

Abstract
THE MEDIATING/MODERATING EFFECTS OF INTRINSIC RELIGIOSITY ON
THE GRATITUDE—HEALTH RELATIONSHIP

by
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The purpose of this study was to determine whether or not intrinsic religiosity is an effective mediator or moderator between gratitude and health in college-aged students. The sample population was 450 undergraduate students from East Carolina University who filled out paper surveys with measures of gratitude, religiosity, and physical/psychological health complaints. Analyses were run to determine sex and ethnic differences, the strength of the relationship between gratitude, intrinsic religiosity, and health, and if mediation or moderation was present. First, results of this study indicate that women report higher levels of gratitude than men, and African Americans report higher levels of intrinsic religiosity than Caucasian Americans. Second, gratitude was significantly related to fewer health complaints, while intrinsic religiosity was not. Third, mediation was not possible for intrinsic religiosity, because it did not hold a significant relationship with health, which goes against the necessary preconditions for mediation. Moderation was also not significant. The evidence suggests that religiosity plays no part in the gratitude—health relationship in this sample.

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THE GRATITUDE—HEALTH RELATIONSHIP

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Chapter I: INTRODUCTION

The constructs studied in positive psychology are not new. They have been studied for over a century in clinical, social, and developmental psychology. In fact, one of the American Psychological Association's three main goals before World War II was to "help all people to lead more productive and fulfilling lives" (Joseph and Linley, 2006, p. 1). Despite this goal, psychology gave significantly more attention to an alternative goal of treating mental illness (Seligman & Csikszentmihalyi, 2000). It was not until Seligman addressed the American Psychological Association in 1999 that positive psychology obtained significant attention. He pointed out that positive psychology has a lot to offer by seeking to create a more holistic position for psychology. This results in asking psychologists to build on the strengths that people possess, in addition to treating illness and dysfunction. Seligman and Csikszentmihalyi (2000) describe positive psychology as follows:

The field of positive psychology at the subjective level is about valued subjective experiences: well-being, contentment, and satisfaction... At the individual level, it is about positive individual traits: the capacity for love and vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality, future mindedness, spirituality, high talent, and wisdom. (p. 5)

In Seligman's book, *Authentic Happiness: Using the New Positive Psychology to Realize Your Potential for Lasting Fulfillment* (2002), he describes

a wide variety of individual traits which, when utilized as strengths, can produce positive consequences in peoples' lives. One of the most poignant sections was written on the subject of gratitude. Seligman asked his students to select a person from their lives with whom they were close and invite them to an event the class deemed "gratitude night." At this event students were asked to publicly express their gratitude and thanks towards their personal guest and then a group discussion followed each testimony. Many students considered this to be one of the most moving and significant events in their lives. This leads to the question, why is it that some people notice and acknowledge the good things that happen to them, while others are eternally unaware of good things that happen? In an attempt to bridge this difference in people, Seligman proposed various gratitude exercises, which, when completed, he was convinced would offer powerful positive benefit to peoples' lives. Rooted in the ideas presented in *Authentic Happiness*, the research reported in this paper is an attempt to discover what impact gratitude has on health and well-being, and how this impact is achieved. The following literature review will lay out the evidence and rationale for this study.

Gratitude

Gratitude is a foundational topic in many of the major world religions. It forms the basis for attitudes toward life events and prayer (Emmons & McCullough, 2003). In contrast, gratitude has not been a topic of interest in psychology until recently; this interest has largely been stimulated by the rise of

positive psychology. This section will discuss efforts to define gratitude, discuss its assessment, explore its relationship to demographic factors such as age and sex, and examine the relationship of gratitude to health. Lastly, this section will cover the use of gratitude in clinical interventions.

Gratitude Defined

The word *gratitude* is derived from the Latin root *gratia*, which produces words such as “grace,” “grateful,” and “gracious.” All derivatives in the Latin language “have to do with kindness, generosity, gifts, the beauty of giving and receiving, or getting something for nothing” (Pruyser, 1976, p. 69). Gratitude is a genuine, deep appreciation of a benefit one has received. Many researchers describe gratitude as consisting of two unique parts: the perception that one has received a positive outcome, and the perception that this positive outcome is due to the intentional actions of another (Peterson & Seligman, 2004; Emmons & McCullough, 2003).

There are many different ways gratitude can be conceptualized. Roberts (2004) explains the emotion of gratitude as a response to an event. A beneficiary is the recipient of something that has inherent value to him. This thing of value, which could be anything from money to help carrying heavy boxes, is labeled the benefice, while the giver is labeled the benefactor. The beneficiary then makes an appraisal of both the value of the benefice and the focus of the benefactor, which may produce an emotional response of gratitude. Roberts says interpretation of both the benefice and benefactor are key factors in how

gratitude is experienced. For example, if the beneficiary believes the benefactor was obligated to provide assistance, then the feelings of gratitude may be diminished. The benefice does not have to hold actual value for the beneficiary to experience gratitude. If the benefactor has strong and purposeful feelings of caring, then gratitude can still be experienced. Weiner (1985) points out that gratitude is usually obtained when the benefactor acts with specific intent to help the beneficiary, rather than helping the beneficiary by accident, unaware of the positive impact the benefice has on his or her life. Also, Ortony, Clore, and Collins (1988) found that gratitude is likely to occur when the beneficiary views an action as praiseworthy, when the beneficiary believes the benefactor acted voluntarily, and when the beneficiary views the benefice as favorable.

In another conceptualization of gratitude, it is described as a mixture of the emotions of admiration and joy. Gratitude is described as a mixture because research on positive emotion has had a difficult time distinguishing among specific positive emotions. Researchers on emotion have devoted much of their energy to describing negative emotions and their classifications, while giving little time towards distinguishing among positive emotions (Fredrickson, 1998). Fredrickson (2004) declares that gratitude and other positive emotions broaden psychological and social resources and build lasting personal resources. She notes that, "through experiences of positive emotions, individuals can transform themselves, becoming more creative, knowledgeable, resilient, socially integrated and healthy individuals" (p. 153).

Lazarus and Lazarus (1994) connect gratitude to the emotion of empathy. Their theory is unique on two key points. First, the experience of gratitude is dependent on the beneficiary's ability to empathize with the benefactor's effort in providing a benefice. Second, they assert that people experience emotions through "core relational themes." This allows the beneficiary to make several appraisals about the benefactor and benefice such as relevance, alternative options, and personal involvement, which influence the intensity of gratitude experienced (Lazarus, 1991).

McCullough, Kilpatrick, Emmons, & Larson (2001) describe gratitude as a moral emotion, similar to, but not a mixture of, emotions such as guilt and/or empathy. In this conceptualization, gratitude has three separate functions. First, gratitude acts as a moral barometer, responsive to benefits received from personal social relationships. In this way gratitude lets a person gauge the value of the benefit received, by the strength of the resulting gracious feeling. Secondly, gratitude acts as a moral motivator, producing a sense of reciprocity that motivates an individual to give help to those who have acted as benefactors. The feeling of gratitude then acts as a mechanism to continue prosocial behavior. Lastly, gratitude acts as a moral reinforcer. McCullough et al. (2001) describe this aspect succinctly: "Expressing gratitude to someone for his or her prosocial actions produces greater effort on the part of the benefactor to behave morally in the future, thereby making gratitude a highly adaptive sentiment to express" (p. 253). This view describes the beneficiary's expression of gratitude as a form of

reinforcement for the benefactor. Receipt of this reinforcement motivates the benefactor to provide further assistance in the future. Therefore, it is adaptive for a beneficiary to express gratitude because it increases his or her likelihood of receiving further support in the future. Observational research has shown that the expression of gratitude reinforces various prosocial actions such as volunteering and kidney donation (Bennett, Ross, & Sunderland, 1996; Bernstein & Simmons, 1974). Conversely it appears that the expression of ingratitude to benefactors is very unpleasant (McCullough et al., 2001).

Gratitude can also be conceptualized as a personality trait. This is the most common way in which gratitude has been conceptualized, and for good reason. One study on strengths of character found that gratitude appears to be strongly related to both happiness and mental health (Park, Peterson & Seligman, 2004). Peterson and Seligman (2004) have placed gratitude in a category of personality traits called “transcendence” (p. 56). This group consists of strengths and virtues such as gratitude, hope, humor, spirituality, and appreciation of beauty. These traits all provide unique ways to give life meaning. They saw gratitude as a private act, one that seeks to encourage thankfulness and joy. These positive feelings are usually connected to another person who has provided a positive benefit to one’s well-being. It is also common to feel grateful to a higher power such as God; this was labeled transpersonal gratitude (Peterson & Seligman, 2004). For example, a mother may feel strong

transpersonal gratitude to a higher spiritual power should her children survive a serious car accident.

Thus far, gratitude has been described in a positive light; however, there are some researchers who observe what may be negative qualities inherent in gratitude. Gratitude, as an emotion, contains elements of debt and dependency. Because American society tends to value both independence and profit over dependency and debt (Solomon, 1995), gratitude can place the beneficiary in an inferior role; modern society may have a cynical view of gratitude. In ancient times gratitude was considered an “opiate for the masses.” Being grateful for what you had was a convenient way of keeping the impoverished from desiring more (McAdams & Bauer, 2004).

Assessment of Gratitude

When studying gratitude, it is important to distinguish between state and trait levels of gratitude. Traits are characterized by a “stable predisposition toward certain types of emotional responding” (Rosenberg, 1998, p. 249). As a trait, gratitude reflects a long-lasting pattern of reacting in a particular way. Various theorists speculate that emotional *traits* place boundaries on the experience of specific emotional *states* (Ortony et al., 1988; Lazarus, 1991). This suggests that the level of trait gratitude has significant influence over gratitude experienced at a state level. Research has discovered that higher levels of trait gratitude lead to more frequent and more intense episodes of state gratitude (McCullough, Tsang, & Emmons, 2004). Furthermore, McCullough et al. found

that people who frequently experience state gratitude display greater amounts of prosocial behavior. State level gratitude is an affect that arises from specific situations; therefore, state gratitude tends to be a temporary mood or disposition that is easily changed by environmental and social factors (Roberts, 2004).

It could be predicted that when people are presented with identical situations, a person who is higher in trait gratitude will express correspondingly higher levels of state gratitude. Until very recently, there has been little to no research explaining why this may happen. Wood, Maltby, Stewart, Linley, and Joseph (2008) proposed a model of gratitude that links individual differences in trait gratitude to specific expressions of state gratitude, as laid out in the following excerpt:

First, we suggest that after a person is helped, he or she makes several attributions about the nature of the aid, and the attributions naturally group together to form a benefit appraisal. Second, we suggest that the benefit appraisals cause the experience of state gratitude. Third, we suggest that characteristic interpretive biases lead people higher in trait gratitude to make more positive benefit appraisals. Fourth, we suggest that more positive benefit appraisals explain why trait and state levels of gratitude are linked. (p. 281-282)

Examples of benefit appraisals and interpretive biases are the perceived cost to the benefactor, and the tendency for people to make more favorable attributions towards people with characteristics similar to themselves. Wood et al.

(2008) conducted a study to test the idea that positive benefit appraisals and interpretive biases act to mediate between trait gratitude and state gratitude. Their study used a sample 253 college students who read three identical vignettes, describing situations where help was received. Afterwards, participants completed questionnaires to measure their positive benefit appraisals towards benefactors in the vignettes and their levels of trait gratitude, through the Gratitude Questionnaire-6. Benefit appraisal was found to largely mediate the relationship between trait and state gratitude.

In the past decade, the majority of research done on the assessment of gratitude has focused on trait gratitude. There have been two significant measures created during this time: the Gratitude Resentment and Appreciation Test (GRAT) by Watkins, Woodward, Stone, and Kolts (2003) and the Gratitude Questionnaire-6 (GQ-6) by McCullough, Emmons, and Tsang (2002). The GRAT was developed to give a valid measure of trait gratitude, which they believed is related to four characteristics: not feeling deprived in life, appreciation of how others benefit one's well-being, an affinity for appreciating simple pleasures, and seeing expressions of gratitude as important. In their first study, 53 questions were created to cover the four characteristics. Nine questions were dropped from the measure because of weak item-total correlations; this left a total of 44 questions (Watkins et al., 2003).

The other measure, the GQ-6, was developed for the same purpose as the GRAT. Thirty-nine positively and negatively worded questions were

administered to 238 undergraduate college students. These students were also asked to identify four people who knew them well and have these informants complete and return rating measures on them. The authors determined that there was only one factor consisting of 10 questions large enough to be meaningful. From this they kept six items which make up the GQ-6. It was found that the GQ-6 was significantly correlated with life satisfaction, vitality, subjective happiness, optimism, and hope. The GQ-6 was also moderately correlated ($r = .33$) with the informant ratings and weakly correlated ($r = .28$) with spiritual transcendence (McCullough et al., 2002).

Gratitude and Health

Research on gratitude's connection with health is in its infancy; most, if not all, significant developments have taken place within the last 10 years. Seligman (2002) garnered considerable interest in the area through his various informal experiments trying to increase happiness in people's lives through positive psychology interventions. He designed a gratitude exercise where people were instructed to write down five things they were grateful for before going to bed. He hypothesized that, over time, this exercise would increase both psychological and physical well-being. Now, several studies have been conducted which demonstrate the nature of the gratitude—health relationship.

In a paper by McCullough et al. (2002), four studies focus on the development of the GQ-6, two of which hold relevance for this study. The first study investigated correlations between the GQ-6 and informant ratings. It

employed 238 undergraduate psychology students (174 women, 57 men); each participant was given 39 positively and negatively worded items that assessed their personal experience and expression of gratitude. They were also given various measures for affective traits, life satisfaction, and psychological symptoms. Participants were last asked to identify four people, who knew them well, to complete an informant rating form about them. Self-reported gratitude was positively correlated with informant ratings of gratitude. In addition, both self and informant ratings were positively correlated with subjective well-being, vitality, hope, optimism, and positive affect. These results were supported by the second study which compared the GQ-6 against an adjective-based scale. One-thousand two-hundred and twenty-eight adults (80% women, 15% men, 5% did not identify sex, mean age 44.6) were surveyed over the internet, and gratitude demonstrated the same correlations in adults as it did college students. Together these studies support past research showing that grateful people tend to possess other positive emotions and higher levels of subjective well-being (Ortony et al., 1988; Lazarus & Lazarus, 1994). Results from these studies also showed that gratitude was negatively correlated with anxiety, depression, and negative affect. This suggests that a propensity towards appreciating and savoring positive events both strengthens positive emotional experience and protects against negative psychological states.

In 2003, Emmons and McCullough conducted a 10 week study with 201 (147 women, 54 men) undergraduate students. Participants were placed into

three groups: write about five major events from their week, write about five hassles from the week, or write about five things in their lives for which they were grateful. All participants kept logs of their emotions, physical symptoms, and health behaviors. The results found that the gratitude group, when compared to the other two, felt better about their lives, had higher ratings of joy and happiness, lower amounts of negative affect, reported fewer physical complaints, and exercised significantly more. This suggests that inducing a state of heightened gratitude benefits both mental and physical well-being. Participants in the gratitude group may even have been energized by their grateful contemplations, as reflected through an increase in exercise. In the second study, participants were placed into the same three conditions; however, in this study participants completed logs and reflections for 16 days, not 10 weekly logs. As in the first study, gratitude was associated with benefits, although in this study they found no difference in amounts of exercise or physical complaints among the three groups. Their third and final study looked at 65 people (44 women, 21 men, age range 22-70) with neuromuscular diseases at the University of California Davis Medical Center. Participants were divided into two groups: a gratitude condition, as in the prior two studies, and a control condition, where participants filled out rating scales. All forms and reflections were completed daily for a 21 day period. Again, results were consistent with the first two studies: participants in the gratitude condition had higher scores on positive affect, and lower scores on negative affect than the control group. The gratitude group

showed significantly higher scores on well-being, hours of sleep, and how refreshing their sleep was. These studies are stronger than many previous ones due to the experimental nature and ease with which the intervention could be implemented. With minimal interference into the participants' lives, the intervention produced definite improvements in both physical and mental well-being.

Months after the last article was published, Watkins et al. (2003) presented two studies that used an almost identical gratitude intervention and found similar results. In the first study, the gratitude group had higher levels of positive affect and subjective well-being, while displaying lower levels of negative affect and depressive symptoms. In the second study, the authors tested the relationship between the GRAT and subjective well-being, depression, and affect. In two samples of students (N=154 and N=66), gratitude was positively correlated with subjective well-being and positive affect, while negatively correlated with depressive symptoms. A similar study, conducted by Park et al. (2004), examined the relationship between various character strengths and subjective well-being. They surveyed 5,299 adults (70% women, 30% men) through two internet web sites. Of the 24 character strengths measured, gratitude, hope, zest, love, and curiosity were found to hold strong associations with life satisfaction. Park et al. (2004) simply state, "Gratitude connects one happily to the past, and hope connects one happily to the future" (p. 612).

One of the latest studies on the relationship between gratitude and health (Krause, 2006) explored whether feeling grateful towards God would minimize the negative effects of stress on health in older adults. Using a longitudinal design, 1,500 elderly individuals (748 Whites, 752 African Americans) were interviewed; the first and second interviews were separated by three years. Three hypotheses were tested: (1) feeling grateful towards God will reduce the size of the relationship between stress and health in later life; (2) older women will be more likely than older men to feel grateful towards God; and (3) the stress-buffering effects of feeling grateful towards God will be more pronounced in older women than men. Stress was assessed by the level of neighborhood deterioration in which an individual lived.

The results of this research indicated that (1) stress was associated with lower health ratings, (2) there was a significant statistical interaction between stress and gratitude towards God on health, and (3) gratitude towards God did not show a significant additive effect on health. In the interaction mentioned before, the relationship between stress and health became weaker as levels of gratitude increased. Furthermore, when this interaction was broken down by sex, a strong relationship was found for women, but no relationship was found for men. Women reported feeling more gratitude than men did; in addition, women with the highest amount of gratitude exhibited a buffering effect against stress. Gratitude in these women appeared to offset the negative effects stress causes for the rest of the population. These results are significant because they

demonstrate that gratitude can provide a protective factor against a stressor. Perhaps cultivating high levels of gratitude in individuals would provide protection against other negative stressors. This study also shows the need for further research into gratitude and sex. It appears that gratitude and its effects are not uniform across men and women. Replication of these findings in future studies will help clarify the nature, importance, and size of sex differences in gratitude.

In understanding the relationship between gratitude and health, it is important to explore the mechanisms or pathways through which this association might operate. Since gratitude is often framed within a religious context, it may be helpful to examine the relationship of gratitude with religion. The conceptualization of gratitude as a moral affect is a good example of gratitude framed within religion (McCullough et al., 2001). Goodenough (1998) points out that, “some of the most profound reported experiences of gratitude can be religiously based or associated with reverent wonder toward an acknowledgement of the universe” (p.460). This can be linked to many world religions, such as Christianity, Judaism, and Islam, having long promoted gratitude as one of the most desirable dispositions for its followers. McCullough et al. (2002) found that dispositional measures of gratitude were “positively correlated with nearly all the measures of spirituality and religiousness, including spiritual transcendence, self-transcendence, and single-item religious variables” (p.118). It is possible that the gratitude—health relationship could be explained by one of the various mechanisms in which religion is hypothesized to act upon

health. George, Ellison, and Larson (2002) make the argument that religious involvement is connected to health through increasing health practices, social support, psychosocial resources, sense of meaning, and buffering against the effects of stress. It makes logical sense that gratitude and its benefits could be subsumed into the benefits religion provides.

Religion

There has been a recent surge in evidence that provides a strong argument for the positive relationship between religion and health. There has been enough research to warrant an entire scientific journal on the subject called *Journal of Religion and Health*. A meta-analysis by McCullough, Hoyt, Larson, Koenig, and Thoresen (2000), of more than 40 independent samples, found that measures of religious involvement were significantly and positively associated with longevity. One study found that there was a seven-year difference in life expectancy between those who reported that they never attended church services and those who attended church services more than once a week. When looking at only African Americans in this study, the difference rose to an astounding 14 years (Hummer, Rogers, Nam, & Ellison, 1999). Religion has also been connected to many other measures such as physical health, subjective well-being, morbidity, social support, coping, healthy behaviors, depression, and anxiety (Oman & Thoresen, 2005).

While providing consistent positive associations, the interpretation of these findings is problematic. This is a result of the fact that, in most studies, their

measures of religion do not tap into the complexities religion holds and they focus on very limited aspects of religion. For example, single-item measures are frequently used by scientists and tend to focus primarily on frequency of church attendance (Oman & Thoresen, 2005).

Through their study of the literature, Hill and Hood (1999) concluded that religion is a complex variable. They looked at 125 separate measures of religion; these measures could be condensed into 17 different categories, such as religious orientation, attitudes, beliefs, and faith development. This gives researchers many options when choosing how to study religion, as well as indicating the need to specify the way in which religion is being evaluated.

Religiosity

Like religion, religiosity is a term that most researchers would have a hard time defining. This can be noted by the failure of most researchers to define religiosity in their own studies. If religiosity is broken into its Latin derivatives, it literally means the quality or extent to which a person is religious. Perhaps this is what most researchers are assuming to study. Hackney and Sanders (2003) point out that religiosity is a multi-faceted term consisting of cognitive, emotional, and behavioral dimensions. The cognitive dimension relates to personal beliefs, ideology, and opinions about one's religion. The emotional dimension refers to the feelings one has towards various aspects of their religion. The behavioral dimension can be represented by actions such as frequency of prayer, religious attendance, reading of scriptures, and working with charities (Cornwall, Albrecht,

Cunningham, & Pitcher, 1986). A fourth dimension, called motivation, could be added to religiosity and used to describe the motives a person has for what they do and believe (Hackney & Sander, 2003). These together could be considered the core of religiosity.

The motivation dimension, which grew out of the work of Gordon Allport, was the last to be developed. In his book *The Individual and His Religion*, Allport (1950) developed two new ways to look at religiosity. He proposed that religiosity develops across the lifespan, and can reflect both immature and mature expressions. Immature religiosity is characterized by using religion to gain social and psychological benefits. Examples of this would be attending church for social connections and praying for personal benefit (Allport & Ross, 1967). Immature religiosity is now referred to as extrinsic religiosity and still represents a core of self-promotion and using one's religion for personal gain. Baker and Gorsuch (1982) found a positive relationship between extrinsic religiosity and anxiety when studying campers at a Southern California religious retreat. This illustrates that religiosity is not a universally positive construct and that some aspects, such as extrinsic religiosity, can have a detrimental impact on health outcomes.

Mature religiosity is characterized by a genuine deep faith and a striving to live religiously. Maturely religious people read about their religion, spend time praying or meditating, and have a strong sense of God's presence in their lives. Mature religiosity is referred to as intrinsic religiosity and has been positively correlated with measures of mental health such as self-control, tolerance, and

sense of well-being in college students (Bergin, Masters, & Richards, 1987).

Koenig, George, and Titus (2004) say that “intrinsic religiosity reflects the extent to which religion is the primary motivating factor in people’s lives, drives behavior, and influences decision-making.”

Allport and Ross (1967) distinguish between the two types of religiosity by saying, “the extrinsically motivated person uses his religion, whereas the intrinsically motivated lives his religion” (p. 434). Richard Paloutzian (1996) points out that intrinsic motivation is internalized and becomes a part of a person’s biological system, while extrinsic motivation does not and is only exhibited when there is some external benefit. One of the major results of Allport’s research (Allport & Ross, 1967) was the finding that extrinsic religiosity was positively correlated with racial prejudice and intrinsic religiosity was negatively correlated with racial prejudice. These findings have been repeatedly supported through follow-up studies (Ponton & Gorsuch, 1988); Donahue (1985, p. 405) points out in his meta-analysis that “the mean correlation across all measures of prejudice for intrinsic is – .05, and .34 for extrinsic.” This clearly points to a major underlying difference between the two forms.

Building on Allport’s work, Hood (1978) recognized that the two are not mutually exclusive. Depending on how high or low each are, four categories emerge: intrinsic (high intrinsic, low extrinsic), extrinsic (high extrinsic, low intrinsic), indiscriminately proreligious (high intrinsic and extrinsic), and indiscriminately antireligious (low intrinsic and extrinsic). Various studies have

consistently shown that each can be high or low independently of the other (Hood,1978; Baker & Gorsuch,1982; Hettler & Cohen,1998). Donahue (1985) conducted a meta-analysis on intrinsic and extrinsic religiosity studies through 1983, which led to several conclusions. Extrinsic religiosity tended to have positive correlations with negative characteristics such as prejudice, anxiety, depression, irrational thought processes, and defense mechanisms. Intrinsic religiosity was not correlated with these negative characteristics. Lastly Donahue found that using four categories to study religiosity was mainly useful when looking at some nonreligious variables, such as prejudice, rather than religious variables.

Religiosity and Health

A growing body of literature has revealed a relationship between intrinsic religiosity and mental health. Since the 1970's, studies have linked intrinsic religiosity to higher levels of psychological well-being, internal locus of control, social and personal adequacy, and lower levels of anxiety and fear of death (Alker & Gawin, 1978; McClain, 1978; Sturgeon & Hamley, 1979). A study by Acklin, Brown, and Mauger (1983) looked at the role religious orientation played in patients' coping with cancer. The sample consisted of cancer patients, compared to a non-cancer control group with non-malignant illnesses. The study found that in the cancer group, intrinsic religiosity was positively associated with higher levels of attributed life meaning and lower levels of social isolation, anger, hostility, and despair. Similarly positive results were found in a 2004 study by

Koenig and colleagues. They looked at 838 medically ill patients, age 50 or older, who were hospitalized at Duke University Medical Center. Their findings showed that intrinsic religiosity was associated with better cognitive functioning, greater social support, and fewer depressive symptoms. These articles show the importance intrinsic religiosity has in the health of older populations dealing with illness. These findings were also more robust than many other studies with younger age groups, and may suggest that intrinsic religiosity provides greater benefit for older age groups.

In 1991, Payne, Bergin, Beilema, and Jenkins pointed out the positive influence intrinsic religiosity has on self-esteem, personal adjustment, well-being, and lower levels of suicide. In 1997, Plante and Boccaccini surveyed 102 college students and the results showed that intrinsic religiosity was associated with lower levels of anxiety and depression. This demonstrates the positive influence intrinsic religiosity has on younger people, in addition to groups of older adults.

Laurencelle, Abell, and Schwartz (2002) conducted a study examining the relationship between intrinsic religiosity and psychological well-being. Their sample consisted of 210 adults, from a private Midwestern University, who were identified by local clergy as being people of "high faith" and a normative group of participants who ranged from low to high in intrinsic religiosity. The results found that participants with high intrinsic faith, when compared to those with low intrinsic faith, had significantly lower depression and anxiety scores, significantly higher ego strength scores, and lower amounts of character pathology. They

found weak correlations between intrinsic faith and psychological well-being. This suggests that intrinsic religiosity may have a specific connection to both emotional health and psychological well-being. A 2003 meta-analysis by Hackney & Sanders recognizes how internalizing intrinsic qualities benefits positive behaviors, attitudes, and psychological well-being.

These encouraging findings still hold true in the most recent research. Yohannes, Koenig, Baldwin, and Connolly (2008) found that intrinsic religiosity was related to less severe depression in geriatric patients in intermediate care, which provides direct support to studies on older adults previously mentioned by Acklin et al. (1983) and Koenig et al. (2004). A 2007 study conducted by Abdel-Khalek looked at religiosity's association with happiness, mental health, anxiety, and depression in a sample of 6339 Muslim Kuwaiti adolescents ages 15-18. Sex differences were found with boys being higher in physical health, mental health, and happiness, while girls were higher in religiosity, depression, and anxiety. The results showed that religiosity was significantly correlated with all measures: positively with happiness and mental health, and negatively with depression and anxiety. The measure used did not specify intrinsic or extrinsic religiosity, but the measure was shown to be strongly related to the Intrinsic Religious Motivation Scale.

Finally, recent research has linked religiosity to physical health, in addition to mental health. McIntosh and Spilka (1990) were the first to suggest a possible connection between intrinsic religiosity and physical health in research on

religiosity. It was not until 15 years later that results were published pertaining to religiosity and physical health directly; two studies mentioned earlier in this section found significant results. Koenig et al. (2004) used a combination of self-report and observer-ratings to measure physical functioning. The study established that intrinsic religiosity was associated with better physical functioning in a sample of medically ill patients. Then, Abdel-Khalek (2007) found that religiosity was significantly correlated with physical health in Muslim adolescents. In the same year Abdel-Khalek published two other studies which included similar results relevant to physical health. The first study (Abdel-Khalek & Naceur, 2007) explored the relationship between religiosity and positive and negative emotions. Using a sample of Muslim college students, they found that religiosity held a strong correlation with physical health in women, but not in men. The second study (Abdel-Khalek & Lester, 2007) explored associations among religiosity and health in Kuwaiti and American college students. Kuwaiti students reported significantly higher amounts of religiosity and psychopathology than American students. Results showed that there were strong positive associations between religiosity and positive physical health for both groups of students. Duplication of the religiosity—physical health relationship in multiple cultures is a strength of this study.

The evidence paints a clear picture: intrinsic religiosity is associated with healthy, emotionally resilient individuals. There have been studies that did not find associations with some of the positive characteristics listed, but they were

few and overshadowed by the number of studies that found significant relationships. The importance of focusing on intrinsic religiosity becomes even more evident when one reviews the literature on extrinsic religiosity and recognizes that extrinsic religiosity holds strong associations with various negative health variables.

Gratitude and Religiosity

While gratitude is often framed within a religious context, only a few studies have examined whether religious measures are related to gratitude. McCullough et al. (2002) found that trait gratitude, measured with the GQ-6, was related to religiosity and intrinsic religious orientation. Extrinsic religious orientation was specifically found to not have any relationship with gratitude. The authors suggest that gratitude is a typical characteristic of those who are intrinsically religious. Research a year later by Watkins et al. (2003) supported these findings. In their study it was found that trait gratitude was positively correlated with intrinsic religiosity and weakly negatively correlated with extrinsic religiosity. A 2005 study by Emmons and Kneezel was the last to examine the gratitude—religion connection; they found that state and trait gratitude were each positively related to spiritual self-transcendence, religious attendance, and both public and private religiosity. These findings support the use of intrinsic religiosity when looking at a gratitude—health relationship, while extrinsic religiosity appears to be irrelevant.

The Present Study

When looking at the research on gratitude, differences between sexes have been almost completely ignored. In 2003, Emmons and McCullough stated that exploring sex differences in gratitude should be a top priority in future research. Since then, only one study included sex in the analysis of gratitude. Krause (2006) found that older women were more likely to experience gratitude towards God than older men. Do men in college also experience less gratitude than their female counterparts? Clearer results have been demonstrated with religiosity; several studies have shown that women report higher levels of religiosity than men do (Abdel-Khalek, 2007; Levin, Taylor, & Chatters, 1994). The third goal of this study is to examine scores for both the Gratitude-Questionnaire 6 and Intrinsic/Extrinsic-Revised Scale across sex. Total scores will be analyzed for sex differences, producing the first hypothesis of the study:

H1: Women are expected to report higher scores on both measures of trait gratitude and intrinsic religiosity.

If sex differences are found, further analyses will be conducted separately for men and women. In addition, due to the large sample of African Americans in this study, differences between African Americans and Caucasian Americans will be examined as well. While African Americans may have a stronger religiosity—health association, no one has examined racial or ethnic differences in gratitude or the gratitude—health relationship.

Even though the effects of gratitude on health have not been extensively studied, there is strong evidence connecting gratitude to many related variables. Gratitude has been shown to be positively correlated with well-being, joy, and happiness (Emmons & McCullough, 2003), while negatively correlated with anxiety, depression, negative affect (McCullough et al., 2002), and physical complaints (Emmons & McCullough, 2003). The second goal of the study is to examine the number of reported health complaints related to levels of trait gratitude. Health complaints will be divided into two categories: physical and psychological health complaints. The second hypothesis is:

H2: A negative correlation is expected between trait gratitude and both physical and psychological health complaints.

The next step will be to determine whether there is a similar relationship between intrinsic religiosity and health complaints. Previous research has shown a consistent relationship between intrinsic religiosity and health. Intrinsic religiosity has been positively correlated with psychological well-being (Laurencelle et al., 2002), physical health (Abdel-Khalek, 2007), social support (Koenig et al., 2004), and negatively correlated with anxiety (Sturgeon & Hamley, 1979), anger, hostility, and depression (Acklin et al., 1983). Based on these data, the third hypothesis is:

H3: A negative correlation is expected between intrinsic religiosity and both physical and psychological health complaints.

Despite the evidence listed thus far, no studies to date have examined whether religiosity acts as a mediator between gratitude and health. A mediating variable is one, that when introduced, will account for the relationship between the independent and dependant variables. This would cause the gratitude—health association to lose its significance and the religiosity—health association to significantly explain the relationship. Religiosity is a characteristic that, in and of itself, should not confer benefits directly to health, but act as a marker of other behaviors or internal states that positively influence health. It is possible that having a religious worldview, or being part of a religious following, could act as a mechanism for the development of trait gratitude, especially since most major world religions incorporate gratitude as an integral part of their faith systems. Because gratitude has been positively correlated with both intrinsic religiosity and health, the fourth hypothesis of the study is:

H4: It is expected that intrinsic religiosity will act as a mediator between trait gratitude and health complaints.

While we anticipate that religiosity acts as a mediator, the possibility exists that it operates as a moderator as well. A moderator is a third variable, that when introduced, would change the effect of the independent variable on the dependant variable. This means intrinsic religiosity would change the relationship between gratitude and health depending on if participants were high or low in intrinsic religiosity. For the sake of this study, we expect that a group high in intrinsic religiosity would strengthen the gratitude—health relationship and a

group low in intrinsic religiosity would not bolster the gratitude—health relationship. This possibility will be explored if mediation is not significant.

Chapter II: METHOD

Participants

The sample consisted of 450 undergraduate students (314 women and 136 men) from a large southeastern university, who were enrolled in psychology classes that provided an optional experiential learning component. Seventy percent (317) were Caucasian, 20% (91) were African American with 14 Hispanics, 13 Asians, and 12 who selected "Other." Participants were recruited through the psychology department's research participation website. All participants had the option of participating in alternative studies or completing a research review for class credit. Of these participants, seven were removed from data analysis due to incomplete or missing survey data, giving a total of 443 participants.

Procedure

The study was submitted for approval from the Institutional Review Board, which was granted (see Appendix A). The study was posted with a brief explanation, expectations of participants, and eligibility criteria (see Appendix B). Participants then were allowed to sign up for a session on a specific date and time to take the survey. Each session consisted of no more than 20 students. The researcher entered the session and read a script that explained the survey procedures (see Appendix C) and provided an opportunity for questions to be taken from the participants. Next, participants were provided with a packet that included the informed consent document, survey instructions, survey

questionnaire, and answer sheet. Participants were asked to read the informed consent carefully; this explained that participation was voluntary, the purpose of the study, anonymity, and whom to contact with questions on research participant rights. After a participant completed the survey, he/she placed it in an envelope, sealed it, and wrote his/her name on the envelope. Later, all surveys were removed from their envelopes and labeled with identification numbers at the top of the survey. Participant names were only collected for the purpose of assigning participation credit. To keep responses anonymous, identification numbers and participant names were not connected.

Materials

Gratitude

Trait level gratitude was measured with the McCullough et al. (2002) Gratitude Questionnaire (GQ-6); it is a 6-item scale, answered with a 7-point Likert scale ranging from strongly disagree to strongly agree. Some example items are: "I have so much in life to be thankful for." and "If I had to list everything that I felt grateful for, it would be a very long list." The GQ-6 is a one-factor measure that has an internal consistency of $\alpha = .82$. In the present study, $\alpha = .84$.

Religiosity

Religiosity was measured by the Gorsuch and McPherson (1989) Intrinsic/Extrinsic-Revised Scale; it has 14 items, answered with a 5-point Likert scale ranging from strongly disagree to strongly agree. The intrinsic factor of

religiosity was used in the analysis of data; it consists of five positively and three negatively worded items, and some sample items are: “My whole approach to life is based on my religion,” “I have often had a strong sense of God’s presence,” and “It is important to me to spend time in private thought and prayer.” The intrinsic factor of religiosity has an internal consistency of $\alpha = .83$. In the present study, $\alpha = .604$.

Health

General Health was assessed with a combination of the Derogatis, Lipman, and Reckels (1974) Hopkins Symptoms Checklist and the Stouffer, Guttman, and Suchman (1950) Psychosomatic Complaints Scale. This 20-item measure looks at the frequency of various symptoms. Items are rated on a 4-point Likert scale which ranges from “not at all a part of my life” to “very much a part of my life” and includes symptoms such as dizziness, headaches, skin rashes, depressed mood, difficulty concentrating, and feeling overly tired or lacking in energy. The measure has good internal consistency ranging from .90 to .93 and test-retest reliability ($r = .93$) over a one-week period. In the present study, $\alpha = .85$.

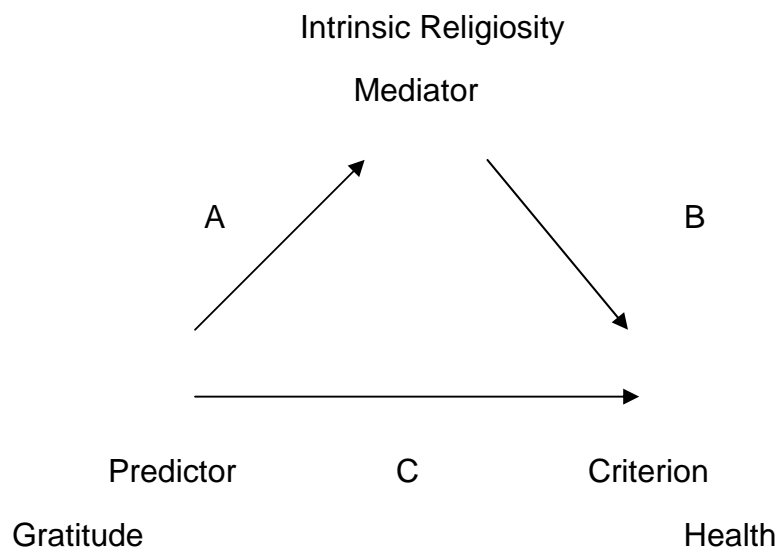
Design

The first hypothesis, predicting that women will score higher on gratitude and religiosity, was tested by completing a Multivariate Analysis of Variance (MANOVA) to determine the significance of sex for both variables. For the next two hypotheses, predicting that there will be negative correlations between

gratitude/religiosity and health, a correlation matrix was used to determine whether gratitude or religiosity is related to physical or psychological health complaints. The main goal of this study is to examine the extent to which intrinsic religiosity accounts for the expected relationship between gratitude and health. A mediation model entails a correlation between two variables, the predictor and criterion, as well as a separate factor which mediates this relationship. For this study, gratitude will be the predictor variable, intrinsic religiosity the mediating variable, and health will be the criterion variable. Figure 1 illustrates the nature of the mediating relationship.

Figure 1

Mediation Model

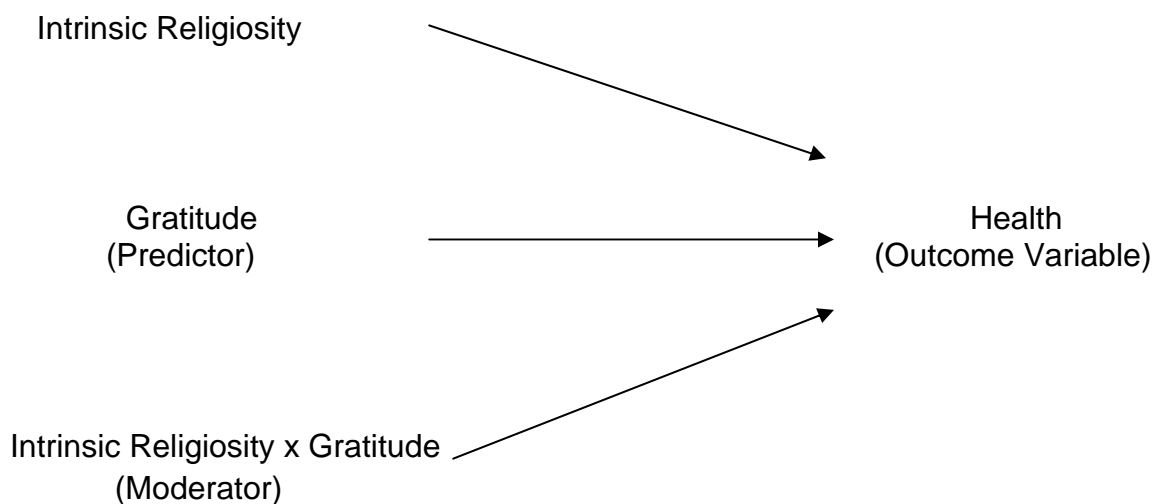


Three pathways (A, B, and C) must exist for this relationship to be tested. The criterion (health) is directly influenced by the predictor variable (gratitude) represented by path C, and indirectly influenced by the mediating variable (intrinsic religiosity) represented by path B. Path A is the extent to which gratitude and intrinsic religiosity are related. The fourth hypothesis proposes that once religiosity is controlled for, path C will be moderately, but significantly reduced, indicating mediation.

It is also possible that religiosity may influence health at only high or low levels of gratitude. To test this a moderation model will be used. Figure 2 illustrates the nature of the moderating relationship.

Figure 2

Moderation Model



Moderation will be determined by conducting a regression analysis that predicts health with religiosity, gratitude, and their interaction. Baron and Kenny (1986) point out that using regressions for analysis is preferable because differences in variance can affect correlations. If the interaction is found to be significant, the moderation model will have been supported.

CHAPTER III: RESULTS

Descriptive statistics were computed for each measure, and means were compared by sex and ethnicity. Table 1 provides general descriptive statistics by sex and Table 2 provides general descriptive statistics by ethnicity. Ethnicity was divided into three groups: Caucasian American, African American and other, which consisted of Hispanics, Asians, and other ethnicities. Due to the insufficient sample size of other, prior research on only Caucasian Americans and African Americans, and the hypotheses of this study, tests were not run for the group of others.

The measure of gratitude has a range of 6-42, is markedly negatively skewed, and our sample reported scores similar to that of other college aged samples. The measure of intrinsic religiosity has a range of 8-40 and participants in this study reported levels of religiosity approximately seven points, approximately one standard deviation, lower than that of the college-aged sample used in its development from a private religious institution. There are no data available for comparison from any non-religious universities. Both physical and psychological health complaints have a range of 10-40, with more physical health complaints reported than psychological health complaints. Physical health appears to be moderately positively skewed and psychological health appears to be markedly positively skewed. There were no available data for this age group with which to compare the mean scores.

Analysis was conducted by using a 2 x 2 (Sex x Ethnicity) MANOVA to determine if there were differences between groups and to determine if any interactions were present. A MANOVA was selected because there were multiple dependent variables being measured which were expected to be interrelated.

Table 1

Descriptive Statistics for Sex

Measure	Sex					
	Male		Female		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Gratitude**	35.78	5.37	37.81	3.71	37.20	4.37
Intrinsic Religiosity	24.85	6.27	24.81	6.62	24.82	6.51
Psychological* Health Complaints	13.11	3.94	14.64	4.43	14.18	4.34
Physical Health Complains	21.53	5.01	23.28	5.62	22.75	5.50

N = 301 female respondents and 130 male respondents.

Sex differences significant at $p < .001^{**}$ / $p < .05^{*}$

Table 2

Descriptive Statistics for Ethnicity

Measure	Ethnicity			
	Caucasian American		African American	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Gratitude	37.16	4.50	38.11	3.46
Intrinsic Religiosity**	24.46	6.55	27.08	6.40
Psychological Health Complaints	13.96	4.19	14.27	4.56
Physical Health Complains	22.84	5.61	22.34	5.56

N = 307 Caucasian American respondents and 83 African American respondents

Ethnicity differences significant at $p < .001^{**}$

Sex Differences

Sex was shown to be significant on a multivariate level (Roy's Largest Root = 0.067, $F(4,422) = 7.10$, $p < 0.001$). There were significant main effects of sex for both gratitude ($F(1,422) = 14.00$, $p < 0.001$) and psychological health complaints ($F(1,422) = 4.47$, $p = 0.035$). The first hypothesis proposed that women will report significantly higher scores of gratitude and intrinsic religiosity. Women had significantly higher scores on the gratitude measure, but not on the intrinsic religiosity measure ($F(1,422) = 0.568$, $p = 0.452$). An additional finding was that there was a main effect of sex on psychological health complaints. Women reported significantly more psychological health complaints than men.

Ethnic Differences

An additional goal of this study, to examine the differences between African Americans and Caucasian Americans, emerged with growth in sample size. The two groups were compared on all measures. Ethnicity was shown to be significant on a multivariate level (Roy's Largest Root = 0.049, $F(4,423) = 5.23$, $p < 0.001$). A main effect was present for intrinsic religiosity ($F(2,422) = 7.52$, $p = 0.001$); African Americans had significantly higher scores on intrinsic religiosity than Caucasian Americans. No other significant results were found for ethnicity.

Gratitude and Health

For the second and third hypotheses, correlations were completed for all measures to determine whether either gratitude or religiosity is related to physical or psychological health complaints. Table 3 provides the correlations for the total sample, Table 4 provides correlations for men and women separately, and Table 5 provides correlations for Caucasian Americans and African Americans separately. The second hypothesis stated that a negative correlation is expected between trait gratitude and both physical and psychological health complaints; full support was found for this hypothesis. Table 3 shows that gratitude held a moderate, inverse correlation with psychological health complaints and a slightly weaker moderate inverse correlation with physical health complaints. When these correlations are examined by sex, both correlations for men became stronger, despite the smaller sample size, while both correlations for women became weaker. All correlations between gratitude and health complaints

maintained significance across both sexes. These results were followed up with a 4 x 2 (Gratitude Quartiles x Sex) MANOVA on health complaints. Gratitude quartiles was shown to be significant on a multivariate level (Roy's Largest Root = 0.084, $F(3,435) = 12.13$, $p < 0.001$), for both physical health complaints ($F(3,435) = 4.17$, $p = 0.006$) and psychological health complaints ($F(3,435) = 12.05$, $p < 0.001$). Figures 3 and 4 illustrate that even though there are sex differences for gratitude, higher amounts of gratitude are associated with significantly fewer psychological health complaints in both sexes, and significantly fewer physical health complaints in men. However, follow-up analysis did not reveal a gratitude quartile x sex interaction that is suggested by the correlation matrix and figures.

Table 3

Correlation Matrix for Total Sample

		Gratitude	Intrinsic Religiosity	Physical Health	Psychological Health	Total Health
Gratitude	Pearson Correlation		.193**	-.175**	-.276**	-.236**
	Sig. (2-tailed)		.000	.000	.000	.000
	N		437	443	449	443
Intrinsic Religiosity	Pearson Correlation			-.062	-.055	-.066
	Sig. (2-tailed)			.197	.256	.172
	N			431	436	431

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

Table 4

Correlation Matrix by Sex

Men		Gratitude	Intrinsic Religiosity	Physical Health	Psychological Health	Total Health
Gratitude	Pearson Correlation		.236**	-.299**	-.426**	-.399**
	Sig. (2-tailed)		.007	.000	.000	.000
	N		131	135	136	135
Intrinsic Religiosity	Pearson Correlation			-.093	-.042	-.081
	Sig. (2-tailed)			.294	.634	.359
	N			130	131	130
Women		Gratitude	Intrinsic Religiosity	Physical Health	Psychological Health	Total Health
Gratitude	Pearson Correlation		.185**	-.166**	-.273**	-.225**
	Sig. (2-tailed)		.001	.003	.000	.000
	N		306	308	313	308
Intrinsic Religiosity	Pearson Correlation			-.051	-.059	-.061
	Sig. (2-tailed)			.374	.308	.290
	N			301	305	301

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

Table 5

Correlation Matrix by Ethnicity

Caucasian Americans		Gratitude	Intrinsic Religiosity	Physical Health	Psychological Health	Total Health
Gratitude	Pearson Correlation		.215**	-.178**	-.249**	-.226**
	Sig. (2-tailed)		.000	.002	.000	.000
	N		310	314	317	314
Intrinsic Religiosity	Pearson Correlation			-.021	-.022	-.024
	Sig. (2-tailed)			.719	.702	.673
	N			307	310	307
African Americans		Gratitude	Intrinsic Religiosity	Physical Health	Psychological Health	Total Health
Gratitude	Pearson Correlation		.021	-.161	-.331**	-.233*
	Sig. (2-tailed)		.848	.135	.001	.029
	N		85	88	90	88
Intrinsic Religiosity	Pearson Correlation			-.148	-.111	-.142
	Sig. (2-tailed)			.182	.315	.201
	N			83	84	83

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

Figure 3

Gratitude Quartiles with Psychological Health Complaints

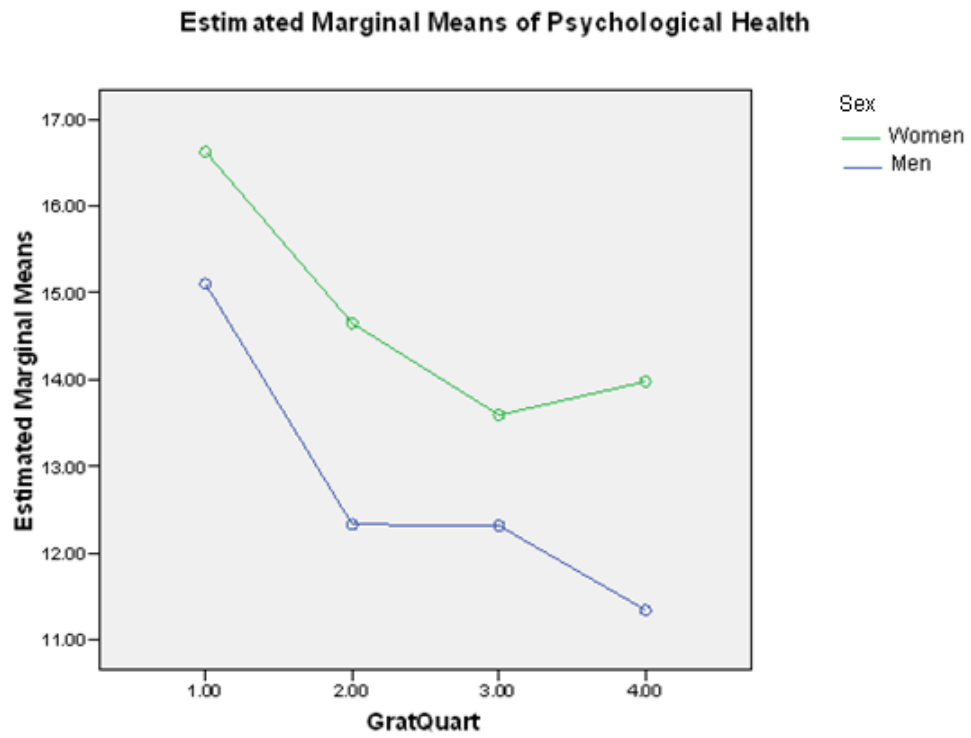
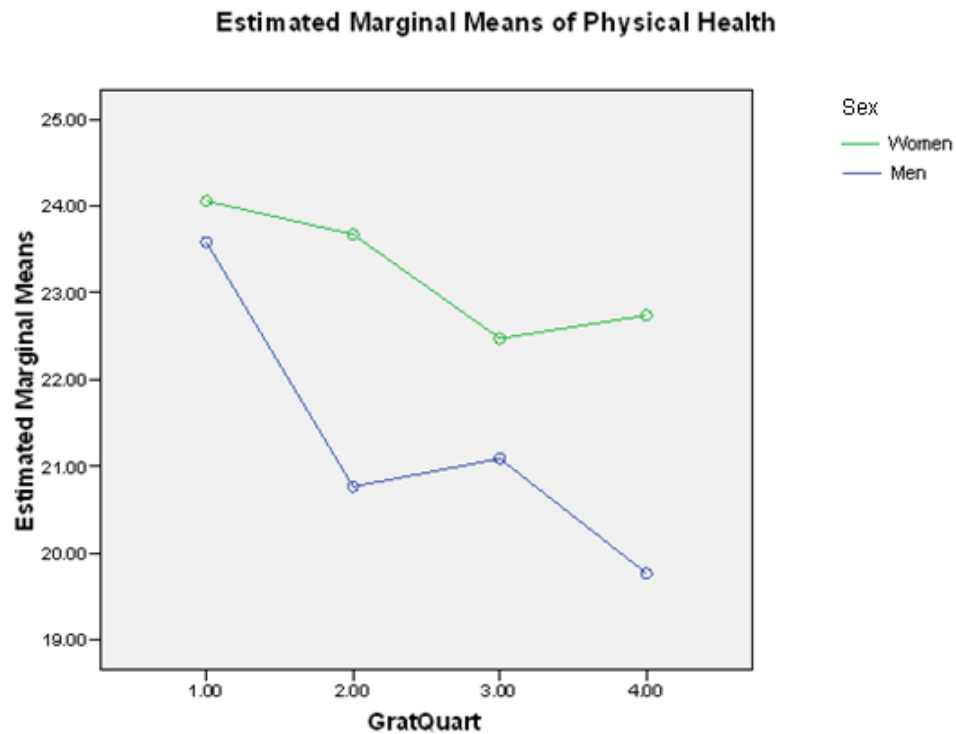


Figure 4

Gratitude Quartiles with Physical Health Complaints



Religiosity and Health

The third hypothesis stated that a negative correlation is expected between intrinsic religiosity and both physical and psychological health complaints. This hypothesis was not supported; intrinsic religiosity was not

significantly correlated with either psychological health complaints or physical health complaints. Ethnicity was also examined because African Americans had significantly higher scores on intrinsic religiosity than Caucasian Americans. However, intrinsic religiosity was not significantly correlated with physical or psychological health complaints for either Caucasian Americans or African Americans separately. Interestingly, intrinsic religiosity was significantly correlated with gratitude in Caucasian Americans, but not in African Americans.

Mediation Model

Causal steps were utilized to examine whether intrinsic religiosity acted as a possible mediator between gratitude and health complaints. Analysis for mediation was completed for only Caucasian Americans because intrinsic religiosity and gratitude were uncorrelated in African Americans. For the first step, intrinsic religiosity was significantly correlated to gratitude. Secondly, intrinsic religiosity was not significantly correlated with total health complaints. The third step would have involved a regression analysis to predict health complaints from both gratitude and religiosity, but because there was not a significant relationship between religiosity and health complaints, this analysis cannot be completed.

Moderation Model

Further analyses were completed to determine whether intrinsic religiosity acted as a moderator on the gratitude—health relationship. Religiosity, gratitude, and religiosity X gratitude were tested in three regression models with physical

health complaints, psychological health complaints, and total health complaints.

Religiosity X gratitude was not significant for health complaints on any level,

meaning, religiosity does not act as a moderating variable for the gratitude—

health relationship for men, women, Caucasian Americans, or African Americans.

CHAPTER IV: DISCUSSION

Findings

There were three primary purposes for this study: to explore sex differences in gratitude and religiosity, to explore ethnic differences in gratitude and religiosity, and to determine whether religiosity is involved in the gratitude—health relationship. No prior research has been completed to examine gratitude, religiosity, and health in unison. This study found partial support for the prediction that women will report higher scores on gratitude and religiosity. Women had significantly higher scores on gratitude. Kashdan, Mishra, Breen, and Froh (2009) found similar results showing that men both felt and expressed less gratitude than women. Willingness to openly express emotions appeared to partially mediate these differences. Unlike this study, they observed that women derived greater benefits for well-being, feeling autonomous, and the need to belong from the experience and expression of gratitude than men. However, measures of physical or psychological health were not examined in their study. Differences in how men and women are socialized could instill different values and skills into each sex that inhibit or promote the development of a gracious outlook in men and women respectively. Our study gives clear support to prior research showing women reporting higher levels of gratitude than men.

Our study found no difference between sexes on level of intrinsic religiosity. This may be because intrinsic religiosity is characterized as a mature form of religiosity, and in a college-aged sample, has not had time to fully

develop and differentiate in each sex. Participants' reported level of intrinsic religiosity may be more accurately described as a reflection of how religious their families were or the environment in which they were raised. Intrinsic religiosity may be better suited to measure the depth of religious beliefs in older samples rather than younger samples. Women also report significantly more psychological health complaints in comparison to men. This could reflect a greater willingness women have towards expressing their emotions or a heightened awareness, rather than an actual difference, in psychological health complaints (Kashdan et al., 2009).

African Americans had significantly higher scores on intrinsic religiosity than Caucasian Americans. This is consistent with the greater focus African American communities place on religion and religious attendance, when compared with their Caucasian American counterparts. Few studies have examined the impact these differences have on each ethnic group. As previously mentioned, Hummer et al. (2005) described a 14-year increase in life expectancy associated with church attendance for African Americans. The benefit church attendance gave to life expectancy for the rest of the population was only half that amount. This suggests that African Americans are both more religious than the rest of the population and that the health benefits they receive because of this are greater. The data from our study did not find any associations between intrinsic religiosity and fewer health complaints. Both groups were similar on all other measures in this study.

Full support was found for the prediction that gratitude would be negatively correlated with health complaints. There appears to be an overall health benefit for people who have higher levels of gratitude, with gratitude giving psychological health the largest benefit. There is a significant amount of research connecting gratitude to psychological benefits, but research connecting gratitude to physical benefits is limited. Emmons and McCullough (2003) also found a specific connection between gratitude and physical health complaints. We found that gratitude is more highly correlated to health in men than in women, especially for psychological health complaints. This is different from what prior research has found. This could be due to a couple of factors. The age of our sample was significantly younger than that of studies showing women had received more health benefits. Also the way in which health was measured was different; other studies used a single-item health measure to rate participants' health.

The prediction that intrinsic religiosity would be negatively correlated with health complaints was not supported. Intrinsic religiosity was not significantly associated with either physical or psychological health complaints. This goes against much research that has come before it. There are several possible reasons for this difference. As previously mentioned, intrinsic religiosity is considered to be a mature form of religiosity and may not be an appropriate measure for this age group. The low alpha found in this study is also of concern. Another measure of religious involvement may have been more suitable. College is also a time where many people question and change their personal religious

beliefs. It may be difficult to accurately assess this concept if it is currently undergoing a significant transformation. Lastly our sample could be considered homogenously healthy. If religiosity was an appropriate measure for a college age group, health benefits may have not been detected due to a lack of diversity. This could be solved by including populations with broader ranges of health.

No support was found for intrinsic religiosity acting as either a mediator or moderator for the gratitude—health relationship. It was clear, after the correlations for religiosity were examined, that religiosity could not act as a mediator because it held no significant connection to health. Tests for moderation held more promise because moderation does not require a significant relationship between the moderating and the outcome variables. Regression analysis also showed that moderation was not supported. This indicates that religiosity plays no part in the gratitude—health relationship in this sample.

Because there was no connection found between intrinsic religiosity and health, religiosity cannot be accounting for the gratitude—health relationship. Therefore, one must look elsewhere for an explanation and one possibility would be the fact that gratitude is likely related to positive affect and other positive emotions (Ortony et al., 1988; Lazarus & Lazarus, 1994). Fredrickson's (2004) broaden and build framework gives a strong case for how specific benefits could be conferred from gratitude. Gratitude may bolster one's psychological resources by increasing the experience of positive emotions and increasing cognitive flexibility. Second, when looking at the world through a grateful outlook, a person

is more inclined to recognize and engage positive resources. Lastly, the expression of gratitude also appears to build social resources and friendships. Feeling and expressing gratitude helps to strengthen social contacts and establish higher amounts of social support.

Limitations and Future Directions

The present study held several possible limitations. First, the sample was homogeneous on multiple levels. The sample was all approximately 18-23 years old, with few older individuals. They were also all the same educational status, lived in the Southeast, and were all fairly healthy. Including populations with broader ranges of health, along with broadening the other dimensions of our sample, would provide data that could be more widely generalized. A second limitation is due to the absence of various personal data for our sample. Questions related to current religious participation, social support, medication taken, and chronic disease were not included and could have provided additional information.

Another limitation is that participants only provided data for the measures at one point in time. This makes the data susceptible to temporary or age related factors that are present in the participants' lives. Use of a longitudinal design would provide increases in consistency and reliability for the data collected, or the use of a cross sectional design would be able to show the role age plays in gratitude. Lastly, despite the large sample size, data on ethnic groups other than

Caucasian Americans and African Americans could not be analyzed due to insufficient sampling of minorities.

There is a strong possibility that as people age, religiosity becomes more influential on health and gratitude. Future research should be conducted to examine if religiosity differentially affects the gratitude—health relationship for various age, educational, and socioeconomic groups. Research should be conducted to examine the mechanisms by which gratitude provides benefits to health. These mechanisms include, but are not limited to, social support, friendship, giving to others, cognitive flexibility, and the experience of positive emotions. Research also needs to further examine specific gratitude interventions, to determine whether these interventions hold therapeutic value, and whether the effects last over extended periods of time.

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Appendix A: INSTITUTIONAL REVIEW BOARD APPROVAL



University and Medical Center Institutional Review Board
 East Carolina University
 Ed Warren Life Sciences Building • 600 Moyer Boulevard • LSB 104 • Greenville, NC 27834
 Office 252-744-2914 • Fax 252-744-2284 • www.ecu.edu/irb
 Chair and Director of Biomedical IRB: L. Wiley Nifong, MD
 Chair and Director of Behavioral and Social Science IRB: Susan L. McCammon, PhD

TO: Kathleen Row, PhD, Dept of Psychology, 115 Rawl Building, ECU

FROM: UMCIRB *zk*

DATE: January 15, 2008

RE: Expedited Category Research Study

TITLE: "Psychosocial Predictors of Healthy Development"

MAILED
 1-15-08

UMCIRB # 07-0761

This research study has undergone review and approval using expedited review on 1.7.08. This research study is eligible for review under an expedited category because it is a research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.)

Dr. W. Nifong deemed this **unfunded** study **no more than minimal risk** requiring a continuing review in **12 months**. Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The investigator must adhere to all reporting requirements for this study.

The above referenced research study has been given approval for the period of **1.7.08 to 1.6.09**. The approval includes the following items:

- Internal Processing Form (dated 11.27.07)
- Answer Sheet for Parent/Guardia: General Information
- Answer Sheet for Student: General Information
- Script for Administering Survey
- Adult Completing the Questionnaire (dated 11.27.07)
- Student Completing the Questionnaire (dated 11.27.07)
- Invitation to Participate
- Survey A (dated 11.27.07)
- Script for Administering the Survey (dated 11.27.07)

Dr. W. Nifong does not have a potential for conflict of interest on this study.

The UMCIRB applies 45 CFR 46, Subparts A-D, to all research reviewed by the UMCIRB regardless of the funding source. 21 CFR 50 and 21 CFR 56 are applied to all research studies under the Food and Drug Administration regulation. The UMCIRB follows applicable International Conference on Harmonisation Good Clinical Practice guidelines.

IRB00000795 East Carolina U IRB #1 (Biomedical) IORG0000418
 IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418
 IRB00004171 East Carolina U IRB #3 (Prisoner) IORG0000418
 IRB00004973 East Carolina U IRB #4 (Behavioral/SS Summer) IORG0000418
 Version 3-5-07

UMCIRB # 07-0761
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Appendix B: STUDY DESCRIPTION ON EXPERIMENTRAK

You are being invited to participate in a research study “Psychosocial predictors of Healthy Development” being conducted by Dr. Kathleen Lawler-Row and Dr. Laura Edwards, faculty at East Carolina University in the psychology Department to examine similarities and differences between parents and their children. The goal is to survey at least 250 students and their parents at East Carolina University. The survey will take approximately 45-60 minutes to complete. It is hoped that this information will assist us to better understand the development of the relationship between health habits and different styles of responding to life events. The survey is anonymous, so please do not write your name. Your participation in the research is voluntary. You may choose not to answer any or all questions, and you may stop at any time. There would be no penalty for not taking part in this research study. Please call Dr. Kathleen Lawler-Row at 252-328-6492 for any research related questions or the UMCIRB at 252-744-2914 for questions about your rights as a research participant.

Appendix C: SURVEY SCRIPT

Script for Administering the Survey to Students in a Group Setting.

“Good morning (good afternoon). My name is _____ and I will be here to administer the survey “Psychosocial Predictors of Healthy Development” for which you signed up to obtain 1 research credit from EXPERIMENTRAK. Thank you for agreeing to fill out this research packet. Completing this packet will contribute to your research participation credits. Please read each survey question carefully and place your answer on the answer sheet. There are no right or wrong answers; just circle the number that best reflects your agreement or disagreement. It is fine to take breaks while completing the survey. After you have finished the survey, put the answer sheet in the envelope, sign the envelope, seal it, and return it to me. Your name will be recorded for class purposes then the envelope will be discarded. Your name should not be on the survey or answer sheet. The survey will be completely anonymous. By completing and returning the survey you are giving us permission to use the data for our research. If you wish to obtain an additional credit you may request an adult who raised you to fill out and mail the survey back to us also. Information for how to do this is written on the instructions in the packet you have with you now. Are there any questions? You may begin. Please do not hesitate to raise your hand if you need assistance or have additional questions.”