis of mediation and moderation, researchers investigate a “third variable” and the nature of its relationship to two other variables with a previously established relationship. To begin to explore the relationships between demographic variables, religious coping, and QOL in long-term survivors of cancer, it is important to understand if these relationships function as mediators or moderators. A moderating variable is one that influences the direction or the strength of the relationship between two variables (Baron & Kenny, 1986). Moderation considers the conditions under which two variables interact with one another rather than the causal pathways linking variables with one another (MacKinnon & Luecken, 2008). According to MacKinnon and Luecken (2008), moderating variables help answer questions regarding when, under what conditions, and for whom. They suggest that understanding moderating variables is vital for effective prevention and intervention programs, and for understanding what types of individuals are most likely to benefit from treatment. Conversely, mediation outlines the causal pathways of relationships. The ultimate goal of mediation analyses is to find causal relationships among variables that lead to outcome. A mediating variable is a variable in the middle; it serves as a mechanism through which one variable influences another. Mediator variables describe how or why such relationships occur (Baron & Kenny, 1986).

Understanding third variables may modify earlier defined relationships. For example, religious coping has been conceptualized as a mediator in the relationship
between religiousness and mental health and stressful events. It has also been conceptualized as a moderator between stressors and mental health (Pargament, 1997). As is delineated above, religious coping is associated with decreased substance use, antisocial behavior, and suicidiality (Gartner, Larson & Allen, 1991). It is associated with greater reported well-being and better mental health. However, negative religious coping is related to guilt, depression, and poorer QOL (Sherman et al., 2005). As such, religious coping has been described as both a mediator and a moderator, and must be investigated further.

The extant findings regarding the pathways through which religious coping operates are unclear. It is difficult to ascertain if religious coping contributes to outcomes directly or through other pathways (Zwingmann et al., 2006). In fact, in a critique of the literature, Lavery and O’Hea (2010) stated, “To continue studying religious coping without clarifying mediating and moderating variables would be unsatisfactory at best” (p. 60).

*Critique of the Literature*

So far, research is still describing and reporting if religious coping occurs, instead of investigating the pathways through which it operates. Only one study has tested coping, (note it is not testing religious coping), as a mediator or a moderator in those with cancer.

In a study of stress and QOL in breast cancer recurrence, researchers hoped to determine if coping was a mediating or moderating variable (Yang, Brothers, & Andersen, 2008). They examined the influence of engagement (e.g., positive reframing,
seeking social support, and having a “fighting spirit”) and disengagement (e.g., denial) coping strategies between stress and QOL. Engagement coping was identified as a moderator in the relationship between stress and QOL, whereas disengagement coping was identified as a mediator on the effects of stress on QOL. Individuals were more likely to use disengagement coping as their stress level increased, which predicted poorer QOL (Yang et al., 2008).

Only one study used SEM to explore religious coping in stress and mental health (Fabricatore et al., 2004). This study tested religious coping as a moderator and a mediator in stress and mental health (Fabricatore et al., 2004). This study examined the influence of collaborative (e.g., sharing the responsibility for the problem with a higher power) and deferred (e.g., giving the responsibility for problems solving to one’s higher power) religious coping on overall well-being and psychological distress. Collaborative religious coping fit a mediator model. This mediator effect held for both positive and negative aspects of psychological distress and overall well-being. Additionally, collaborative and deferred religious coping were both moderators of the relationship between stressors and mental health outcomes.

Recently, the National Institute of Health gathered several scholars to review the literature regarding the relationships between faith and emotional well-being in the context of health crises, and the future implications of this research. After reviewing the articles, they called for more evidence from methodically sound studies (Powell, Shahabi & Thoresen, 2003). They also highlighted important methodological and conceptual considerations. As such, they called for assessment of multiple aspects of religion and
spirituality, instead of relying on a single-time question or simple frequency data (Hill & Pargament, 2003). They also outlined the need to understand the mechanisms underlying the effects of religiousness (Powell et al., 2003). Specifically, they called for more sophisticated designs (e.g., longitudinal) and advanced statistics (e.g., structural equation modeling) to delineate the direct and indirect relations of faith (Powell et al., 2003).

The complex relationship between demographic variables, religious coping, and QOL in long-term survivors of cancer has not been satisfactorily explored. Because survivorship is increasing, research is needed with survivors. In order to gain a clearer understanding of the complex relationship between religious coping and QOL, this study will test a primary model which will include religious coping as a mediating and moderating variable. An alternative model will test religious coping only as a mediator, and another alternate model will test religious coping as a moderator.

Summary and Conclusions

As outlined above, researchers have invested a great deal of energy into better understanding the role of religious coping and demographic variables and their influence on QOL in long-term survivors of cancer, yet little research has put all of these variables together. Much of the research suggests that religious coping may work as a moderator and mediator in QOL. However, little research has been conducted to see which model is a better fit for long-term survivors of cancer. Overall, researchers have found mixed findings regarding age, cancer type, cancer stage, and time since diagnosis and how they influence QOL.
When working with extant literature in long-term survivors of cancer, there are mixed results regarding the role of religious coping. It is important to test religious coping both as a moderator and a mediator of QOL. It will help to elucidate what role religious coping has among demographic variables and QOL. Current research describes religious coping as both a moderator and a mediator for QOL. Testing both mediation and moderation models will provide clarification regarding the role of religious coping in long-term survivors of cancer. Also, the findings would enhance the clinical perspective of religious coping and have important ramifications on psychotherapeutic interventions when working with survivors of cancer.
Participant Characteristics

This study included long-term adult survivors of cancer who had completed treatment for cancer. The participants were recruited from the Cancer Center at Ball Memorial Hospital in Muncie, Indiana, where they had previously received tertiary treatments (e.g., radiation, chemotherapy) for cancer. Data was gathered over a three-month period (September 2009-December 2009). Inclusion criteria included: (a) being diagnosed with cancer at least five or more years prior to the beginning of the study; (b) receiving and completing treatment at the cancer center; (c) being at least 25-years-old at the time of the study; and, (d) being registered in the tumor registry records of Ball Memorial Hospital. Individuals who were concurrently receiving treatment at the cancer center at the time of data collection were excluded from participation in the study. Employees of the Tumor Board at Ball Memorial Hospital identified individuals meeting the eligibility criteria.

Participants

Table 1 displays counts, percentages, means, and standard deviations for the demographic variables of the study participants. The present study included a total of 265 long-term adult survivors of cancer, diagnosed more than five years prior to the start of the study. Although 265 completed questionnaires were returned, only 213 (80.4%) were
entirely completed. Several participants failed to answer all questions. Twenty individuals (7.7%) had one missing variable, and 10 individuals (3.8%) had two missing variables. Twenty-two participants (8.3%) had more than 2 missing variables. Because of problems with missing data, listwise deletion was used. After implementation of the listwise deletion, the sample size was 213 (160 females, 53 males).

Participants in the study ranged in age from 39-years-old to 99-years-old, with a mean age of 67-years-old (SD = 11.3). Race varied little, with a majority of participants being Caucasian/White (n = 205; 96.2%). The second largest group was African American/Black (n = 6; 2.8%). A majority of the participants were married (n = 144; 67.6%) with a smaller percentage being widowed (n = 40; 18.8%), divorced (n = 20; 9.4%), single/never married (n = 7; 3.3%), and separated (n = 2; 0.9%).

A majority of the sample reported being Christian (n = 200; 93.9%), while 12 participants (5.6%) reported that they were not Christian. The most common Christian denomination reported was Methodist (n = 41; 19.2%), followed by Baptist (n = 33; 15.5%). One-fourth (n = 54; 25.4%) of the sample reported attending church zero times a month, while 16% (n = 34) reported attended four times a month. Nearly 18% (n = 38) of the sample described their involvement in church as changing after their cancer diagnosis.

Table 2 displays counts, percentages, means, and standard deviations for the disease-related variables. The largest category of cancer type was “female” which included all breast and cervical cancers (n = 127; 59.6%), followed by prostate (n = 23; 10.8%). The third largest category of cancer type was colorectal (n = 22; 10.3%),
followed by lymphomas (n = 17; 8%). All of the other cancer types reported were

grouped together (n = 24; 11.3%). The cancer type categories were then divided into sex-

Table 1

*Counts, Percentages, Means, and Standard Deviations for Demographic Variables (N = 213)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>P</th>
<th>M</th>
<th>SD</th>
</tr>
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<tr>
<td>Gender</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>160</td>
<td>75.1</td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>53</td>
<td>24.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>213</td>
<td>100.0</td>
<td>67.6</td>
<td>11.3</td>
</tr>
<tr>
<td>Ethnicity</td>
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<td></td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>205</td>
<td>96.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American/Black</td>
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<td>2.8</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
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<td>0.5</td>
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<tr>
<td>Marital Status</td>
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<td></td>
</tr>
<tr>
<td>Married</td>
<td>144</td>
<td>67.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
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<td>18.8</td>
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<tr>
<td>Divorced</td>
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<tr>
<td>Single, Never Married</td>
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<td>3.3</td>
<td></td>
<td></td>
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<tr>
<td>Separated</td>
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<td>0.9</td>
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<td></td>
</tr>
<tr>
<td>Christian</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>200</td>
<td>93.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>12</td>
<td>5.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
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<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Involvement Change</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>38</td>
<td>17.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>169</td>
<td>79.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>6</td>
<td>2.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

linked cancer v. non-sex-linked cancer. The sex-linked cancer group was made up

females with a history of breast and/or cervical cancer, or males with a history of prostate
cancer, while the non-sex-linked cancer group consisted of those with all other types of
cancer. The sex-linked cancer group made up two-thirds of the sample (n = 150; 70.4%), while non-sex-linked cancers made up one-third (n = 63; 29.6%).

When asked to report cancer stage, 3.8% (n = 8) of the participants indicated stage 0, 17.8% (n = 38) indicated stage I, 11% stage II (n = 24), 9.4% stage III (n = 20), 6% stage IV (n = 13), and 2.3% (n = 5) reported no stage. Thirty percent (n = 64) marked “don’t know/don’t remember” and 20% (n = 41) left the question blank. This high percentage led to problems in statistical analysis which will be explained later. A majority of the sample described their disease as being in remission (n = 148; 69.5%). Five percent (n = 10) said they were experiencing recurrence, and 20.7% (n = 44) said they did not know the status of their disease. Five percent (n = 11) left the question blank.

For a majority of participants, this was their first diagnosis of cancer (n = 201; 94.4%). A majority of the sample reported not currently receiving treatment (n = 191; 89.7%). However, 10% (n = 21) did report currently taking some type of hormonal therapy. The average time since diagnosis was 9.7 years (SD = 5.7), with the maximum time being 51 years and minimum time being four months. Seven of the participants reported a diagnosis of less than five years, which meant they should not have met inclusion criteria for the study. After checking their information with the tumor registry, it was determined that each of these participants had a previous diagnosis of cancer more than five years ago. It was assumed that these participants had a second, more recent cancer diagnosis and failed to report their first diagnosis. Thus, it was determined that they did meet inclusion criteria. Fifty-five percent (n = 117) of the sample reported that
their doctor told them they were cancer free, while 42.3% (n = 90) did not report that their doctor told them they were cancer free.
Table 2

Counts and Percentages for Disease-Related Variables (N = 213)

<table>
<thead>
<tr>
<th>Disease Variable</th>
<th>n</th>
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<th>M</th>
<th>SD</th>
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<td>Cancer Type</td>
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</tr>
<tr>
<td>Female</td>
<td>127</td>
<td>59.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prostate</td>
<td>23</td>
<td>10.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colorectal</td>
<td>22</td>
<td>10.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lymphomas</td>
<td>17</td>
<td>8.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>24</td>
<td>11.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex-Linked Cancer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>150</td>
<td>70.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>63</td>
<td>29.6</td>
<td></td>
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</tr>
<tr>
<td>Cancer Stage Known</td>
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<td></td>
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<tr>
<td>Yes</td>
<td>135</td>
<td>63.4</td>
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<td></td>
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<tr>
<td>No</td>
<td>61</td>
<td>28.6</td>
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<tr>
<td>Cancer Stage</td>
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<td>Stage I</td>
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<tr>
<td>Stage IV</td>
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<tr>
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<td></td>
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<tr>
<td>Don’t Know/Don’t Remember</td>
<td>64</td>
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<td>Status</td>
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<tr>
<td>Remission</td>
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<td>Recurrence</td>
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<tr>
<td>Don’t Know</td>
<td>44</td>
<td>20.7</td>
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<tr>
<td>First Diagnosis</td>
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<tr>
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<td>201</td>
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<tr>
<td>No</td>
<td>11</td>
<td>5.2</td>
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<tr>
<td>Missing</td>
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<td>0.5</td>
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<tr>
<td>Receiving Treatment</td>
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<td>21</td>
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<tr>
<td>No</td>
<td>191</td>
<td>89.7</td>
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<tr>
<td>Missing</td>
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<td>0.5</td>
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<td>Time Since Diagnosis</td>
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<td>5.7</td>
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<td>Cancer Free</td>
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<tr>
<td>Yes</td>
<td>117</td>
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</tr>
<tr>
<td>No</td>
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<tr>
<td>Missing</td>
<td>6</td>
<td>2.8</td>
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</tr>
</tbody>
</table>
**Missing Data**

A common problem encountered by researchers is how to treat missing data. There are several methods for dealing with this problem (Field, 2005). This researcher chose to use listwise deletion, where participants with any missing data were not included in the analyses. Statistically, this is a more traditional and conservative approach to dealing with missing data than some others commonly used in the social sciences (Field, 2005). When using this procedure, it is assumed that some of the participants have missing data on all variables, while other cases have missing data on only a few variables (Schumacker & Lomax, 1996). One advantage of using listwise deletion is that all analyses are done with the same number of cases. A disadvantage of using listwise deletion is having a sample size that is smaller than the original sample as well as the possibility of some estimation bias if the data are not missing completely at random (Kline, 2005).

When comparing those who were deleted from the study to those who were not, only two variables, age and time since diagnosis, were significantly different. The mean age of the participants deleted from the study was 75-years-old, while the mean age of the participants used was 67-years-old. The average time since diagnosis of the participants deleted from the study was 13 years, while the average time for those included in the study was 9 years. A t-test revealed a significant difference for age ($F = .856, \text{df} = 254, p < .001$), and time since diagnosis ($F = 12.08, \text{df} = 248, p = .004$). In summary, participants who were included in the study tended to be younger and were more recently diagnosed than those who were deleted from the study.
Sampling Procedures

This study was approved by the institutional review boards (IRBs) of Ball State University (Appendix A) and Ball Memorial Hospital (Appendix B).

Potential participants were identified initially through the Ball Memorial Hospital Tumor Registry. A tumor registry documents and stores all significant aspects of the individual’s medical history and treatment. Many also contain information regarding demographic variables, diagnostic findings, primary sites of cancer, stages of cancer, recurrence, and end results (Eiseman & Haga, 1999). The Tumor Registrar was requested to search for all participants who meet selection criteria. A total of 782 participants met the inclusion criteria for the study.

Once participants were identified through the Tumor Board Registry, oncologists at the cancer center were asked to evaluate the list to make sure the participants were appropriate for the study. Once participants were identified and approved by the oncologists, data was collected using written questionnaires administered through the U.S. Postal Service mail system. This survey methodology follows the established guidelines of the Tailored Design Method (TDM; Dillman, 2007). The TDM uses principles of social exchange to reduce costs for responding, reduce survey error, and increase perceptions of rewards. According to the basic concepts of social exchange, individuals are more likely to return a questionnaire if they trust that the perceived rewards of completing it outweigh the costs of completing it. Moreover, trust may be established by making the task appear important, having the project sponsored by some type of authority figure, and providing a token of gratitude in advance (Dillman, 2007).
Rewards can be increased by expressing thanks, making the questionnaire interesting, giving incentives, and giving social validation. Social costs can be decreased by avoiding inconvenience, making the questionnaire short and easy, and minimizing requests to obtain personal information (Dillman, 2007).

The TDM consists of five separate elements which were individually shown in Dillman’s (2007) research to increase response rates for mail surveys. Overall, response rates for studies using TDM ranged from 58-78% in four studies (Dillman, 2007). These five elements include a) respondent-friendly questionnaire; b) up to five contacts with the questionnaire recipient; c) inclusion of stamped return envelopes; d) personalized correspondence; and, e) a financial token of appreciation.

The current study used the following five participant contacts. Figure 3 displays the totals for each participant contact.

*Pre-notice Letter.* The purpose of the pre-notice letter is to let the participant know that an important survey would be arriving in the mail in a few days and that the individual’s response is important and would be appreciated. The pre-notice letter was signed by the participant’s oncologist. It was noted in this pre-notice letter that a small token of appreciation will accompany the survey. For this study, 782 individuals were identified through the tumor registry as meeting inclusion criteria for the study. Each oncologist involved in the study examined the patient lists carefully and eliminated a total of eight (1.0%) participants from the study. All of the oncologists cited advanced age as being the reason to remove participants from the study. A total of 774 participants were sent pre-notice letters (Appendix C) from the oncologists on September 25, 2009. After
this initial contact, 20 (2.5%) potential participants voluntarily withdrew from study by calling and/or emailing the researcher, and 59 (7.6%) letters were returned due to incorrect addresses.

Packet of Questionnaires. The packet of questionnaires included a cover letter explaining the importance of the research study and the packet of questionnaires, a one-dollar bill (as a token of appreciation), and a return envelope. The dollar bill was included with the participation request, as this is thought to be significantly more effective than sending larger payments after a questionnaire is complete. Dillman (2007) found that larger amounts of money may be more effective but will have diminishing returns with the highest increase coming after the first dollar. Moreover, token financial incentives were more effective when compared to lotteries (Dillman, 2007). Researchers believe this is because the lottery does not create a sense of dissonance that makes the individual feel as though a gesture of kindness should be reciprocated (Dillman, 2007). Questionnaire packets included a cover letter (Appendix D), an informed consent form (Appendix F), the Authorization for the Release of Health Information for Research Purposes form (Appendix G), the easy three-step instruction sheet (Appendix E), the General Information Questionnaire (Appendix H), the FACT-G (Appendix I), the QOL-CS (Appendix J), the RCOPE (Appendix K), and the SBI-15R (Appendix L). Order effect was controlled for through randomization of the order of the questionnaires in the packet. On October 6, 2009, 695 participants were mailed the packet of questionnaires to complete. After receiving the packet of questionnaires, 12 (1.7%) individuals voluntarily withdrew from the study by calling and/or emailing the researcher. Two hundred thirty-
three (33.5%) completed packets were returned after the first mailing, and 450 packets (64.7%) were not returned.

*Thank You/Reminder Postcard.* A thank you postcard (Appendix M) was sent a week after the initial packet of questionnaires. The postcard thanked the individual for responding and reminded the respondent to complete the packet if he or she had not. The purpose of the postcard reminder was to ask the individual again to complete and mail the packet. According to Dillman (2007), it is also effective because it is a different type of reminder than the original letter. On October 13, 2009, reminder/thank you postcards were sent to 683 (100%) participants.

*Replacement Questionnaire.* Four weeks after the original questionnaire was mailed, a replacement questionnaire and cover letter (Appendix N) were sent. Receiving the replacement questionnaire let the individual know that the questionnaire was not received, and it encouraged the person to fill it out and return it. Replacement packets were sent to 450 (65.9%) participants on November 10, 2009. Thirty-two (4.7%) completed packets were returned after the replacement questionnaires were sent. After receiving the second packet, three (0.4%) participants voluntarily withdrew from the study by emailing and/or calling the researcher, and 418 (61.2%) packets were not returned.

*Final Contact.* The final contact was to be made via telephone (Appendix O) approximately one week after the replacement questionnaire was sent. However, due to logistical problems, this step was not feasible. Dillman (2007) suggested this step be done no longer than a week after the individual receives the replacement questionnaires, so that
he or she does not misplace the questionnaires. However, this was not possible as there were 450 participants to contact and only one person to contact them. Moreover, this time span occurred during the holiday season. After discussing the advantages and disadvantages of contacting individuals via telephone, the researcher decided to forgo this step. The total number of participants who returned completed questionnaires was 265 (34%).

Confidentiality of the questionnaire data was maintained through numerous procedures. First, all the data from the questionnaires, with the exception of the participant’s name, were entered into a database program (i.e., Excel). Names of
Figure 3

Data Collection Flow Diagram

**Enrollment**

Assessed for eligibility (n=782) → Excluded by oncologists due to age (n=8)

Mailed pre-notice letter (n=774) → Withdrawn from the study (n=20)

Packet of questionnaires mailed (n=695) → Withdrew from the study (n=12)

Postcards mailed (n=683) → Packets completed and returned (n=233)

Replacement packets mailed (n=450) → Withdrawn from the study (n=3)

Completed packets returned (n=265) → Packets completed and returned (n=32)

Did not return packets (n=418)

**Completion**

**Analyses**

Total Analyzed (n=213) → Removed from study after listwise deletion due to missing data or (n=44)

Removed because currently receiving chemotherapy or radiation (n=8)
participants from the mail collection were kept on a master list which was locked in the primary investigator’s office at all times.

The master list included participants’ names and a code number assigned to each name for the purpose of tracking the returned research packets. Only the code numbers were listed on the completed packets. The collected questionnaire packets were kept locked in the primary investigator’s office at all times. Confidentiality of the participants’ identity was protected by asking for only limited personal information. Also, participants’ questionnaires only included their code number, not their name, which limited the risk of accessing personal information. Lastly, the informed consent form included in each packet contained detailed information explaining confidentiality and included instructions about how to obtain further information about their rights as a participant (Appendix J).

Participants were treated in accordance with the “Ethical Principles of Psychologists and Code of Conduct” (American Psychological Association, 1992).

Initially, the researcher proposed to exclude individuals who were currently receiving treatment at the Cancer Center. Of the 265 participants who returned completed questionnaires, 233 (87.9%) reported not receiving treatment, and 28 (10.6%) reported currently receiving treatment. The researcher retained 20 (71.4%) of the 28 participants who reported receiving long-term hormonal therapy and removed 8 (28.6%) of 28 participants who were receiving chemotherapy or radiation from further analyses. Eight individuals reported receiving chemotherapy and/or radiation and their data were therefore removed from the analyses.
Instrumentation

In order to collect the data necessary to answer the research questions, several different data collection instruments were used. Each is discussed below.

**General Information Questionnaire** (Appendix H). A demographic questionnaire was constructed for this project to obtain relevant information about the participants. Information of interest included participant age, cancer type, and cancer stage. Participants were asked to list the date of their cancer diagnosis to assist the researcher in determining the time since diagnosis. Participants were also asked to provide the date of their last active treatment.

**Quality of Life (QOL) Instruments.**

*Functional Assessment of Cancer Therapy: General (FACT-G; Appendix I).* The most commonly used measure of QOL with those who have cancer is the Functional Assessment of Cancer Therapy: General (FACT-G; Cella et al., 1993). This instrument is a general quality of life measurement intended for use with a variety of chronic illness conditions. It was originally validated in a general cancer population. There are 27 items, with four subscales. These include physical, social/family, emotional, and functional well-being. Items are scaled on a five-point Likert-type scale from 0 (not at all) to 4 (very much). This measure appears to have well-established psychometric properties. According to the creators, coefficients of reliability and validity were high (Cella et al., 1993). Convergent validity for the FACT-G was conducted by comparing it to the Functional Living Index-Cancer. Convergent validity was high ($r = .79$). Test-retest
reliability for the total score was good ($r = .92$), as were the coefficients for the individual subscales. The physical well-being subscale ($r = .88$) had the highest coefficient, followed by the functional well-being subscale, ($r = .84$), the social well-being subscale ($r = .82$), and, the emotional well-being score ($r = .82$).

*Quality of Life - Cancer Survivors (QOL-CS; Appendix J).* This instrument was designed to measure factors concerning long-term cancer survivors (Ferrell, Dow, & Grant, 1995). It contains a total of 41 items. There are four subscales: psychological well-being, physical well-being, social well-being, and spiritual well-being. Respondents are asked to rate each item on a scale from 0 (worst outcome) to 10 (best outcome). The scores for each of the 41 items are summed to obtain a total score. The average score for each of the subscales may also be reported (Ferrell, Dow, & Grant, 1995).

The QOL-CS is based on a previous version of the QOL instrument developed by researchers at the City of Hope National Medical Centre. Researchers conducted a mail survey of 1200 long-term survivors of cancer. Of those 1200 survivors, 686 surveys were used to obtain validity and reliability data. Content validity was verified by literature review, clinical experience, and initial pilot testing based on a qualitative study using in-depth interviews with five long-term survivors of cancer. Concurrent validity was tested by comparing the FACT-G to the QOL-CS. According to the creators, moderate to strong correlations were found between associated subscales: QOL-CS physical to FACT-G physical ($r = .74$), QOL-CS psychological to FACT-G emotional ($r = .65$), QOL-CS social to FACT-G social ($r = .44$). Additionally, the overall concurrent validity was strong ($r = .78$). The overall test-retest reliability for the QOL-CS was strong ($r = .89$).
The subscales of psychological well-being ($r = .88$), physical well-being ($r = .88$), social well-being ($r = .81$), and spiritual well-being ($r = .90$) also had good test-retest reliability.

**Religious Coping.**

Religious Coping (RCOPE; Appendix K). Religious coping was measured by the RCOPE (Pargament, Koenig, & Perez, 2000). According to Lavery and O’Hea (2010), the increased use of this measure “represents a shift away from examining religious coping as a general, singular construct to a more comprehensive, in-depth investigation of religious coping within the cancer population” (p. 57). The RCOPE was initially validated in both a college sample ($N = 540$), with a confirmatory factor analysis in a hospitalized elderly sample ($N = 551$). A majority of the elderly sample was Catholic (45%) and Protestant (41%). Only 6.7% of the sample reported never spending time in private religious activities, and only 6.1% reported never attending church or religious meetings.

The RCOPE consists of 21 subscales and a total of 105 items. Each item assesses the extent to which the individual endorses that type of religious coping. Items are designed for a 4-point Likert scale rating, ranging from 0 (not at all) to 3 (a great deal). The RCOPE has two dimensions: positive and negative religious coping and each dimension is composed of five items. Negative religious coping, (e.g., anger at God), uniquely identifies a very important aspect of spiritual adjustment. High scores of negative religious coping are typically predictive of poor adjustment to disease (Pargament et al., 2000). Positive religious coping strategies are those which reflect a constructive and confident turning to religion for support (e.g., turning to God for
meaning and comfort). This type of religious coping appears to be beneficial for individuals dealing with stressful life events (Pargament et al., 1998). The RCOPE has demonstrated good construct validity and internal consistency reliability in the medical setting and among individuals facing major life crises (Pargament et al., 2000). Test-retest reliability in older medical patients are generally stable over time ($r > .80$).

*Systems of Belief Inventory (SBI-15R; Appendix L).* The SBI-15R (Holland et al., 1998) is a measure specific to individuals with cancer and has high levels of psychometric development. While it was not developed to be a specific measure of religious coping, it was designed to measure the presence and importance of religious and spiritual beliefs and practices. It also measures the value of support from a religious/spiritual community. This 15-item measure is a brief version of the original 54-item questionnaire, and was created for easy use in the study of religious beliefs in QOL, stress, and coping research (Holland et al., 1998). There are two subscales. The first subscale is the Beliefs and Practice Subscale, and the second subscale is the Social Support Subscale related to the respondent’s religious community. Respondents are asked to rate each item on a 4-point Likert-type scale from 0 (strongly disagree) to 3 (strongly agree or all of the time).

The SBI-15R has demonstrated high internal consistency for subscale I ($\alpha = 0.92$), subscale II ($\alpha = 0.89$), and for the overall test ($\alpha = 0.93$). The test-retest correlation was high ($r = 0.95$) for both religious and lay groups. The SBI-15R demonstrated high convergent validity, by having significant correlations with two other religious measures, the Religious Orientation Inventory ($r = -0.84$), and the Index of Core Spiritual
Experiences ($r = 0.82$). Overall, the SBI-15R has undergone careful psychometric development and is a quality instrument to use when assessing the importance of religious and spiritual beliefs in those with cancer (Holland et al., 1998).

**Research Design**

This study was a non-experimental, cross-sectional, descriptive field study design. Descriptive field studies often have high external validity because the sample of participants is taken from the population of interest. This type of study has low internal validity because variables are studied as they occur naturally rather than being manipulated (Heppner, Wampold, & Kivlighan, 2008). The basic goal of survey research is to document the nature or frequency of a particular variable, and survey research is used to describe, explain, or explore phenomena (Heppner et al., 2008).

**Statistics and Data Analysis**

**Statistical Software Program**

This study used a non-experimental field study design that relied on survey methodology to answer the research questions of interest. To analyze the data, the researcher used the Statistical Program for the Social Sciences (SPSS, Version 12). Descriptive data of interest included means, standard deviations, percentages, and frequencies.

Preliminary data analyses were conducted to better understand the general relationship among the variables. The preliminary analyses included descriptive statistics including means, standard deviations, and correlations for the measured variables. The research questions of interest were addressed using a formal test comparing the fit of the
mediation model (Figure 1) to a moderation model (Figure 2) based on structural equation modeling (SEM).

SEM is a multivariate analysis that uses observed, latent, and/or theoretical variables. SEM is used regularly for representing dependency relationships in the social and behavioral sciences (McDonald & Ho, 2002). The goal of SEM is to combine several statistical methods in an effort to explain the relationship between constructs in a parsimonious way. SEM is helpful when researchers are looking to investigate several relationships, or paths, between variables, constructs, and effects. For this study the AMOS (v. 18) software package was used to estimate the SEM models.

The intended primary model was designed to assess meditational effects of religious coping between demographic variables and QOL. As such, the primary model assumed that demographic variables influence QOL, and some of the demographic variables may work through religious coping to influence QOL. It also tested the influence of demographic variables on QOL, and assumed QOL would change as religious coping increased or decreased. The alternative model, the moderation model, assumed the influence of demographic variables on QOL changes as religious coping changes.

The research methodology was cross-sectional, as participants provided data at one point in time. According to researchers, using SEM in cross-sectional research is acceptable and quite common (Weston & Gore, 2006). In the current models, the latent variables included demographic variables, religious coping, and QOL in long-term survivors of cancer. The observed variables are the constructs found in the assessment
tools (i.e., questionnaires) outlined above. Overall, in this study, SEM delineated the relationship between the demographic variables, religious coping, and QOL in long-term survivors of cancer (Kahn, 2006). Tradition commonly suggests five to seven steps in a systematic and comprehensive SEM.

Step 1: Identification of the Model

In model specification and identification, the initial steps of the process, theory is used to establish probable relationships between constructs. Specifically, this study used a latent variable SEM approach. This allows the researcher to define variables of interest from multiple measures, compared to less sophisticated path models that only measure variables that are directly observed (Kline, 2005). The use of latent variable SEM serves three purposes for the current study. First, it allows the researcher to examine all of the predictor variables in an integrated way, as opposed to separately or in a disorganized way. This method is necessary to delineate numerous interconnections between latent and observed variables. Second, latent variables allow the researcher to examine variables identified in literature as possible predictors, even though they cannot be directly observed. Third, SEM was chosen due to the type of data obtained through the analyses. That is, when using SEM the researcher has the flexibility to analyze the total and indirect effects of the predictor variables on the criterion variable (Kline, 2005). This is imperative as there is little guidance in the literature about the best way to examine the complicated relationship between religious coping and QOL.

Step 2: Identification Process
As outlined by Weston and Gore (2006) the second step in SEM is the identification process. This step answers the question, “On the basis of the sample data contained in the sample covariance matrix, $S$, and the theoretical model implied by the population covariance matrix, can a unique set of parameters be found?” (Schumacker & Lomax, 1996, p. 99). In other words, identification asks if there are enough constraints and parameters in the model to find distinct estimates of the variables. In most cases, there are not enough constraints in the model, so the researcher must determine parameters by setting limits on the model. If the model is underidentified, there are more paths than correlations and it will not factor completely (Kline, 2005). Conversely, when a model is overidentified there are more correlations than parameters. Just-identified models are best as they allow the researcher to use fit indices to assess the appropriateness of the model.

Determining constraints on a model happens by identifying each possible parameter in the model as being: (a) free, (b) fixed, or (c) constrained (Schumacker & Lomax, 1996). A free parameter is one that is unknown and the researcher wants to estimate it, while a fixed parameter is one that is fixed to a certain value like zero or one. A constrained parameter is one that is unknown but is restricted to be equal to one (or more) of the other parameters. In most cases, researchers use at least one fixed parameter to avoid problems with identification; however, past researchers have suggested using at least two steps to avoid the identification problem (Schumacker & Lomax, 1996). The first step is to fix at least one path to all latent variables to one (i.e., 1.0). Second, begin with the most simple and parsimonious model with the minimum
number of parameters possible. In other words, use only the paths considered absolutely crucial in answering the research question. This practice is thought to eliminate the potential to impose unnecessary constrictions and parameters on the model. If the model is identified, the researcher is able to add other parameters in subsequent models (Weston & Gore, 2006).

**Step 3: Selection of Measures**

Step 3 entails the researcher selecting the measures to be used in the study. The multiple measures employed to gather information on the observed variables, latent variables, and criterion variables for this study were outlined earlier in this chapter. All measures were selected based on recommendations from extant literature.

**Step 4: Collection of Data**

In this step, it is recommended that the data collection be completed with the measures outlined in step three. As explained in detail above, five measures were used to collect the data.

**Step 5: Determination of Goodness-of-Fit**

The fifth step is to determine goodness-of-fit of the proposed model through goodness-of-fit indices. In SEM, goodness of fit indices identify which model fits the sample data the best (Weston & Gore, 2006). Goodness of fit criteria typically ranges from zero (no fit) to one (perfect fit), with the value of 0.90 and above considered to be good model fit (Kline, 2005).

In interpreting the fit of the data to the proposed models, goodness of fit indices and chi-square tests are frequently used, and will be used for testing the fit of the current
model (Weston & Gore, 2006). Convention encourages the use of several goodness of fit indices in the evaluation of SEM. Therefore, the chi-square test, Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and the Tucker-Lewis index (TLI) will be employed to identify model fit (Weston & Gore, 2006). While the chi-square test is the most regularly reported fit statistic, it is very influenced by sample size, and must be viewed within the context of other fit indices. The chi-square test explores the null hypothesis that the covariance matrix estimated from the model reproduces and is similar to the observed covariance matrix. According to Kline (2005), a chi-square test score of less than 30 with a non-significant $p$ value is suggestive of good fit. The CFI and TLI assess model fit by comparing the proposed model to a null model. A value of .90 or greater on the CFI and TLI indicate good model fit. Conversely, RMSEA is a “badness of fit” test that uses a built-in correction for complex models, which is ideal for the current complex structural model. Tradition indicates that a RMSEA of less than or equal to .05 suggests good fit and a RMSEA of greater than or equal to .10 indicates poor fit, while anything in between suggests satisfactory fit (Kline, 2005).

**Step 6: Model Evaluation**

The next step in the SEM process is to compare the fit of the primary and alternate models. The models will be evaluated using several varying standards. First, the chi-square difference statistic was used because the models are nested (Kline, 2005). The chi-square difference statistic tests the null hypothesis that the two models fit identically in the sample population. Rejecting the null hypothesis suggests that one model has
superior fit. The chi-square difference statistic has the unique ability to identify the impact on model fit when paths are added or removed. Furthermore, the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) for each model can be compared to identify unexplained variance via a complexity correction. More specifically, the AIC and BIC represent the amount of variance in the model that is not accounted for by the proposed paths. Smaller values indicate a better model fit. It is important to note that the AIC and BIC provide scale free numbers that are only comparative. As such, the model with a better fit will have a combination of better goodness of fit indices with lower AIC and BIC results.

**Step 7: Model Modification**

If not satisfied with the fit or parameter estimates of the proposed models, the final step of model modification will begin. Model modification entails changing the estimated parameters of the model to create a better fit. Specifically, this means revising the model if the data lacks a good fit for the proposed relationships. It should be noted that this is a controversial technique (Weston & Gore, 2006). Convention suggests that if model modifications are theoretically driven, data driven, and are used sparingly, modification may be defensible for furthering research knowledge and encouraging reproductions in future research.

**Summary of Analytic Procedures**

This study used a quantitative, cross-sectional, non-experimental field study design that relied on survey methodology to obtain the data to answer the research questions of interest. Data was gathered using five different instruments (i.e., General
To analyze the data, the researcher used the Statistical Program for the Social Sciences (SPSS, Version 12). Descriptive data of interest included means, standard deviations, percentages, and frequencies.

To analyze the proposed models, the statistical program AMOS (Version 18) was used. Specifically, this study used the steps outlined by Weston and Gore (2006) to test the theoretically based models of QOL.
Chapter 4

Results

This chapter presents the collected data, statistical analyses and results of the present study of religious coping in long-term survivors of cancer. The results are guided by three research questions and the accompanying hypotheses. The chapter will begin with explanation of the correlation coefficients of the study measures and variables. Next, results from the structural equation models used to address the research questions of interest will be explored.

Preliminary Psychometric Analyses

Table 3 presents the means, standard deviations, and internal consistency of the instruments used in the study. The internal consistencies of the instruments, as measured by Cronbach’s alpha, were above the recommend cut-off of .70 (Field, 2005), with the exception of the FACT-G Emotional Well-Being subscale ($\alpha = .678$). Overall, the internal consistencies of the instruments were comparable with what was reported by the creators of the instruments. For example, the internal consistency reported for the Belief Practices subscale of the SBI-15R was .92. In this study, it was almost exactly the same ($\alpha = .924$). The alpha reported for Social Support subscale of the SBI-15R ($\alpha = .89$) was also close to the one found in this study ($\alpha = .920$). On the RCOPE, the Positive Religious Coping subscale ($\alpha = .84$) was slightly lower than reported by creators of the instrument ($\alpha = .87$), while the internal consistency of the Negative Religious Coping
subscales ($\alpha = .73$) was slightly higher ($\alpha = .69$) than reported by the creators (Pargament, Koenig, & Perez, 2000). A majority of the QOL subscales were very similar to what previous researchers have reported. The only noteworthy difference was on Social Well-Being subscale of the QOL-CS. In this study the internal consistency was .744 and the reported alpha in the validation of the measure was .81. Otherwise, many of the internal consistencies were at or above what was reported in the literature. These similar comparisons indicate that the instruments performed with the same degree of consistency in the sample as it has in previous studies.

Table 3

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<th>Scale/Subscale</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>$\alpha$</th>
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<td>FACT-G $^b$</td>
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</table>

*Note.* $^a$ Systems of Belief Inventory, Revised. $^b$ Functional Assessment of Cancer Therapy – General. $^c$ Quality of Life Scale – Cancer Survivor.

It should be noted that many ($n = 84$) individuals omitted questions on the FACT-G Social/Family Well-Being subscale. It is unclear exactly why individuals missed
questions on this subscale, but it may be due to the types of questions asked. There were
a few questions regarding emotional and sexual intimacy in the section that may have
made the participants feel uncomfortable and may have caused them to skip the section
entirely.

Structural Equation Modeling

SEM was used to fit and compare mediation and moderation models. Amos (v. 18) was used to compare models and maximum likelihood estimates were calculated for
both the mediation model (Figure 4) and moderation model (Figure 5). The discussion
that follows focuses on overall goodness of fit and discussion of direct and indirect paths
for each model. First an explanation of how the data satisfied the assumptions of SEM is
delineated.

Determination of Adequate Sample Size

SEM requires several assumptions to be met for the results to be interpretable.
These assumptions include adequate sample size, lack of collinearity, and normality of
the distributions (Kline, 2005). Two hundred fifty-six participants returned completed
packets, but only 213 were completed in entirety.

Determination of Multicollinearity

Multicollinearity occurs when different instruments intended to measure different
constructs end up measuring the same construct and are highly correlated (Kline, 2005). In SEM, the observed indicator variables should not exhibit multicollinearity, which can
be assessed through the variance inflation factor (VIF). For this study, the VIF indicates
whether or not an indicator variable has a strong linear relationship with other indicators.
According to Field (2005), if the largest VIF is greater than 10 then there is concern about multicollinearity. For this study, none of the indicators had values greater than 10, which suggests that multicollinearity was not a concern.

**Determination of Normality**

Similar to one of the assumptions in regression, another consideration with using SEM is normality of the data. Determination of normality included: (a) univariate normality and (b) multivariate normality. It is important to look at the skew of the distribution around the mean, along with the distribution through the tails, also known at the kurtosis. Scores of skewness greater than 3.0 suggest asymmetrical data. Scores of kurtosis above 10.0 suggest the presence of non-normal data (Field, 2005). In the current study, all of the demographic variables had skewness less than 3.0 except one. Time Since Diagnosis was greater than 3.0 (3.90), which suggests the presence of non-normal data. A majority of the demographic variables had normal kurotosis, with the exception of Time Since Diagnosis (21.56), again suggesting that this variable was not normally distributed. Mardia (1970) defined a measure of multivariate kurtosis and derived its asymptotic distribution for samples from a multivariate normal population. A significant p-value suggests the presence of abnormal data. In this study, the p-value was <.001, which suggests that the data do not meet the assumption of multivariate normality. When the assumption of multivariate normality is not met, especially in smaller sample sizes, estimation bias becomes a problem. This means the path estimates may not be accurate. The standard errors for these estimates may also be negatively influenced. Unfortunately,
there is no way to measure how much estimation bias there is in a given model (Kline, 2005).

**Models**

The original mediation model (Figure 1) included four observed variables (Sex, Age, Time Since Diagnosis, Sex-Linked Cancer) to assess the impact of demographics on the latent variables. The observed variables used to estimate the latent variable of religious coping were the Systems of Beliefs Inventory (subscale I and II) and the RCOPE (Positive Religious Coping subscale). The observed variables used to estimate the latent variable of QOL were all of the subscales on the QOL-CS (i.e., Physical Well-Being, Psychological Well-Being, Social Well-Being, Spiritual Well-Being), and the subscales of the FACT-G (i.e., Physical Well-Being, Social Well-Being, Emotional Well-Being, Functional Well-Being).

The moderation model (Figure 2) was similar, but included interaction terms. To create the interaction terms for the moderation model, four variables (Time Since Diagnosis, Age, Sex, and Sex-Linked Cancer) were centered by making them z-scores. After being centered, a value for religious coping was created by conducting maximum likelihood factor analysis, which produced regression factor scores. These factor scores were then multiplied by the centered value for the four variables and formed interaction terms. Therefore, the observed interaction variables were Religious Coping by Sex-Linked Cancer, Religious Coping by Time Since Diagnosis, Religious Coping by Age, and Religious Coping by Sex. As in the mediation model, observed variables used to estimate the latent variable of QOL were all of the subscales on the QOL-CS (i.e.,
Physical Well-Being, Psychological Well-Being, Social Well-Being, Spiritual Well-Being), and the subscales of the FACT-G (i.e., Physical Well-Being, Social Well-Being, Emotional Well-Being, Functional Well-Being).

**Modifications to planned data analyses**

*Cancer Type.* Using maximum likelihood estimation, initial attempts to run the model were largely unsuccessful. In the proposed model, the researcher hoped to include Cancer Type in the model. Participants were instructed to write-in the type of cancer with which they were diagnosed on the demographic questionnaire. Answers varied in specificity. There were a total of 47 different types of cancers reported. As such, the researcher created a dummy coded variable for cancer type because it was a nominal variable. Five dichotomous coded variables were created to represent categories of cancer. These were female cancers (n = 127), prostate cancer (n = 23), colorectal cancer (n = 22), lymphomas (n = 17), and other cancers (n = 24). Female cancers served as the reference group and it was used to make comparisons with the other groups. This was problematic because of the disproportionately high number of female cancers and relative low occurrence of other types of cancers. This resulted in the dummy variable having very little variance. In the beginning iterations of the model, there were several negative eigenvalues and it failed to converge (i.e., find a solution). Negative eigenvalues are typically indicative of small sample size. It could be the case that the sample was too small to accurately represent the relationships being explored. These negative eigenvalues made it clear that narrowing the categories to five categories would not work because the model could not find a solution. In an attempt to narrow the categories even
further, the researcher created two categories: sex-linked cancers (e.g., breast, prostate) and non-sex-linked cancers (e.g., lung, lymphoma). The model was able to find a solution when this variable was included in the model. As such, Cancer Type was described as sex-linked v. non-sex-linked. For individuals who listed more than one type of cancer, the first type of cancer listed was the one used for categorization.

*Cancer Stage.* Another problematic variable was Stage of Cancer. A large number of participants (n = 76; 35.7%) indicated that they did not know or remember their stage, or they left the question blank. In an effort to increase the overall sample size and include stage of cancer in the models, it was decided to use the data from the tumor registry, rather than the self-reported participant data. This allowed for the inclusion of stage as another medical variable in the model. Results indicated that in the mediation model, neither the relationship between stage of cancer and QOL (β = .147), nor the relationship between stage of cancer and religious coping (β = .071) were statistically significant. Likewise, stage of cancer did not reach statistical significance with QOL (β = .159) or with the interaction of religious coping and cancer stage (β = .110) in the moderation model. Thus, the decision was made to exclude stage of cancer from the model, so that the 76 participants did not have to be deleted from the analyses.

*Religious Coping.* Another problem with the first attempts to run the model was the poor loading for negative religious coping on the latent variable religious coping. Put simply, the factor loading can be thought of as the Pearson correlation between a factor (e.g., an observed or measured variable) and the latent variable (Field, 2005). A latent variable is a variable consisting of various combinations of the observed (measured)
variables and loadings that indicate to what extent the latent variable consists of or “is made up of” various observed variables. Good factor loadings indicate that there is a reasonable correlation between the observed variables and the latent variable, while a poor factor loading indicates there is not a strong correlation or the latent variable is not “made up of” much of the observed variables. In this study, the other observed variables for religious coping had better standardized loadings (RCOPE, Positive Religious Coping subscale = .640, Systems of Belief Inventory, Social Support subscale = .832, Systems of Belief Inventory, Belief Practices subscale = .932) compared to the standardized loading of negative religious coping (RCOPE, Negative Religious Coping subscale = .15). It is unclear why this scale had such a poor loading. It could be due to the types of questions asked for the negative religious coping scale (“Wondered whether God was punishing me because of my lack of faith” or “Wondered what I did for God to punish me”). Perhaps respondents were uncomfortable reporting these feelings and underreported them. It may also be that those who completed the questionnaire were less likely to experience these types of feelings. While it made theoretical sense to include negative religious coping in the model, the data suggested that it would be detrimental to the model. Thus, the decision was made to remove negative religious coping from the model to have a better fitting model. The model is still relevant without including negative religious coping, because the purpose of the project is to investigate the relationships between religious coping and QOL. With this modification, the model assessed how a mixed group (breast, cervical, prostate, lung, lymphoma) of cancer survivors do or do not use positive religious coping and its influence on QOL.
Structural Equation Models

When exploring goodness of fit for SEM, researchers must be mindful of the cut-off and recommended limits for the indices. According to Kline (2005), a chi-square test with a non-significant \( p \) value is suggestive of good fit. While the chi-square test is the most regularly reported fit statistic, it is very influenced by sample size, and must be viewed within the context of other fit indices. The chi-square test explores the null hypothesis that the covariance matrix estimated from the model reproduces the observed covariance matrix. The CFI and TLI should all be above .90 to have good fit (Kline, 2005). Conversely, RMSEA is a “badness of fit” index that uses a built-in correction for complex models, which is ideal for the current complex structural model. Tradition indicates that a RMSEA of less than or equal to .05 suggests good fit and a RMSEA of greater than or equal to .10 indicates poor fit, while anything in between suggests satisfactory fit (Kline, 2005).

Following is a discussion of the structural models for mediation and moderation. The discussion begins with the mediation model shown in Figure 4 and continues with the moderation model shown in Figure 5.

*Mediation Model.* Figure 4 presents the SEM results for the mediating model using standardized regression coefficients. Table 4 provides the results for the goodness of fit indices for both models. First, the chi-square was statistically significant (\( \chi^2 = 407.20, \text{df} = 79, p < .001 \)) indicating poor fit. In addition, the CFI of .776 and TLI of .702 failed to be above the recommended cut-off of .90. Lastly, the RMSEA of .140 (\( p < .05 \))
was not below the recommended cut-off of .05. Thus, the fit indices for the mediating model indicate that the model had poor fit with the data.

*Figure 4.* Mediation model.

Table 4

<table>
<thead>
<tr>
<th>Fit Index</th>
<th>Mediating Model df = 79</th>
<th>Moderating Model df = 139</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2$</td>
<td>407.20</td>
<td>637.04</td>
</tr>
<tr>
<td>CFI</td>
<td>.776</td>
<td>.704</td>
</tr>
<tr>
<td>TLI</td>
<td>.702</td>
<td>.636</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.140</td>
<td>.130</td>
</tr>
<tr>
<td>AIC</td>
<td>489.20</td>
<td>1892.94</td>
</tr>
<tr>
<td>BIC</td>
<td>627.01</td>
<td>1956.81</td>
</tr>
</tbody>
</table>


In order to gain an understanding of the relationships among the variables (latent and observed) in the models, path coefficients were examined. Sex (male = 1; female = 0) significantly predicted religious coping ($\beta = -.289, p < .05$). Age also significantly predicted religious coping ($\beta = .009, p < .05$), and of most importance to the hypothesized relationship in the present study, religious coping significantly predicted QOL ($\beta = .603, p < .05$).

**Moderation Model.** Figure 5 presents the SEM results for the moderating model using standardized path coefficients. The chi-square was statistically significant ($\chi^2 = 637.04, df = 139, p < .001$), indicating poor fit. The CFI of .704 and TLI of .636 failed to be above the recommended cut-off of .90, and the RMSEA was .130 ($p < .05$), which failed to be below the recommended cut-off of .05. Thus, the fit indices for the moderating model signify that the model had poor fit with the data.
Figure 5. Moderation model.

Note. PRCOPE = RCOPE Positive Religious Coping; NRCOPE = RCOPE Negative Religious Coping; SBI_bp = Systems of Belief Inventory Belief Practices; SBI_ss = Systems of Belief Inventory Social Support; FunctWell = FACT-G Functional Well-Being; EmotWell = FACT-G Emotional Well-Being; SocWell = FACT-G Social/Family Well-Being; PhysWell = FACT-G Physical Well-Being; QOL_PhysWell = QOL-CS Physical Well-Being; QOL_PsyWell = QOL-CS Psychological Well-Being; QOL_SocWell = QOL-CS Social Concerns; QOL_SpiritWell = QOL-CS Spiritual Well-Being
Only one path in this model was statistically significant. Religious coping significantly predicted QOL ($\beta = .515, p < .05$). Unlike the mediating model, the moderating model found no significant paths between religious coping and age or religious coping and sex. Moderation did not occur because there was not a significant interaction between QOL and any demographic variables or interaction variables.

As noted earlier, the AIC and BIC for each model can be compared to ascertain which model provided relatively better fit to the data. The AIC and BIC represent the amount of variance in the model that is not accounted for by the proposed paths with a penalty for model complexity. Smaller values indicate a better model fit (Kline, 2005). As shown in Table 4, both the AIC and BIC values indicated that the mediation model was the better fit. However, the mediation model failed to represent the relationships among the variables, had poor fit, and lacked parsimony.

Summary

According to the results of this study, neither model had good fit. The mediation model was a bit better than the moderation model based on AIC and BIC indices of goodness of fit. In the mediation model, sex significantly predicted religious coping ($\beta = -.289, p < .05$), as did age ($\beta = .009, p < .05$). Most noteworthy was the finding that religious coping significantly predicted QOL ($\beta = .603, p < .05$) in the mediation model. Unlike the mediation model, the moderation model found no significant paths between religious coping and age. Moderation did not occur because there was not an interaction between QOL and any demographic variables or interaction variables.
The strategies individuals use to cope with cancer can be important in attempts to better understand QOL (Lazarus & Folkman, 1984). The use of various types of religious coping has been associated with positive well-being (Levin & Chatters, 1998) and better QOL (Tarakeshwar et al., 2006). However, prior research has not clarified the nature of the association between religious coping and QOL (Zwingmann et al., 2006). Religious coping has been conceptualized as both a mediator and moderator in the relationship between religiousness and mental health (Fabricatore, Handal, Rubio, & Gilner, 2004).

While researchers have not identified the exact role of religious coping in dealing with chronic illnesses, they have acknowledged the importance of faith in the context of health problems (McCullough et al., 2000). In 2003, the National Institute of Health gathered several scholars to review the literature regarding the relationships between faith and emotional well-being in the context of health crises, and the future implications of this research. After reviewing the articles, they called for more evidence from methodically sound studies (Powell, Shahabi & Thoresen, 2003). They also highlighted important methodological and conceptual considerations. As such, they called for assessment of multiple aspects of religion and spirituality, instead of relying on a single-time question or simple frequency data (Hill & Pargament, 2003). They also outlined the need to better understand the mechanisms underlying the effects of religiousness (Powell
et al., 2003). Specifically, they called for more sophisticated designs (e.g., longitudinal) and advanced statistics (e.g., structural equation modeling) to delineate the direct and indirect relationships between faith and health (Powell et al., 2003).

To answer the call of Powell and colleagues (2003) to use more methodologically sound studies and advanced statistics, and in order to gain a clearer understanding of the complex relationship between religious coping and QOL in long-term survivors of cancer, this study tested a primary model which included religious coping as a mediating variable, and an alternative model that tested religious coping as a moderator. In prior literature, the complex relationships between disease-related and demographic variables, religious coping, and QOL have not been satisfactorily explored. Thus, this study included those disease-related and demographic variables previously identified as relevant to an understanding of the QOL of long-term cancer survivors. Multiple aspects of religion and spirituality were assessed and advanced statistics were used in an attempt to better understand the mechanisms underlying the effects of faith and religious coping (Powell et al., 2003).

**Statement of Support/Nonsupport for Hypotheses**

The first hypothesis was that religious coping would act as a mediator in the relationship between demographic variables and QOL. This hypothesis was supported. The results of this study suggest that religious coping significantly predicted QOL ($\beta = .603, p < .05$) within a mediation model. Additionally, sex ($\beta = -.289, p < .05$) and age ($\beta = .009, p < .05$) significantly predicted religious coping in the mediation model.
The second hypothesis was that religious coping would act as a moderator in the relationship between demographic variables and QOL. This hypothesis was not supported. In this study, the only statistically significant path in the moderation model was the path between religious coping and QOL ($\beta = .515$, $p < .05$). Moderation did not occur because there was not an interaction between QOL and any demographic variables. This significant path only explains that the degree an individual uses religious coping is related to QOL.

The third hypothesis was that there would be a relationship between the demographic variables and QOL. This hypothesis was not supported. There were no significant paths between any of the demographic variables and QOL in either model.

Overall, the models did not fit the data well. One possible reason for this outcome is the complexity of the models. The models included numerous probable paths which in theory should have been related, but had never been examined in a single model. Moreover, due to missing data, it is likely that the sample size was not large enough to adequately detect a relationship if one existed. It is also possible that the structure underlying the model is different from what was proposed in both models. Perhaps the theoretical assumptions did not align well with the real-world data. It is also possible that not all of the factors were measured well by the instruments used. Perhaps the measures were unable to assess subtle differences that may exist for long-terms survivors of cancer compared to those who are not long-term survivors of cancer.

As noted in Chapter 3, Stage of Cancer was excluded from the model. The model remains valid even without Stage of Cancer. As noted in Chapter 2, current research is
inconclusive about the influence of Stage of Cancer on QOL. There is some evidence that those with later stages have worse QOL (Kronblith, 1998) compared to those with earlier stages, but little work has been done to explore the influence of Stage of Cancer on long-term survivors of cancer. It would be beneficial to singularly investigate the relationships between Stage of Cancer and QOL in long-term survivors of cancer.

Integration with Prior Research

As noted earlier, little research has been done regarding the complex relationships among demographic variables, religious coping, and QOL. According to researchers, it is difficult to ascertain if religious coping contributes to outcomes such as QOL directly or through other pathways (Zwingmann et al., 2006). In fact, in a critique of the literature, Lavery and O’Hea (2010) stated, “To continue studying religious coping without clarifying mediating and moderating variables would be unsatisfactory at best” (p. 60).

Gender and Religious Coping. Researchers have found gender differences in religious coping. Women tend to be more religious in general and are more likely to engage in religious coping compared to men (McIllmurry et al., 2003). The results of this study indicated that gender significantly predicted religious coping ($\beta = -.289, p < .05$) in the mediation model, but not in the moderation model ($\beta = .149, p < .05$). These results indicate that women were more likely than men to report engaging in religious coping. This finding is consistent with the existing literature.

Gender and QOL in Survivors of Cancer. Researchers have also found gender differences in QOL. In a study of long-term survivors of cancer, males reported significantly higher QOL compared to women (Zebrack, Peterson, & Ganz, 2008).
However, women were more likely to report greater positive effects of cancer. In this study, no relationship was found between gender and QOL in either model. It is unclear why no relationships were found. It could be due to the disproportionate number of women in the study, or to the relatively small sample size, or to some other factor such as socio-economic status.

*Age and Religious Coping.* Researchers have found that older individuals rely on religious coping more frequently than younger adults (Derks et al., 2005). In this study, age significantly predicted religious coping ($\beta = .009, p < .05$) in the mediation model, but not in the moderation model ($\beta = -.050, p < .05$). These results indicate that when compared to younger adults, older adults’ QOL may be enhanced by the use of religious coping.

*Age and QOL in Survivors of Cancer.* Much research indicates that older individuals adapt better and report less psychological distress than their younger counterparts when diagnosed with cancer (Parker et al., 2003). Researchers postulate that age influences adjustment to cancer because of age-normative expectation regarding the increased likelihood of developing cancer as people age. In fact, researchers have found efficacy for coping with cancer to increase as individuals grow older (Merluzzi & Martinez-Sanchez, 1997). In a study of long-term survivors of cancer, Zebrack and colleagues (2008) found younger participants were more likely to report better physical health and positive impacts of cancer, but reported worse mental health compared to older participants. Older participants were more likely to report better overall mental health and QOL. In this study, no relationship was found between age and QOL in either
model. It is uncertain why no relationship was found. It could be due to the small sample size and restricted age range of the participants involved.

**Time Since Diagnosis and Religious Coping.** Little research has been done regarding time since diagnosis and religious coping. However, researchers have found that the significance of religious coping may change with progression of cancer. In a study of women, researchers found that 50% of women admitted to becoming more religious after diagnosis (Roberts, Brown, Elkins, & Larson, 1997). In this study, no relationship was found between time since diagnosis and religious coping in either model. This could be due to the small sample size or the amount of variance in the time since diagnosis category.

**Time Since Diagnosis and QOL in Survivors of Cancer.** Results regarding time since diagnosis and QOL have been mixed and less clear in the existing literature. Some researchers have found QOL to increase as time since diagnosis increases (Vinokur et al., 1989; Wellisch et al., 1996; Yang et al., 2008), while others have found no relationship between time since diagnosis and QOL (Merluzzi & Martinez-Sanchez, 1997; Schnoll et al., 2002). In this study, no relationship was found between time since diagnosis and QOL in either model. As with time since diagnosis and religious coping, this could be due to the large amount of variance in the time since diagnosis category and a relatively small sample size.

**Cancer Type and Religious Coping.** In existing studies, individuals with different types of cancer often spontaneously reported religious faith to be important in dealing with cancer (Flannelly, Flannelly, & Weaver, 2002). In this study, no relationship was
found between sex-linked versus non-sexed-linked cancer and religious coping in either model. This could be due to the unusual mix of types of cancer, or the way they were categorized into sex-linked versus non-sex-linked cancers.

*Cancer Type and QOL in Survivors of Cancer.* As described in detail in Chapter 2, there is a significant amount of research regarding cancer type and QOL. Much of the work done regarding cancer type and QOL has been with survivors of breast cancer. In a study of long-term survivors of breast cancer, researchers compared depression and anxiety scores of the survivors with a control group of women without breast cancer (Saleeba, Weitzner, & Meyers, 1996). Long-term survivors had higher depression scores than the control participants. Additionally, 23% of the long-term survivors scored in the mildly to moderately anxious range, while only 10% of the control group scored in this range (Saleeba, Weitzner, & Meyers, 1996). Conversely, in another study, QOL was compared in a group of long-term survivors of breast cancer and a control group. After controlling for recurrence, results indicated that the breast cancer survivors who did not experience recurrence had similar QOL levels compared to the control group (Dorval, Maunell, Deschenes, Brisson, & Masses, 1998).

In the current study, no relationship was found between cancer type and QOL in either model. Again, this could be due to the unusual mix of types of cancer, or the way they were categorized into sex-linked versus non-sex-linked cancers.

*Religious Coping and QOL in Survivors of Cancer.* Because much of the focus of this project is on religious coping and QOL, the relationships between the two can be explored in detail in Chapter 2. Overall, positive religious coping is related to better
overall QOL, compared to the use of negative religious coping or no religious coping (McIllmurray et al., 2003; Soothill et al., 2002).

This sample was different and will add uniquely to the literature because it included long-term survivors of cancer and not individuals who are in the middle of treatment. The sample was similar to past studies as a majority of the sample reported being Caucasian, Christian, older, females who experienced a sex-linked cancer. The study was also unique because it assessed multiple aspects of religion and spirituality, instead of relying on a single-time question or simple frequency data (Hill & Pargament, 2003).

In the current study, there was a statistically significant relationship between religious coping and QOL in both the mediation model ($\beta = .603, p < .05$) and the moderation model ($\beta = .515, p < .05$). Therefore, religious coping acted as a mediator, but not a moderator in this study. Moderation did not occur because there was not an interaction between QOL and any demographic variables or interaction variables.

The primary model assessed the meditational effects of religious coping between demographic variables and QOL. Mediation outlines the causal pathways of relationships. A mediating variable is a variable in the middle; it serves as a mechanism through which one variable influences another. Mediator variables describe how or why such relationships occur (Baron & Kenny, 1986). In the mediation model, it is assumed that the demographic variables influence QOL, and some of the demographic variables may work through religious coping to influence QOL. It also tested the influence of demographic variables on QOL, and assumed QOL would change as religious coping
increased or decreased. The alternative model, the moderation model, assumed the influence of demographic variables on QOL changes as religious coping changes. A moderating variable is one that influences the direction or the strength of the relationship between two variables (Baron & Kenny, 1986). Moderating variables help answer questions regarding when, under what conditions, and for whom.

As such, the questions can be answered as a result of this study are regarding religious coping as a mediating variable between demographic variables and QOL. According to the results of this study, religious coping is a variable in the middle that serves as a mechanism through which demographic variables influence QOL. Religious coping can describe how and why the relationships between demographic variables and QOL occur. What is also known from this study is that religious coping cannot answers questions regarding when, under what conditions, and for whom.

This study was the first to examine the complex relationships between demographic variables, disease-related variables, religious coping, and QOL. Given the complexity of these relationships, and possibly the lack of prior studies investigating similar models, the mediating and moderating models as proposed were not supported by the data. The data from the current study failed to support the mediating and moderating models as proposed. However, some significant paths were identified that were consistent with and supported prior research.

Limitations of the Study

Threats to Internal Validity
The methodology of the current study suggests two threats to internal validity to consider. The first is selection bias. Those who completed the long battery of questionnaires may differ significantly from those who chose not to complete the questionnaires. It is possible those who returned the surveys were physically healthier, more motivated, and more psychologically stable than those who did not respond. Moreover, those who were more religious in general may have been more motivated to complete and return the surveys compared to those who do not consider religion to be important in their lives. This self-selection sampling bias is a threat to internal validity and should be considered when interpreting the results.

An additional threat to internal validity comes from relevant variables not adequately measured in this study. Such variables may lead to confounding results. This principle states that the results may not be due the results as measured, but instead to a third variable that was not adequately controlled (Heppner et al., 2008). Some possible confounding variables could be socioeconomic status (SES), ethnicity, or a more recent experience with cancer. Research regarding cancer, SES, and race suggests that they may play a role in the development and mortality from cancer. Specifically, those from a low SES are more at risk for the development of cancer. Moreover, while the incidence rates for major cancers have decreased in the general population, declines in mortality have been slower in minority populations when compared to Caucasians (Glanz, Croyle, Chollette, & Pinn, 2003). Minority populations tend to have advanced stages of the disease at the time of diagnosis (Mark & Sherman, 2003), and African American are more likely to have more severe types of tumors (i.e., Type II; Schimp et al., 2006).
compared to Caucasians. In a study regarding cancer and coping, coping strategies relied on by African American women with cancer were prayer, avoiding negative people, developing a positive attitude, having a will to live, and receiving support from family, friends, and support groups (Henderson et al., 2003). Perhaps ethnicity and SES are third variables that influence both severity of cancer, differences in coping, and QOL that could not be adequately explored because of the lack of diversity in the sample.

**Imprecision of Measures**

Most of the instruments used had internal consistency comparable to the levels reported in research. While the internal consistency of these measures was acceptable, the data gathered were not perfect. Due to the self-report nature of these surveys, it is uncertain if participants were honest, fully engaged, and motivated when completing the surveys. Self-report surveys are neither able to ascertain subtle differences in participants, nor are they able to quantify caveats or explanations that participants may have when completing the surveys (Heppner et al., 2008). In fact, several participants wrote explanations beside questions or on the back of their survey packets. This is all valuable data that cannot be explained or explored in this study. This highlights one of the major disadvantages of conducting survey research – the inability to distinguish between individual differences, as the participant is forced to select an answer (Heppner et al., 2008).

As noted earlier, there was difficulty using the Negative Religious Coping subscale of the RCOPE. The first attempts to run the model were largely unsuccessfully due to the poor loading, or low correlation, for the Negative Religious Coping subscale
on the latent variable Religious Coping. The other observed variables for religious coping had better standardized loadings (RCOPE, Positive Religious Coping subscale = .640, Systems of Belief Inventory, Social Support subscale = .832, Systems of Belief Inventory, Belief Practices subscale = .932) compared to the standardized loading of Negative Religious Coping (RCOPE, Negative Religious Coping subscale = .15). While it made theoretical sense to include negative religious coping in the model, the data suggested that it would be detrimental to the model. The decision was made to remove negative religious coping from the model to have a better fitting model. The model was still relevant without including negative religious coping, because the purpose of the project is to investigate the relationships between religious coping and QOL. With this modification, the model assessed the way individuals do or do not use positive religious coping and its influence on QOL. Additionally, the data suggested that Spiritual Well-Being subscale on the QOL-CS appeared to be more related to the latent variable of Religious Coping than to the latent variable of QOL. The reason this scale had a poor loading on QOL is uncertain. More research should be done to understand if there was too much overlap between this scale and the scales measuring religious coping.

Four additional limitations need to be considered when interpreting the results. These limitations involve the use of self-report data, study design, missing data, and sampling bias. First, as noted earlier, results and conclusions are based on self-report data of the participants. This assumes that the individual was honest, thorough, and open when completing the questionnaires. Like with all self-report data, the conclusions that can be drawn are limited by the perceptions and interpretations of the participant. Participants
were asked to reflect on their experience of cancer and to make connections with that experience to the present day. This could have led to poor recall, further complicating how the individual was to report his or her experiences.

A second limitation is the cross-sectional research design. Ideally, the researcher would have been able to follow each individual from his or her initial diagnosis past the completion of treatment; however, given limited resources and time a longitudinal design was not feasible. There has been much criticism recently regarding using cross-sectional research designs with participants who are in the middle of cancer treatment (Powell et al., 2003). Because a cross-sectional design was unavoidable, participants who are survivors of cancer were able provide a clearer picture of what QOL looks like after treatment.

A third limitation is missing data. Because the packet of surveys was extremely long, many participants returned incomplete surveys. It is unknown whether this was due to fatigue, confusion, or some other factor. This calls into question the validity and reliability of the responses provided. The researcher decided to decrease threats to validity by eliminating participant responses with any missing data that was pertinent to the SEM. Unfortunately, this had an undesirable effect on the analyses by decreasing the sample size. Because many of the variables were eliminated due to missing data, the study was not as comprehensive as preferred. Despite problems with missing data, the study rendered several significant findings.

A consequence of these limitations is limited generalizability, or external validity, of the findings. The study used a sample of long-term survivors of cancer. As such, many
of the individuals were initially diagnosed with early stages (i.e., 0, I, II) of treatable types of cancer (e.g., breast, prostate), more than five years ago. Individuals in the study had a mean age of 67 (SD = 11) with a majority of participants being Caucasian (96.2%), female (75.1%), married (67.6%), and Christian (93.9%). The largest category of cancer type was female (e.g., breast, cervical; 59.6%). As such, these results may not be generalizable to individuals who are not Caucasian, Christian, married, older adults with a history of female cancers.

Research Implications

The field of cancer survivorship is still in its infancy. While much has been accomplished, much more must be done. Feuerstein (2007) proposed that as individuals continue to live longer and fuller lives after surviving cancer, old concepts of adaptation and adjustment are no longer appropriate. He called for newer and innovative models of cancer survivorship to be created, along with newer up-to-date concepts, measures, and interventions that may add to the QOL of survivors of cancer. He also called for an interdisciplinary partnership of physicians, epidemiologists, researchers, nutritionists, health psychologists, and others to work together to move toward a better understanding of survivorship, treatment effects, molecular processes, and the like (Feuerstein, 2007). Health psychology has the unique and important role of understanding the psychosocial and existential aspects of survivorship (e.g., religious coping) that influence overall QOL. As such, future researchers must continue to explore the influence of psychosocial factors in long-term survivorship.
Within the field of long-term survivorship, there needs to be more theoretically guided research. A few theoretical and conceptual models do exist. For example, Lent (2007) developed a theoretical model of emotional well-being for survivors of cancer, but few researchers have used this model to guide research. Another model, the Biobehavioral Model of Cancer Stress and Disease Course (Andersen, Kiecolt-Glaser, & Glaser, 1994) was developed to capture how individuals adjust to the stresses of cancer. The model also proposed the mechanisms through which behavioral (e.g., compliance and health behaviors) and psychological (e.g., stress and QOL) responses may influence biological processes and health outcomes (Andersen, Kiecolt-Glaser, & Glaser, 1994). Andersen has successfully used the Biobehavioral Model of Cancer Stress and Disease Course to guide a career of research (e.g., Andersen et al., 2007; Andersen et al., 2004; Andersen et al., 1998). For example, using this conceptual model, Andersen and colleagues (2008) conducted a randomized clinical trial in which individuals with breast cancer were assigned to a psychological intervention plus assessment group or an assessment only group. Results indicated that participants in the psychological intervention plus assessment group had a reduced risk for breast cancer recurrence and death compared with those who did not receive the psychological intervention (Andersen et al., 2008). While Andersen has successfully applied this model to research, a majority of research on survivorship has been guided by pragmatic views of which variables to study, rather than broader theoretical conceptualizations (e.g., Lent, Andersen). Thus, developing conceptual models of survivorship could help researchers integrate numerous empirical and theoretical linkages. If such models were developed, researchers would
have conceptual frameworks to guide research. This would most likely lead to a more coherent understanding of long-term survivorship, as researchers could modify conceptual and theoretical constructs based on empirical findings.

Future researchers may consider developing more technologically-advanced modes of gathering data. As noted earlier, one of the major limitations of this study was missing data. To avoid this problem in the future, researchers could use a computer-based program in which participants simply touch a screen to select an answer. This could possibly decrease confusion and make the process less cumbersome. The computer system could also remind participants when inadvertently skipping a question, decreasing the likelihood of having missing data. To gather richer data, researchers could allow participants to elaborate on the answers they provide. Encouraging qualitative answers would allow the participants to explain answers or give more detail when necessary.

New research will not only add to the repertoire of clinical interventions, but may also deconstruct old models of survivorship that may no longer be applicable.

Clinical Implications

Cancer Care Professionals

Religious coping may assist individuals in dealing with a diagnosis of cancer and in dealing with the aftermath of cancer and its treatments. In fact, in this study religious coping mediated the relationship between demographic variables and QOL. Other researchers have found spirituality and religion to be related to better adjustment to survivorship. For example, Yanez and colleagues (2009) found faith to be uniquely
related to post-traumatic growth, while meaning and peace were related to favorable adjustment during cancer survivorship.

Whether or not spiritual concerns of those with cancer should be addressed within the medical environment has gained increasing attention (Sloan et al., 1999). Past studies have found that most individuals are comfortable discussing these beliefs with their doctors (Kristeller, 2005), and want their physicians to address spiritual issues (King & Bushwick, 1994). In a study of QOL near death, Balboni and colleagues (2010) found that support of terminally ill individuals’ spiritual needs by the medical team was associated with greater utilization of hospice and less aggressive end of life care. These researchers found spiritual care to be associated with better QOL near death (Balboni et al., 2010). Despite research evidence, cancer care professionals’ attitudes regarding the importance of discussing religious and spiritual issues determines whether or not such issues are addressed (Green, Eriksen, & Schor, 1988). Researchers have found that physicians are reluctant to engage in discussions that are religious or spiritual in nature for multiple reasons. Some of these include time concerns, role concerns, lack of skills, fear of causing distress to the patient, and lack of congruence between physician and patient beliefs (Kristeller et al., 2002).

While the aforementioned concerns hinder professionals’ willingness to address such issues, a lack of communication and diffusion of responsibility also influences whether or not such issues are addressed. Helping individuals who have religious and spiritual concerns is difficult when there is little communication between cancer care professionals regarding whose responsibility it is to broach such topics (Kristeller,
Sheedy-Zumbrun, & Schilling, 1999). In a study of oncologists and oncology nurses, a large percentage of oncologists (37.5%) and nurses (47.5%) identified themselves as primarily responsible for addressing spiritual distress in the medical setting, yet they gave these issues low priority when compared to other demands (Kristeller et al., 1999). Over 85% of both oncologists and nurses felt that chaplains were best equipped to work with patients who are experiencing spiritual distress; however, only 64.2% of nurses and 40.3% of oncologists reported regular consultation with a chaplain (Kristeller et al., 1999).

Research indicates that it is important for cancer care professionals to address religious and spiritual concerns in those with cancer and survivors of cancer. If cancer care professionals can overcome their reluctance to address religious and spiritual concerns of patients and establish better communication regarding these issues between cancer care workers, patients with religious or spiritual concerns will likely benefit. Kristeller and colleagues (2005) proposed, “Raising spiritual concerns with patients can be done sensitively and effectively within constraints of usual practice. Furthermore, doing so improves not only the physician-patient relationship, but appears beneficial to patients, particularly for those who may be experiencing lower levels of spiritual well-being at the time” (p. 344). As the results of the current study indicate, addressing religious coping may have important implications for QOL in long-term survivors of cancer, and will likely be beneficial to the individual.

_Psychologists_
The results of this study have implications for psychologists who work with long-term survivors of cancer. Religious coping is an important variable to explore within the clinical setting as it mediates QOL. Because psychologists tend to be less religious compared to the general population (Shafranske & Gorsuch, 1984), it may be easy for clinicians to underestimate the role religion can play in the coping process. Clients’ religious beliefs should be considered a multicultural aspect of who they are and what they bring to the therapeutic setting. To completely disregard clients’ religious beliefs and how they use religion to cope is to disregard a part of who they are and potentially a major source of effective coping strategies.

A psychologist need not be a theologian to broach the topic of religious coping with clients. Based on clinical experience, it is best to first assess if the person is religious or not. If so, the next logical step is to ask how he or she uses religion for coping. This knowledge may prove helpful when discussing coping mechanisms for dealing with difficult situations in life, related to cancer or otherwise. Next, when brainstorming ways of dealing with situations, the psychologist may gently probe the client’s religious beliefs by asking questions like, “What would your faith say about that cognitive distortion?”, or “Do your feelings about yourself align with the feelings your higher power has for you?” Asking these types of questions does not require the clinician to be an expert in religion; these types of questions do, however, give the client an opportunity to use and engage religion in the coping process.

As the number of cancer survivors increases, it is important for clinicians to understand the unique needs of cancer survivors. As noted earlier, the cancer survivor
may experience persistent pain, fatigue, problems with working memory, and fear of recurrence (Feuerstein, 2007). It is up to clinicians and researchers alike to continue to explore the best psychotherapeutic treatment modalities for cancer survivors.

Summary and Conclusions

Future research must continue to study the relationships between demographic variables, disease-related variables, religious coping, and QOL. While this study identified religious coping as a mediator, more work must be done to determine the pathways through which religious coping operates.

As noted earlier, the models in this study were not a good fit with the data. More research needs to be done to determine what data should look like when conducting this type of research. While this study answered the call from Powell and colleagues (2003) to use more advanced statistics, perhaps applying SEM to this population is premature. Maybe more research must be done with survivors before such sophisticated studies and advanced statistics can be conducted successfully. Because survivorship is a relatively new phenomenon, perhaps it would be helpful to better understand the population and develop scales to assess all of these variables before applying it to such a sophisticated model. In other words, while we have a good understanding of how these variables operate independently, more work must be done to figure out how these variables are experienced by survivors, and how they interact in complex ways. While these methodological problems may have been the reason the results, it is also possible that the models were simply not correct or were too complex.
Because this was not an exploratory project, no work was done to try and find the best fit for the model. Instead, the proposed models were tested and the results were reported. One thing that could have been done to find the best fit for the model has to do with examining the error terms. Correlated error terms would suggest the presence of another factor which would be a violation of the assumption of uncorrelated error terms. If covariance between error terms was high it would suggest they were not measuring different things; instead, it would suggest they were measuring the same thing. To make a more parsimonious model, a new variable could have been created that was the sum of those two. This would have eliminated one direct path to latent variable and possibly some co-variance between error terms, which would have increased degrees of freedom. This would have automatically improved the fit of the model. However, because this was not an exploratory project, this was not done.

More work must be done using sophisticated analyses (Powell et al., 2003) in both areas of survivorship and religious coping. It is understandable that researchers are still describing both variables by using frequency and count data, but the time has come for both to be taken more seriously. They should not be post hoc considerations. Instead, it is time for the field to advance its understanding of these constructs to better appreciate how long-term survivors of cancer do or do not use religious coping to maintain QOL. Moreover, better understanding these constructs may prove useful in the clinical setting.

More work must be done with diverse populations. This sample in this study was predominately Caucasian, Christian women. It is unlikely that these results are generalizable to individuals from other races or those from different religious
backgrounds. Moreover, few measures exist to assess religious coping from viewpoints outside of Christianity. Creation of such measures may aid researchers in better understanding how individuals from different religious backgrounds use their faith to help them cope.
References


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Appendix A
Institutional Review Board

DATE: June 17, 2009
TO: Sarah Jenkins, Masters
FROM: Ball State University IRB
RR: IRB protocol # 110019-2
TITLE: The Moderating and Mediating Effects of Religious Coping on Quality of Life in Long-Term Survivors of Cancer
SUBMISSION TYPE: Revision
ACTION: APPROVED
DECISION DATE: June 17, 2009
EXPIRATION DATE: June 16, 2010
REVIEW TYPE: Expedited Review

The Institutional Review Board has approved your Revision for the above protocol, effective June 17, 2009 through June 16, 2010. All research under this protocol must be conducted in accordance with the approved submission.

Editorial Notes:

1. The IRB would like to suggest that it might be helpful to your subjects to let them know on each mailing that they have the opportunity to opt out of the study at any time, not just on your informed consent document.

As a reminder, it is the responsibility of the P.I. and/or faculty sponsor to inform the IRB in a timely manner:

- when the project is completed,
- if the project is to be continued beyond the approved end date,
- if the project is to be modified,
- if the project encounters problems, or
- if the project is discontinued.

Any of the above notifications should be addressed in writing and submitted electronically to the IRB (http://www.bsu.edu/irb). Please reference the IRB protocol number given above in any communication to the IRB regarding this project. Be sure to allow sufficient time for review and approval of requests for modification or continuation. If you have questions, please contact Amy Boos at (765) 285-5034 or akboos@bsu.edu.
Appendix B
July 14, 2009

Steven Jenkins, M.A.P.
5421 N. Meadow Dr.
Indianapolis IN 46268

Dear Ms. Jenkins:

On July 14, 2009, the Ball Memorial Hospital Institutional Review Board Expedited Review Committee reviewed the above proposed study and voted to approve it as an expedited study under Category 7 for a period of twelve months.

IRB approval of this study is valid for 364 days from the original approval date. However, continuing review and re-approval is conducted by the IRB on an eleven-month basis. A continuing review report will be required to receive approval for another year. You will be notified when this report is due. If the study is completed before that time, please submit the results as soon as possible.

This approval is contingent upon you following the IRB's research guidelines and making any revisions as requested by the IRB prior to implementation.

It is the responsibility of the Principal Investigator to ensure that strict confidentiality of patient information, research data and any materials used to gather data is maintained by all persons associated with this research project. Violation of confidentiality will result in termination of the study and could lead to legal and/or civil penalties.

Sincerely,

Jeffrey C. Bird, MD
Chairperson, Institutional Review Board
Appendix C
Dear Patient,

I am writing to let you know about a research project sponsored by Ball State University and The Cancer Center at Ball Memorial Hospital. This study is being carried out by members of our Cancer Counseling Staff, under the supervision of Dr. Don Nicholas, with whom we work very closely.

The purpose of the study is to learn more about how religious coping influences quality of life. With your experience as an individual with cancer you have expert knowledge that can be of help to the researchers. Participation involves completing questionnaires that ask about you, your history of cancer, and your ways of using your religion to help you cope. It is estimated that it will take about one hour of your time. This study was carefully reviewed and approved by research committees at both Ball Memorial Hospital and Ball State University.

In a few days you will receive the questionnaires. Please look for your envelope in the mail. It should arrive in 7-10 days. Inside there will be (a) an informed consent form, (b) a series of questionnaires, (c) clear instructions on how to fill them out, and (d) a self-addressed envelope for you to use in returning the completed questionnaires. Please fill out the questionnaires and return them as soon as possible. If you are not interested in participating in this study, contact Sarah Jenkins by emailing her at sjenkins@bsu.edu, or by leaving a message at Dr. Nicholas's voicemail at 765-285-8058.

Thank you for your time and consideration. It's only with the generous help of people like you that research like this can be successful.

Sincerely,

[Signature]

Dr. Anthony Tilmans
Radiation Oncology
The Cancer Center at Ball Memorial Hospital

P.S. A small token of appreciation will be included with the questionnaire as a way of saying thanks.

The Cancer Center at BMH

2401 W. University Ave.
Muncie, IN 47303-3499
Office: (765) 751-1449

www.accessbmh.org
Appendix D
Dear Patient,

About a week ago, you received a letter from your doctor at the Cancer Center about a study looking at religious coping and quality of life in persons who are survivors of cancer.

Enclosed in this mailing are the questionnaires and related forms to be completed. We estimate that it should take about one hour to fill them out and put them in the return envelope. Please note that one of these questionnaires asks about coping from the perspective of a person who is either Christian or Jewish.

We would like to thank you in advance for your voluntary participation. It’s only through the generous participation of people like you that research like this can be successful.

To begin the study, please see the EASY 3-STEP INSTRUCTIONS.

Sincerely,

[Signatures]

Sarah Jenkins, M.A.P.
Doctoral Fellow
Ball State University

Donald R. Nicholas, PhD
Professor, Counseling Psychology
Ball State University

P.S. Enclosed is a small token of our appreciation for your participation in this study.
Appendix E
EASY 3-STEP INSTRUCTIONS

**STEP 1:** Read and sign the participant Informed Consent form

(Return one copy to us, and keep the other)

**STEP 2:** Answer all the questions on all the questionnaires

(Notice there are questions on both sides of the page)

**STEP 3:** Return ALL THE PAGES THAT ARE BLUE in the envelope provided:

- Signed Participant Informed Consent form
- Signed “Authorization for the Release of Health Information for Research Purposes” form
- General Information Questionnaire
- All four research questionnaires

Thanks again for your participation!
The Cancer Center at Ball Memorial Hospital

The Moderating and Mediating Effects of Religious Coping on Quality of Life in Long-Term Survivors of Cancer

(Please initial at the bottom of page 1 and sign page 2; keep this copy for your records)

Participant Informed Consent

Study Title: The Moderating and Mediating Effects of Religious Coping on Quality of Life in Long-Term Survivors of Cancer

The purpose of this study is to examine the many factors that influence how survivors of cancer cope. If you decide to participate, you will be asked to complete a series of questionnaires regarding the way you use religion to cope and your quality of life. After you have completed all of the questionnaires you will be asked to return them to The Cancer Center at Ball Memorial Hospital, in a self-addressed, stamped envelope. It will take you about one hour to complete all the questionnaires. We hope to receive 250 completed questionnaires.

All of your answers will remain confidential and will not be available to anyone, other than those persons involved in this study. The foreseeable risks or ill effects from participating are minimal. Because of the personal nature of a few questions, some people may become a little uncomfortable when answering them. If you experience any discomfort or distress, you can contact The Cancer Center at Ball Memorial Hospital (765-751-1449) and arrange to talk to one of the cancer counselors.

One benefit you may gain from participating in this study is a better understanding of those religious factors that influence coping in long-term survivors of cancer. You may also benefit from knowing that you are contributing to research designed to help individuals with cancer.

Your participation in this study is completely voluntary. You may decide to withdraw your participation at any time for any reason without penalty or prejudice. Your name will not be used in any presentation of the results of this study, and all answers will be treated with strict confidentiality. Your decision to participate, or not to participate, will in no way have any effect on the health services you receive at The Cancer Center at Ball Memorial Hospital. If you have any questions about this study and what is being asked of you, please contact either the principal investigator or the faculty advisor using the contact information at the bottom of this document.

Page 1: Initials: __________
For your rights as a research participant, the following person may be contacted:
Research Compliance, Sponsored Programs Office, Ball State University, Muncie, IN 47306 (765) 285-5034, or Gail Goethals, IRB Administrator, Ball Memorial Hospital, 2401 W. University Ave., Muncie, IN 47303, (765) 747-8458.

I, ____________________________, agree to participate in this research project entitled, The Moderating and Mediating Effects of Religious Coping on Quality of Life in Long-Term Survivors of Cancer. I have read the description of this project and give my consent to participate. I understand that I will receive a copy of the informed Consent Form to keep for future reference. I have also had an opportunity to ask any questions about my participation.

Participant’s Signature ____________________________ Date ____________

Principal Investigator:
Sarah Jenkins, M.A.P.
Cancer Counselor
The Cancer Center at Ball Memorial Hospital
Doctoral Fellow
Ball State University
(765) 285-8040

Faculty Supervisor:
Donald B. Nicholas, Ph.D
Associate Director of Psycho-Oncology
The Cancer Center at Ball Memorial Hospital
Professor of Counseling Psychology
Ball State University
(765) 285-8018

Page 2: Initials: ____________
Appendix G
AUTHORIZATION FOR THE RELEASE OF HEALTH INFORMATION FOR RESEARCH PURPOSES

Regulations called the “Privacy Rule” issued under the Health Insurance Portability and Accountability Act ("HIPAA") are designed to protect the privacy of your individually identifiable health information. The Privacy Rule requires your health care provider(s) to obtain your written authorization before they can use or disclose your protected health information for the purposes of the research study entitled “The Moderating and Mediating Effects of Religious Coping on Quality of Life in Long-Term Survivors of Cancer” (referred to as the “research study.”)

By signing this authorization, you are authorizing your treating physician(s), Ball Memorial Hospital, Inc. and other health care providers to disclose your protected health information to Sarah Jenkins and her research staff for purposes of the research study. You are also authorizing Sarah Jenkins and her research staff to disclose your protected health information to the parties listed below.

Protected Health Information to Be Used or Disclosed

- Age
- Date of initial cancer diagnosis
- Type of cancer
- Stage of cancer

Parties Who May Receive or Use Your Protected Health Information

- Ball Memorial Hospital’s Institutional Review Board
- Government representatives, when required by law

Your health care providers will use and disclose your protected health information only as permitted by you in this Authorization and as required or permitted by applicable state or federal law.

Right to Refuse to Sign This Authorization

You do not have to sign this Authorization. If you decide not to sign this Authorization, you will not be allowed to participate in the research study or receive any research related treatment that is provided through the study. However, your decision not to sign this Authorization will not affect any other treatment, payment, or enrollment in health plans or eligibility for benefits.

Right to Revise

1 Protected health information includes information that relates to your past, present or future physical or mental health or condition, the provision of health care to you, or the past, present or future payment for your health care that either identifies you or can be used to identify you.

APPROVED JUL 14 2009
You can change your mind and withdraw this Authorization at any time by sending a written notice to Samu Jenkins, Ball State University, Teachers College, 5th Floor, Muncie, IN 47306 to inform the researcher of your decision. If you withdraw this Authorization, your health care providers may only use and disclose your protected health information already collected for the research study. No further health information about you will be used or disclosed for this research study.

**Potential for Re-disclosure**

Once your protected health information is disclosed under this Authorization, it may be re-disclosed by the recipient and may no longer be protected by HIPAA or the Privacy Rule. Other confidentiality protections may or may not apply. For example, researchers in other studies could use your protected health information collected for this study without contacting you if they get approval from an Institutional Review Board (IRB) and agree to meet various other confidentiality requirements. Also, there are other laws that may require your protected health information to be disclosed for public purposes. Examples include disclosures for legally mandated reporting of abuse or neglect, judicial proceedings, health oversight activities and public health measures.

This Authorization expires upon completion of the study.

If you have not already received a copy of the Ball Memorial Hospital, Inc. Notice of Privacy Practices, you may request one. If you have any questions or concerns about your privacy rights, you should contact Ball Memorial Hospital’s Privacy Officer at (765) 747-3228 or privacyofficer@colmanail.org.

By signing below, you agree that you have had the opportunity to review and ask questions regarding this Authorization form and that it reflects your wishes. You will receive a copy of this form after it is signed.

**Signature of Individual or Legal Representative**

**Date**

**Printed Name of Individual or Legal Representative**

**Authority of Legal Representative**

**Address of Individual**

APPROVED JUL 14 2009
Appendix H
General Information Questionnaire

1. What is today’s date? _______________________________

2. What is your date of birth? _____ _____ _____
   _______ month day year
   _______ years

3. How old are you today? _______

4. What is your sex? (1)____male (0)_____female
   married

5. What is your marital status?
   ____ (0) single, never married
   ____ (1) married
   ____ (2) divorced
   ____ (3) widowed
   ____ (4) separated
   ____ (5) Other: ___________

6. What is your race/ethnicity?
   ____ (0) Caucasian/White
   ____ (1) African American/Black
   ____ (2) Latino/Latina/Hispanic
   ____ (3) Asian American
   ____ (4) Other, please specify: ______________

7. Do you consider yourself a Christian? (1) ___Yes (0) ____No

8. If so, what denomination: ______________________

9. How long have you been a Christian? _______

10. How many times a week do you attend religious activities? _______

11. How many times a month do you attend religious activities? _______

12. Did your involvement in religious activities change after you were diagnosed with cancer?
   ___ (0) No ___ (1) Yes

DIAGNOSIS AND TYPE OF CANCER

13. When were you first diagnosed with cancer? If uncertain, give approximate date.
   ____/____/____
   Month  Day  Year
14. With which type of cancer were you diagnosed (e.g., breast, prostate, lung)?

(Write type of cancer here)

15. Has a doctor ever told you the stage of your cancer? (1) ___ Yes (0) ____ No

16. If so, what was the stage?
   _____ stage 0
   _____ stage I
   _____ stage II
   _____ stage III
   _____ stage IV
   _____ no stage
   ____ Don’t know/remember

17. Was this your first diagnosis of any type of cancer (other than skin cancers)?
   _____(1)Yes  _____(0) No

   • If no, when were you previously diagnosed?
     _____/_____/_____
     Month  Day  Year
   • If no, with what type of cancer were you previously diagnosed?
     _____________________
     (Write type of cancer here)

CANCER TREATMENTS

18. Are you currently receiving treatment for you cancer? _____(1) Yes  _____(0) No

19. If yes, what type of treatment(s) are you currently receiving (check all apply)

   _____(1) surgery
   _____(2) chemotherapy
   _____(3) radiation therapy
   _____(4) hormonal therapy
   _____(5) other: ___________
       (specify type)

20. If no, what type of treatment(s) have you ever received? (check all that apply)

   _____(1) surgery
   _____(2) chemotherapy
   _____(3) radiation therapy
(4) hormonal therapy
(5) other: ___________
(specify type)

21. Has your doctor ever told you that you are “cancer free”? ___ (1) Yes ___ (0) No

22. What is the current status of your disease? ___ (0) Remission ___ (1) Recurrence ___ (2) Don’t Know

THANK YOU VERY MUCH. PLEASE CONTINUE TO COMPLETE THE NEXT QUESTIONNAIRE.
Appendix I
FACT-G (Version 4)

Below is a list of statements that other people with your illness have said are important. By circling one (1) number per line, please indicate how true each statement has been for you during the past 7 days:

### PHYSICAL WELL-BEING

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Not at all</th>
<th>A little bit</th>
<th>Somewhat</th>
<th>Quite a bit</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>op1</td>
<td>I have a lack of energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>op2</td>
<td>I have nausea</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>op3</td>
<td>Because of my physical condition, I have trouble meeting the needs of my family</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>op4</td>
<td>I have pain</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>op5</td>
<td>I am bothered by side effects of treatment</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>op6</td>
<td>I feel ill</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>op7</td>
<td>I am forced to spend time in bed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

### SOCIAL/FAMILY WELL-BEING

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Not at all</th>
<th>A little bit</th>
<th>Somewhat</th>
<th>Quite a bit</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>o1</td>
<td>I feel close to my friends</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>o2</td>
<td>I get emotional support from my family</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>o3</td>
<td>I get support from my friends</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>o4</td>
<td>My family has accepted my illness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>o5</td>
<td>I am satisfied with family communication about my illness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>o6</td>
<td>I feel close to my partner (or the person who is my main support)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Regardless of your current level of sexual activity, please answer the following questions. If you prefer not to answer it, please check this box □ and go to the next section.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Not at all</th>
<th>A little bit</th>
<th>Somewhat</th>
<th>Quite a bit</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>o7</td>
<td>I am satisfied with my sex life</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
FACT-G (Version 4)

By circling one (1) number per line, please indicate how true each statement has been for you during the past 7 days.

### EMOTIONAL WELL-BEING

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all</th>
<th>A little bit</th>
<th>Somewhat</th>
<th>Quite a bit</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel sad</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I am satisfied with how I am coping with my illness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I am losing hope in the fight against my illness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I feel nervous</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I worry about dying</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I worry that my condition will get worse</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

### FUNCTIONAL WELL-BEING

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all</th>
<th>A little bit</th>
<th>Somewhat</th>
<th>Quite a bit</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am able to work (include work at home)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>My work (include work at home) is fulfilling</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I am able to enjoy life</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I have accepted my illness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I am sleeping well</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I am enjoying the things I usually do for fun</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I am content with the quality of my life right now</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Appendix J
Quality of Life Scale/CANCER PATIENT/CANCER SURVIVOR

Directions: We are interested in knowing how your experience of having cancer affects your Quality of Life. Please answer all of the following questions based on your life at this time.

Please circle the number from 0 - 10 that best describe your experiences:

**Physical Well Being**

To what extent are the following a problem for you:

1. **Fatigue**
   
   no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

2. **Appetite changes**
   
   no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

3. **Aches or pain**
   
   no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

4. **Sleep changes**
   
   no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

5. **Constipation**
   
   no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

6. **Nausea**
   
   no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

7. **Menstrual changes or fertility**
   
   no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

8. **Rate your overall physical health**
   
   extremely poor 0 1 2 3 4 5 6 7 8 9 10 excellent
Psychological Well Being Items

9. How difficult is it for you to cope today as a result of your disease and treatment?
   not at all 0 1 2 3 4 5 6 7 8 9 10 very difficult
difficult

10. How good is your quality of life?
    extremely 0 1 2 3 4 5 6 7 8 9 10 excellent
    poor

11. How much happiness do you feel?
    none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

12. Do you feel like you are in control of things in your life?
    not at all 0 1 2 3 4 5 6 7 8 9 10 completely

13. How satisfying is your life?
    not at all 0 1 2 3 4 5 6 7 8 9 10 completely

14. How is your present ability to concentrate or to remember things?
    extremely 0 1 2 3 4 5 6 7 8 9 10 excellent
    poor

15. How useful do you feel?
    not at all 0 1 2 3 4 5 6 7 8 9 10 extremely

16. Has your illness or treatment caused changes in your appearance?
    not at all 0 1 2 3 4 5 6 7 8 9 10 extremely

17. Has your illness or treatment caused changes in your self concept (the way you see yourself)?
    not at all 0 1 2 3 4 5 6 7 8 9 10 extremely
How distressing were the following aspects of your illness and treatment?

18. Initial diagnosis

| not at all distressing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | very distressing |

19. Cancer treatments (i.e. chemotherapy, radiation, or surgery)

| not at all distressing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | very distressing |

20. Time since my treatment was completed

| not at all distressing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | very distressing |

21. How much anxiety do you have?

| none at all | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | a great deal |

22. How much depression do you have?

| none at all | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | a great deal |

To what extent are you fearful of:

23. Future diagnostic tests

| no fear | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | extreme fear |

24. A second cancer

| no fear | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | extreme fear |

25. Recurrence of your cancer

| no fear | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | extreme fear |

26. Spreading (metastasis) of your cancer

| no fear | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | extreme fear |
Social Concerns

27. How distressing has illness been for your family?
   not at all  0 1 2 3 4 5 6 7 8 9 10 a great deal

28. Is the amount of support you receive from others sufficient to meet your needs?
   not at all  0 1 2 3 4 5 6 7 8 9 10 a great deal

29. Is your continuing health care interfering with your personal relationships?
   not at all  0 1 2 3 4 5 6 7 8 9 10 a great deal

30. Is your sexuality impacted by your illness?
   not at all  0 1 2 3 4 5 6 7 8 9 10 a great deal

31. To what degree has your illness and treatment interfered with your employment?
   no problem  0 1 2 3 4 5 6 7 8 9 10 severe problem

32. To what degree has your illness and treatment interfered with your activities at home?
   no problem  0 1 2 3 4 5 6 7 8 9 10 severe problem

33. How much isolation do you feel is caused by your illness or treatment?
   none  0 1 2 3 4 5 6 7 8 9 10 a great deal

34. How much financial burden have you incurred as a result of your illness and treatment?
   none  0 1 2 3 4 5 6 7 8 9 10 a great deal
Spiritual Well Being

35. How important to you is your participation in religious activities such as praying, going to church?

not at all important 0 1 2 3 4 5 6 7 8 9 10 very important

36. How important to you are other spiritual activities such as meditation?

not at all important 0 1 2 3 4 5 6 7 8 9 10 very important

37. How much has your spiritual life changed as a result of cancer diagnosis?

less important 0 1 2 3 4 5 6 7 8 9 10 more important

38. How much uncertainty do you feel about your future?

not at all uncertain 0 1 2 3 4 5 6 7 8 9 10 very uncertain

39. To what extent has your illness made positive changes in your life?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

40. Do you sense a purpose/mission for your life or a reason for being alive?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

41. How hopeful do you feel?

not at all hopeful 0 1 2 3 4 5 6 7 8 9 10 very hopeful
Appendix K
The following items deal with ways you coped with the experience of cancer. There are many ways to try to deal with problems. These items ask what you did to cope with cancer. Obviously different people deal with things in different ways, but we are interested in how you tried to deal with it. Each item says something about a particular way of coping. We want to know to what extent you did what the item says. How much or how frequently. Don’t answer on the basis of what worked or not-just whether or not you did it. Use these response choices. Try to rate each item separately in your mind from the others. Make you answers as true FOR YOU as you can. Circle the answer that best applies to you.

1. Plead with God to make everything work out

2. Tried to deal with the situation on my own without God’s help

3. Worked together with God to relieve my worries

4. Wondered whether God was punishing me because of my lack of faith

5. Felt that God has limits

6. Felt that God was working right along with me

7. Didn’t try much of anything; simply expected God to take control

1 – Not at all 0
2 – Somewhat 1
3 – Quite a bit 2
4 – A great deal 3
8. Knew that I couldn’t handle the situation, so I just expected God to handle it for me…………………………………………………………………………………………………………………………

9. Prayed for a miracle………………………………………………………………….. 0 1 2 3

10. Worked together with God as partners………………………………………… 0 1 2 3

11. Saw my situation as part of God’s plan………………………………………… 0 1 2 3

12. Decided that God was punishing me for my sins…………………………….. 0 1 2 3

13. Questioned the power of God…………………………………………………… 0 1 2 3

14. Prayed to get my mind off of my problems……………………………………. 0 1 2 3

15. Tried to put my mind off my problems by focusing on God………………… 0 1 2 3

16. Tried to deal with my feelings without God’s help…………………………. 0 1 2 3

17. Did my best and then turned the situation over to God……………………….. 0 1 2 3

18. Tried to put my plans into action together with God…………………………. 0 1 2 3

19. Believed the devil was responsible for my situation…………………………. 0 1 2 3

20. Felt punished by God for my lack of devotion………………………………… 0 1 2 3

21. Tried to make sense of the situation with God………………………………….. 0 1 2 3

22. Turned the situation over to God after doing all that I could…………………. 0 1 2 3

23. Sought comfort from God……………………………………………………………. 0 1 2 3

24. Trusted that God would be by my side……………………………………………. 0 1 2 3

25. Didn’t try to do much; just assumed God would handle it………………….. 0 1 2 3

26. Did what I could and put the rest in God’s hands……………………………. 0 1 2 3

27. Felt the situation was the work of the devil………………………………………. 0 1 2 3
<table>
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<tr>
<th></th>
<th>Description</th>
<th>Count 0</th>
<th>Count 1</th>
<th>Count 2</th>
<th>Count 3</th>
</tr>
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<tbody>
<tr>
<td>28.</td>
<td>Went to church to stop thinking about this situation</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>29.</td>
<td>Made a deal with God so that He would make things better</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>30.</td>
<td>Wondered if God allowed this event to happen to me because of my sins</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>31.</td>
<td>Realized there were some things that even God could not change</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>32.</td>
<td>Pleased with God to make things turn out okay</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>33.</td>
<td>Made decisions about what to do without God’s help</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>34.</td>
<td>Trusted that God was with me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>35.</td>
<td>Depended on my own strength without support from God</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>36.</td>
<td>Tried to do the best I could and let God do the rest</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>37.</td>
<td>Didn’t do much; just expected God to solve my problem for me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>38.</td>
<td>Tried to see how the situation could be beneficial spiritually</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>39.</td>
<td>Felt the devil was trying to turn me away from God</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>40.</td>
<td>Didn’t try to cope; only expected God to take my worries away</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>41.</td>
<td>Thought about spiritual matters to stop thinking about my problems</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>42.</td>
<td>Realized that God cannot answer all of my prayers</td>
<td>0</td>
<td>1</td>
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<td>3</td>
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<tr>
<td>43.</td>
<td>Bargained with God to make things better</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>44.</td>
<td>Tried to make sense of the situation without relying on God</td>
<td>0</td>
<td>1</td>
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<tr>
<td>45.</td>
<td>Looked to God for strength, support and guidance</td>
<td>0</td>
<td>1</td>
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<td>3</td>
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<tr>
<td>46.</td>
<td>Focused on religion to stop worry about my problems</td>
<td>0</td>
<td>1</td>
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<tr>
<td>47.</td>
<td>Sought God’s love and care</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>48.</td>
<td>Decided the devil made this happen</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
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<td></td>
<td></td>
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<tr>
<td>49.</td>
<td>Thought that the event might bring me closer to God.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
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</tr>
<tr>
<td>50.</td>
<td>Tried to find a lesson from God in the event.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
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<tr>
<td>51.</td>
<td>Thought that some things are beyond God’s control.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
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<tr>
<td>52.</td>
<td>Took control over what I could, and gave the rest up to God.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
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<tr>
<td>53.</td>
<td>Tried to see how God might be trying to strengthen me in this situation.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
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<tr>
<td>54.</td>
<td>Wondered what I did for God to punish me.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
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<tr>
<td>55.</td>
<td>Wondered if the devil had anything to do with this situation.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
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<td>56.</td>
<td>Asked God to help me be more forgiving.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
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<tr>
<td>57.</td>
<td>Wondered whether God had abandoned me.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58.</td>
<td>Tried to stick with others of my own faith.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
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</tr>
<tr>
<td>59.</td>
<td>Hoped for a spiritual rebirth.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60.</td>
<td>Confessed my sins.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61.</td>
<td>Felt my church seemed to be rejecting or ignoring me.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>62.</td>
<td>Offered spiritual support to family or friends.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
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<tr>
<td>63.</td>
<td>Felt angry that God was not there for me.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
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<tr>
<td>64.</td>
<td>Prayed for a complete transformation of my life.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
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<tr>
<td>65.</td>
<td>Prayed to discover my purpose in living.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
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<tr>
<td>66.</td>
<td>Stayed away from false religious teachings.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
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<tr>
<td>67.</td>
<td>Tried to be less sinful.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
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<tr>
<td>68.</td>
<td>Stuck to the teachings and practices of my religion.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
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<tr>
<td>69.</td>
<td>Asked clergy to remember me in their prayers.</td>
<td>0</td>
<td>1 2 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
70. Asked other to pray for me.................................................. 0 1 2 3
71. Sought help from God in letting go of my anger.......................... 0 1 2 3
72. Thought about how my life is part of a larger spiritual force.......... 0 1 2 3
73. Asked forgiveness for my sins............................................. 0 1 2 3
74. Looked for a stronger connection with God.............................. 0 1 2 3
75. Tried to change my whole way of life and follow a new path – God’s path. 0 1 2 3
76. Wondered whether my clergy was really there for me................... 0 1 2 3
77. Tried to give spiritual strength to others.................................. 0 1 2 3
78. Wondered whether my church had abandoned me........................ 0 1 2 3
79. Questioned God’s love for me............................................... 0 1 2 3
80. Searched for forgiveness from God........................................ 0 1 2 3
81. Sought a stronger spiritual connection with other people............ 0 1 2 3
82. Sought spiritual help to give up my resentments.......................... 0 1 2 3
83. Tried to provide others with spiritual comfort............................ 0 1 2 3
84. Asked God to help me find a new purpose in life......................... 0 1 2 3
85. Looked for a total spiritual reawakening.................................. 0 1 2 3
86. Sought God’s help on trying to forgive others............................. 0 1 2 3
87. Avoided people who weren’t on my faith.................................. 0 1 2 3
88. Tried to experience a stronger feeling of spirituality.................... 0 1 2 3
89. Prayed for the well-being of others........................................ 0 1 2 3
90. Prayed to find a reason to live.............................................. 0 1 2 3
<table>
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<tr>
<th></th>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>91</td>
<td>Tried to find a completely new life through religion.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>92</td>
<td>Looked for love and concern from members of my church.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>93</td>
<td>Ignored advice that was inconsistent with my faith.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>94</td>
<td>Wondered if God really cares.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>95</td>
<td>Tried to build a strong relationship with a higher power.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>96</td>
<td>Asked God to help me be less sinful.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>97</td>
<td>Voiced anger that God didn’t answer my prayers.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>98</td>
<td>Asked God to help me overcome my bitterness.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>99</td>
<td>Looked for spiritual support from clergy.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>100</td>
<td>Looked to God for a new direction in life.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>101</td>
<td>Disagreed with what the church wanted me to do or believe.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>102</td>
<td>Tried to comfort others through prayer.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>103</td>
<td>Felt dissatisfaction with the clergy.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>104</td>
<td>Sought new purpose in life from God.</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>105</td>
<td>Sought support from members of my church.</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>
Appendix L
Systems of Belief Inventory (SBI-15R)

**Directions:** We are interested in knowing how your religious and spiritual beliefs influence your life. Please answer all of the following questions based on your life at this time. Please circle the number from 0 to 3 that best fits you.

1.) Religion is important in my day-to-day life.
   
   0—Strongly Disagree; 1—Somewhat Disagree; 2—Somewhat Agree; 3—Strongly Agree

2.) Prayer or meditation has helped me cope during times of serious illness.
   
   0—Strongly Disagree; 1—Somewhat Disagree; 2—Somewhat Agree; 3—Strongly Agree

3.) I enjoy attending religious functions held by my religious or spiritual group.
   
   0—Strongly Disagree; 1—Somewhat Disagree; 2—Somewhat Agree; 3—Strongly Agree

4.) I feel certain that God in some form exists.
   
   0—Strongly Disagree; 1—Somewhat Disagree; 2—Somewhat Agree; 3—Strongly Agree

5.) When I need suggestions on how to deal with problems, I know someone in my religious or spiritual community that I can turn to.
   
   0—Strongly Disagree; 1—Somewhat Disagree; 2—Somewhat Agree; 3—Strongly Agree

6.) I believe God will not give me a burden I cannot carry.
   
   0—Strongly Disagree; 1—Somewhat Disagree; 2—Somewhat Agree; 3—Strongly Agree

7.) I enjoy meeting or talking often with people who share my religious or spiritual beliefs.
   
   0—None of the time; 1—A little bit of the time; 2—A good bit of the time; 3—All of the time

8.) During times of illness, my religious or spiritual beliefs have been strengthened.
   
   0—Strongly Disagree; 1—Somewhat Disagree; 2—Somewhat Agree; 3—Strongly Agree

9.) When I feel lonely, I rely on people who share my spiritual or religious beliefs for support.
0 = Strongly Disagree; 1 = Somewhat Disagree; 2 = Somewhat Agree; 3 = Strongly Agree

10.) I have experienced a sense of hope as a result of my religious or spiritual beliefs.

0 = Strongly Disagree; 1 = Somewhat Disagree; 2 = Somewhat Agree; 3 = Strongly Agree

11.) I have experienced peace of mind through my prayers and meditation.

0 = Strongly Disagree; 1 = Somewhat Disagree; 2 = Somewhat Agree; 3 = Strongly Agree

12.) One's life and death follows a plan from God.

0 = Strongly Disagree; 1 = Somewhat Disagree; 2 = Somewhat Agree; 3 = Strongly Agree

13.) I seek out people in my religious or spiritual community when I need help.

0 = None of the time; 1 = A little bit of the time; 2 = A good bit of the time; 3 = All of the time

14.) I believe God protects me from harm.

0 = Strongly Disagree; 1 = Somewhat Disagree; 2 = Somewhat Agree; 3 = Strongly Agree

15.) I pray for help during bad times.

0 = Strongly Disagree; 1 = Somewhat Disagree; 2 = Somewhat Agree; 3 = Strongly Agree
Appendix M
Dear Patient,

Last week we sent you a packet of questionnaires seeking your opinions about how long-term survivors of cancer cope.

If you have already completed and returned the questionnaire to us, please accept our sincere thanks and gratitude. If not, please do so today. We are especially grateful for your help because it is only by asking people like you to share your opinions that we can understand the way survivors cope.

If you did not receive a questionnaire, or if it was misplaced, please call us at 765-285-8058 and we will get another one in the mail to you today.

Sincerely,

Sarah Jenkins, M.A.P.          Donald Nicholas, Ph.D.
Doctoral Fellow                Faculty Supervisor
Appendix N
About three weeks ago we sent a packet of questionnaires and instructions for participating in the Religious Coping in Long-Term Survivors of Cancer Study being conducted at The Cancer Center. We have not yet received your completed questionnaires. In case you may have overlooked or misplaced the earlier mailing we have enclosed another set of the questionnaires.

Enclosed in this mailing are the following:

- “Authorization for the Release of Health Information for Research Purposes” form
- 2 copies of your Participant Informed Consent form
  - Please read and sign one and return it to us
  - Keep the other copy for future reference if needed
- 5 Questionnaires
  - General Information Questionnaire
  - FACT-G
  - QOL-CS
  - RCOPE
  - SBI-15R
- Stamped Envelope

See EASY 3-Step Instructions

We hope that you will fill out and return the questionnaires soon, but if for any reason you prefer not to answer them, please let us know by returning a note or blank questionnaire in the enclosed stamped envelope. If you have any questions about the study, please feel free to contact Don Nicholas at 765-285-8058. We want to thank you again for your participation in this important study. Your participation will help future cancer patients and families.

Sincerely,

Sarah Jenkins, M.A.P.
Doctoral Fellow
Ball State University

Donald Nicholas, Ph.D.
Faculty Supervisor
Ball State University
Appendix O
Hello, may I please speak to ____________. My name is ________________ and I am calling from The Cancer Center at Ball Memorial. I am calling to follow up with you about a questionnaire you received regarding coping in long-term survivors of cancer. We have not received your completed questionnaires in the mail at this time and were wondering if you were interested in completing the survey.

- If they say they have already sent it then thank them for their help and assure them that they will not be contacted again.
- If they say that they are not interested in completing it then ask if they have any questions that you could answer about the survey. If not, then thank them for their help and assure them that they will not be contacted again.
- If they say that they are planning to complete the survey then thank them for their support and ask that they please complete it as soon as they can. Then assure them that they will not be contacted again.
- If they say they would like to complete the survey but they have lost their questionnaire then ask them for their address and let them know it will be mailed out immediately. Then assure them that they will not be contacted again.
Appendix P
Institutional Review Board

DATE: May 19, 2010
TO: Sarah Jerkins, Masters
FROM: Ball State University IRB
RE: IRB protocol # 110019-5
TITLE: The Moderating and Mediating Effects of Religious Coping on Quality of Life in Long-Term Survivors of Cancer
SUBMISSION TYPE: Continuing Review/Progress Report
ACTION: APPROVED
DECISION DATE: May 19, 2010
EXPIRATION DATE: May 18, 2011
REVIEW TYPE: Expedited Review

The Institutional Review Board has approved your Continuing Review/Progress Report for the above protocol, effective May 10, 2010 through May 18, 2011. All research under this protocol must be conducted in accordance with the approved submission.

As a reminder, it is the responsibility of the P.I. and/or faculty sponsor to inform the IRB in a timely manner:

• when the project is completed,
• if the project is to be continued beyond the approved end date,
• if the project is to be modified,
• if the project encounters problems, or
• if the project is discontinued.

Any of the above notifications should be addressed in writing and submitted electronically to the IRB (http://www.bsu.edu/irb). Please reference the IRB protocol number given above in any communication to the IRB regarding this project. Be sure to allow sufficient time for review and approval of requests for modification or continuation. If you have questions, please contact Amy Boos at (765) 286-5034 or abboos@bsu.edu.
Appendix Q
May 26, 2010

Sarah Jenkins, M.A.P.
5421 N. Meadow Dr.
Indianapolis, IN 46268

RE: Our Study # 09-820
Protocol Title: The Moderating and Mediating Effects of Religious Coping on Quality of Life in Long-Term Survivors of Cancer:

Dear Ms. Jenkins:

The Ball Memorial Hospital Institutional Review Board (IRB) reviewed and approved the continuing review report for the above study on May 25, 2010:

This study has been closed, there are no patients in follow-up; however, data analysis continues. Please notify the IRB Administrator when data analysis is complete and you will be instructed what to do. Otherwise, a continuing review report will be required again in eleven months. You will be notified when this report is due.

Sincerely,

Kerri W. Ballis, MD
Chairperson, Institutional Review Board

Institutional Review Board

2401 W. University Ave.
Muncie, IN 47303-3459
Office: (765) 747-8458 . Fax: (765) 747-8459

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