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RELIGIOSITY, HEALTH, AND WELL-BEING AMONG MIDDLE EASTERN /
ARAB MUSLIMS AND CHRISTIANS IN THE USA: A STUDY OF
POSITIVE EMOTION AS A MEDIATOR

BY

LOTUS MAKRAM MESHREKI

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

PSYCHOLOGY

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Abstract

This study examined the relationship between different dimensions of religiosity and mental health and well-being, and the mediating role of positive emotion in a sample of 181 Middle Eastern / Arab Christians and Muslims in the U.S. Results showed a positive relationship between intrinsic religiosity and positive mental health and well-being that was mediated by positive emotion. Intrinsic religiosity had a stronger relationship to positive emotion than did extrinsic religiosity. Positive emotion in turn was related to better mental health and well-being.

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Chapter 1

Introduction

The study of religion has taken place from many perspectives, such as philosophy, history, psychology, and medicine. The philosophy of religion dates to Plato and his predecessors, whereas the psychology of religion has a much shorter history (Selbie, 1924). The psychological study of religion began with such psychologists as William James and G. Stanley Hall in the early 1900s. But it was only in the 1960s that two journals were founded in order to promote the growth of empirical studies of religion in the field (Peterson & Park, in press). Although religiosity has been a sustained interest in the field of psychology, it has never been a central focus. This fact has been partly due to the reluctance of psychologists to study value-laden topics such as religiosity. However, a recently emerging area of psychology—positive psychology—is interested in topics related to religiosity such as faith, hope, charity, gratitude, and forgiveness.

The mind-body relationship has also been an increasingly popular topic of research. This interest is seen in recent trends toward meditation, yoga, and mindfulness, among other related practices. These trends are often viewed in terms of one's spirituality or well-being. Regardless of the frame, the idea that minds and bodies interact to produce health and well-being is unquestioned (Ray, 2004).

In recent decades, psychologists began to pay more attention to religiosity and spirituality and tried to study their roles and functions in the lives of individuals. There have been numerous review articles on the subject of religion and health (Bergin, 1983; Donahue, 1985; George, Ellison, & Larson, 2002; Hackney & Sanders, 2003; Koenig & Larson, 2001; Larson, Sherrill, Lyons, Craigie, Thielman, & Greenwold, 1992;

Matthews, McCullough, Larson, Koenig, Swyers, & Milano, 1998; McCullough, Hoyt, Larson, & Koenig, 2000; Payne, Bergin, Bielema, & Jenkins, 1991). These review articles present evidence of the connection between religiosity and physical and mental health. Koenig, McCullough, and Larson (2001) reported that there is a strong link between religiosity and health. Religiosity seems to be positively related to better health and longevity. However, religiosity also can have negative effects on health through religious beliefs or practices that prohibit medical procedures. For instance, Jehovah's Witnesses commonly refuse blood transfusions due to a belief that they must not maintain life through another's blood. Thus, in addition to the growing interest in religion in psychology, it is also becoming of increasing interest in medical fields (Koenig, 2000; Larson et al., 1992; Matthews et al., 1998; Oyama, 1998; Sloan, Bagiella, & Powell, 1999).

Researchers are also attempting to find what mediates this link between religion and health. This knowledge would aid in the promotion of wellness. As noted, recent studies have explored the religion-health link, yet few have investigated the mediators of this relationship (George, Ellison, & Larson, 2002; Miller & Thoresen, 2003; Pargament, 2002). A review of this area of interest led to the identification of possible mechanisms and mediators (see George, Ellison, & Larson, 2002). Yet reviewers have concluded that there is still uncertainty about what mechanisms account for the benefits of religion, and evidence for the mediators is mixed. Identifying these mechanisms is a main interest among social and behavioral scientists today.

Numerous limitations have been noted in previous research on religiosity and health. These limitations concern the samples studied, which are mostly Christians

(George et al., 2002), specifically European-American Protestants (Donahue, 1985).

Also, over 50% of studies examining religion and health utilize a population above the age of 60 years (George et al., 2002). America's religious diversity has been growing in recent decades (Smith, 2002). In particular, Islam is the second fastest growing religion in the U.S. (Husain, 1998). These issues raise the question on the generalization of research findings to groups from different cultural, religious and developmental backgrounds. Thus, there is a need to examine the relationships between religiosity and health and well-being with individuals from more diverse groups. The current study will explore the relationship between religiosity and health and well-being, and the mechanisms underlying it -- in particular, positive emotion as a mediator -- using samples of Muslim and Christian Arab populations in the U.S.

Significance of the Study

History of Religiosity in Psychology

The importance of religion dates back to at least 6,000 BC in some cultures. For instance, artifacts from the predynastic period in Egypt revealed that mental and physical illness were not distinguished from each other, but were understood in religious terms, such as evil spirits and demon possessions. J. H. Leuba, E. D. Starbuck, and William James were American psychologists who began the scientific study of religion. In 1899, E. D. Starbuck wrote the first academic textbook on the psychology of religion, followed by William James in 1902, who wrote *The Varieties of Religious Experience*, which focused on more extreme forms of religious beliefs and experience (Koenig et al. 2001).

G. Stanley Hall launched a journal committed to the psychology of religion that was published between 1904 and 1915 (Peterson & Park, in press). The topic of religion

in science was becoming so popular that even Einstein (1941) has been quoted “Science without religion is lame. Religion without science is blind” (Koenig et al., 2001). In the mid 1900s, Gordon Allport defined religiosity as consisting of two distinct parts in his book *The Individual and His Religion*: extrinsic and intrinsic. Where extrinsic religiosity refers to religious involvement that provides social needs, security, and status, intrinsic religiosity is the internalization of religious beliefs (Allport, 1950). Even more recently, the Fetzer Institute (1999), a private foundation, has reported the following dimensions of religiosity to be essential for empirical studies where health is an outcome measure: daily spiritual experiences, meaning, values, beliefs, forgiveness, private religious practices, religious/spiritual coping, religious support, religious/spiritual history, commitment, organizational religiousness, and religious preference.

In the 1960s, journals such as the *Review of Religious Research* and the *Journal for the Scientific Study of Religion* were established and sparked empirical research in the area of religiosity. Furthermore, many more textbooks on the topic of psychology of religion were written, and coursework was introduced. In 1975, the American Psychological Association created a division devoted to the psychology of religion. In regards to clinical and counseling work, issues of religiosity and spirituality began to arise in therapy (Peterson & Park, in press). This has been addressed in numerous textbooks, such as in *The Art of Integrative Counseling* (Corey, 2001).

Over the years, researchers showed great interest in the relationship between religiosity/spirituality and mental and physical health and well-being (e.g., George et al., 2002; Matthews et al., 1998; Meisenhelder & Chandler, 2001; Powell, Shahabi, & Thoresen, 2003; Witter, Stock, Okun, & Haring, 1995). However, it has only been

recently that the quality of research regarding religiosity and health has improved significantly. In the 1990s, there has been noticeable improvement in the quantity and quality of research on religiosity and health. Before the 1990s, studies often used only one item to measure religiosity or did not define religiosity explicitly as a variable (Miller & Thoresen, 2003). However, in recent years, the National Institute of Health (NIH) has sponsored major national studies on religiosity and health, and several scientific journals including *American Psychologist*, *Journal of Health Psychology*, and the *Annals of Behavioral Medicine* have published special issues on religiosity/spirituality and health and well-being.

The interest in religiosity and spirituality has spread among the general population. Recent reports have revealed that six out of ten Americans indicated that religion is a “very important” part of their lives, which is a slight increase over the past decade (Gallup, 2004). Even today, the study of religiosity regarding health and well-being receives increasing attention in many areas of psychology and other related fields.

Conceptualization of Religiosity

As the United States culture began to distinguish between the terms religiosity and spirituality, psychologists also worked to make this distinction (Hill & Hood, 1999; Koenig et al., 2001; Matthews et al., 1998; Miller & Thoresen, 2003; Spilka, Hood, Hunsberger, & Gorsuch, 2003). For a little over a century, some aspect of religiosity has been studied in relation to mental and physical health (Koenig, 1998). Religiosity and spirituality are often used as synonyms, although they have been traditionally defined as distinct concepts. *Spirituality* resides in a more personal and psychological arena, whereas *religiosity* has clear institutional/organizational implications (Spilka et al., 2003).

According to Koenig et al. (2001), *religiosity* is a well-structured system of beliefs, rituals, practices, and customs with the purpose of creating closeness to the “sacred or transcendent” as well as promoting an understanding of a person’s association and responsibility to other members in a community. In contrast, *spirituality* is defined as a personal pursuit in the search of answers to purpose and meaning in life in addition to understanding the relationship to the “sacred or transcendent,” which may not lead to or arise from religious practices and developing of a community. The term spirituality is more global, and not necessarily specific to any organized religion. Researchers have noted the difficulty of defining and operationalizing both terms, and there have been numerous measures and theories created on the subject (Hill & Hood, 1999; Spilka et al., 2003).

In general, compared to religiosity, it is more difficult to define and measure spirituality (Koenig et al., 2001; Matthews, et al., 1998; Spilka et al., 2003), although the measurement of spirituality is more possible with scales developed in recent years (see Miller & Thoresen, 2003). Religiosity and its measures are most widely used in the literature examining religiosity and mental and physical health (Miller & Thoresen, 2003). Thus, considering these issues and the fact that this study will be examining specific religious groups, the current study will focus only on “religiosity.”

Dimensions of Religiosity

Although researchers define and measure religiosity in many different ways, most of them agree that religiosity is a multidimensional construct (Bergan, 2000; George et al., 2002; Hill & Hood, 1999; Miller & Thoresen, 2003; Seybold & Hill, 2001). There have been continuing efforts to conceptualize and differentiate dimensions of religiosity.

Allport (1950) first characterized extrinsic and intrinsic religiosity with the terms of immature and mature religiosity. According to Allport and Ross (1967), extrinsic religiosity is characterized by having a pragmatic function, such as one's desire to obtain status, social needs, and comfort. Intrinsic religiosity is described as more of an internal motivation from the traditions of the religion, which is no longer simply established by self-interest. Whereas extrinsic entails "using" one's religion, intrinsic entails "living" one's religion (Allport & Ross, 1967). Over the years, many researchers have tried to approach religiosity from its extrinsic and intrinsic perspectives (Baker & Gorsuch, 1982; Bergan, 2000; Donahue, 1985; Laurencelle, Abell, & Schwartz, 2002; Nooney & Woodrum, 2002; Payne et al., 1991; Schnittker, 2001).

Examining distinctions in the multidimensional concept of religiosity is important, as researchers consistently found that different aspects of religiosity were related to different health outcome variables (Baker & Gorsuch, 1982; Nooney & Woodrum, 2002; Schnittker, 2001). Psychological adjustment was significantly related with diverse measures of religiosity, but mainly with intrinsic religiosity. Bergan (2000) found that external religiosity (e.g., level of religious affiliation) was significantly related to life satisfaction, while internal religiosity (e.g., frequency of private religious devotion) had no significant relationship. He speculated that different aspects of religiosity might affect life satisfaction in different ways.

According to a more recent review by George and his colleagues (2002), most research on religiosity has focused on four dimensions of measuring religiosity: participation/attendance, affiliation, private practice, and religious coping. All four dimensions have been related to positive health outcomes, but in different ways. For

instance, religious attendance has been most strongly linked with better physical and mental health as well as with mortality (Ellison, 1995; Koenig, George, Hays, Larson, 1998; Koenig, Hays, Larson, George, Cohen, McCullough et al., 1999). Religious coping has also been reported to have the most impact as a predictor of recovery and survival (Oxman, Freeman, & Manheimer, 1995; Pargament, 1997).

Researchers have presented evidence that religious affiliation is related to levels of depression (Kennedy, 1998; Koenig et al., 2001). Private religious activities and religious beliefs have a weaker relationship to depression compared to organizational religious activities and intrinsic religious commitment (Kennedy, 1998). Religiosity, especially intrinsic religiosity overall, is likely to buffer against anxiety (Koenig et al., 2001). Yet, another study examining anxiety and religiosity (Baker & Gorsuch, 1982) reported that intrinsic religiosity is associated with greater ego strength, more integrated social behavior, less paranoia, and ultimately less anxiety. In contrast, extrinsic religiosity was associated with the inability to adaptively incorporate anxiety into everyday life. The researchers concluded that intrinsic religious commitment leads to peace of mind.

In a study with older, medically ill, hospitalized adults who were mostly Christian, researchers found that intrinsic religiosity was a predictor for shorter time to reaching remission for depressed patients. Church attendance and private religious activities were not related to time to remission of symptoms (Koenig, George, & Peterson, 1998). Private religiosity was also reported to be a protective factor against depression for disabled men (Idler & Kasl, 1992).

Kendler and his colleagues (2003) utilized multidimensional measures of religiosity with a sample of 2,616 twins from a general population registry. The

researchers assessed for nine disorders, including substance abuse or dependence (externalizing disorders) and other disorders, such as depression and anxiety (internalizing disorders). Results included that social religiosity and thankfulness were related to both types of disorders, while general religiosity, which involved God (a belief in a divine being who is actively/positively involved in individual affairs), forgiveness, and God as judge were related to externalizing disorders only.

In addition, there were indications of diverse possible pathways of different dimensions of religiosity and health outcomes. Nooney and Woodrum (2002) reported that public (attendance) and private (prayer) religiosity were related to depression by different mechanisms: public religiosity was mediated by social support, whereas private religiosity was mediated by religious coping.

These results supported the conclusion that there are different relationships between different aspects of religiosity and health and well-being. Some of the existing inconsistencies in the literature regarding the relationship between religiosity and health are also partly due to studies using different conceptualizations of religiosity and various measures of religiosity. Thus, in the future, it is necessary to study religiosity as a multidimensional construct to clarify the relationship between religiosity and health.

Religiosity, Health and Well-being

Research so far has provided evidence of a positive relationship between religiosity and health and well-being and religiosity as a protective factor for stress. According to recent reviews, despite past views of religion having a negative influence on health, the majority of studies have reported a positive relationship between

religiosity, greater hope or optimism, and better mental and physical health (Koenig et al., 2001; Seybold & Hill 2001).

Researchers speculate that religious commitment might have a function in improving illness prevention, coping with sickness, and recovery. Results from many recent studies have suggested that religious commitment is related with a lower incidence of various chronic diseases (Levin & Schiller, 1987; Levin & Vanderpool, 1987), increased longevity (Comstock & Partridge, 1972), and faster recovery from illness (Andreasen, 1972; Oxman et al., 1995; Pressman, Lyons, Larson, & Strain, 1990; Propst, Ostrom, Watkins, Dean, & Mashburn, 1992).

Religiosity, Mental Health and Well-being. So far, the majority of studies examining religious involvement have found a correlation with mental health and well-being measures such as: well-being/life satisfaction, happiness, hope/optimism, purpose/meaning in life, higher self-esteem, adaptation to bereavement, greater social support/less loneliness, lower rates of depression/faster recovery from depression, lower suicide rates, less anxiety, less psychosis, lower rates drug/alcohol abuse, less delinquency/criminal activity, and greater marital stability/satisfaction (see Koenig et al., 2001, for a review). However, schizophrenia and other psychotic disorders have not been established as having a relationship with religiosity (Koenig et al., 2001)

Depending on the conceptualization of religiosity and measures, there were different findings reported regarding the relationships between religiosity and mental health and well-being. Peterson and Roy (1985) found that church attendance was significantly negatively related to anxiety, but it was not related to meaning and purpose in life. These researchers suggested that the church community provides emotional

support, which in turn alleviates anxiety. The best predictor for meaning and purpose in this study was religious salience (e.g., the report that religion is very important or not at all important in daily life). Results showed that not all aspects of religiosity affect well-being.

Longitudinal studies provide more clarity for the effects of religiosity on mental health. Schnitker (2001), using national longitudinal data on a large sample of mostly Christians, examined three aspects of religious involvement: attendance at religious services, religious salience (similar to “religiosity” and having life purpose/meaning), and spiritual help-seeking (involving prayer and/or religious counsel) and its relations to mental health. He found a significant main effect of religious attendance on depression: those attending more religious services had significantly less depression, with social integration accounting for much of the effect. Spiritual help-seeking was also noted to have a significant, positive effect on reducing depression. He also reported a U-shaped effect for religious salience and depression: those with low and high levels of religious salience reported more depression than those with values in the middle. Stress-buffering effects were also found for both religious salience and spiritual-help seeking. Individuals who practice prayer or seek religious counseling or try to find meaning and purpose in life tend to be less likely suffer from stress. The evidence suggests a significant negative relationship between religious involvement and depression. One major limitation of this study is that the sample appeared to consist of mostly Christian denominations, the majority of whom were Protestants.

One particular study comprised a unique sample of Afghan, Muslim, depressed refugee patients (Jahangir, Rehman, & Jan, 1998). The number of depressive symptoms

as well as degree of religiosity were assessed. Results revealed a negative relationship between degree of religiosity and suicidal plans/attempts. The authors attributed their findings to the teachings of the Islam religion, in which suicide is considered to be an unforgivable sin.

Studies suggested possible effects of religiosity on decreased substance abuse (Kendler et al, 2003; Larson & Wilson, 1980). For instance, a link between substance abuse and lack of meaning in life was revealed, which in turn is associated with lower religiosity (Larson & Wilson, 1980). In addition, researchers have found that religiosity and religious affiliation are potential predictors for reduced alcohol disorders (Koenig, George, Meador, Blazer, & Ford, 1994; Moore, Mead, & Pearson, 1990): those with higher levels of religiosity are less likely to abuse alcohol or other drugs. In addition, Koenig et al.'s (2001) review reported that approximately 100 studies have suggested religiosity as a potential prevention tool for alcohol and drug abuse for all age groups.

Religiosity may work as a buffer or protective factor for stress. Individuals who use religion for coping appear to cope better with illness compared to those who do not (Saudia, Kinney, Brown, & Young-Ward, 1991; Siegel & Schrimshaw, 2002; Williams, Larson, Buckler, Heckmann, & Pyle, 1991). For instance, Siegel and Schrimshaw (2002) interviewed 63 older HIV-infected persons to examine specific benefits of religious and spiritual coping. Benefits reported included: they believed that religion/spirituality slowed the progression of their illness as well as helped to manage psychological stress of illness; they found of meaning from their illness experience; and religious activities stimulated several positive emotions, such as tranquility, peace, and contentment, and reduced several negative emotions such as guilt and self-blame. Both religious activities

and private religiosity reportedly provided support socially and internally. In addition, a review of 40 studies regarding religious coping and physical health revealed that 53% of these studies found religiosity as a potential protective factor (Pargament, 1997).

Religious coping may help one satisfy a quest for significance during times of stress.

However, researchers pointed out that the stress-buffering effects of religiosity on mental health are not conclusive (e.g., Ellison, Boardman, Williams, & Jackson, 2001). For instance, Plante, Saucedo, and Rice's (2001) study did not find an association between religious faith and coping with daily stress; the authors indicated that religious coping may be used with large and traumatic stressors as opposed to daily stressors. In addition, Abernathy, Chang, Seidlitz, Evinger, and Duberstein (2002) reported a curvilinear relationship between religious coping and depression among spouses of lung cancer patients; those with moderate levels of religious coping had lower levels of depression than those with high or low levels of religious coping.

In general, although the relationship between religiosity and mental health has been supported by some studies, Crawford, Handal, and Weiner, (1989) pointed out that previous research generated ambiguous and inconclusive results. They noted that this is due to using religious measures that are not valid and reliable, not assessing both positive and negative aspects of adjustment, and also not considering gender in the analyses. Thus, further research on religiosity and mental health and well-being is necessary.

Religiosity and Physical Health. Religiosity has been examined with many aspects of physical health, such as heart disease (Friedlander, Kark, & Stein, 1986; Oxman et al., 1995), hypertension (Koenig et al., 1998; Larson, Koenig, Kaplan, Greenberg, Logue, & Tyroler, 1989), immune system functioning (Koenig et al., 1997),

and cancer (Reynolds & Kaplan, 1990), among others (Koenig, 1998). There have been many reviews that have examined the links between religiosity and physical health. Of thirty studies reviewed on heart disease, 75% demonstrated less heart disease / lower cardiovascular mortality among those who were more religious (Koenig et al., 2001). Blood pressure has also been studied with respect to religious attendance among older adults (Koenig et al, 1998; Steffen, Hinderliter, Blumenthal, & Sherwood, 2001). Religious attendance and private religious practices were implicated in reduced blood pressure (Koenig et al., 1998).

Another aspect of physical health examined in the literature is mortality. McCullough et al. (2000) conducted a meta-analysis of religious involvement and mortality (odds of survival). They reported a significant relationship between religious involvement and lower mortality, with a small effect size. The largest effect sizes were reported from studies using public measures of religious involvement. Examining moderator variables, the authors reported that religious involvement might be more of a protective factor for women. In addition, they noted that the positive relationship of mortality and religious involvement is mainly due to public participation and not private attitudes/beliefs. These reviewers recommended using measures of religious involvement that are multidimensional. They also noted positive emotions and attitudes associated with physical health and religious involvement as possible mediators, among others.

Helm, Hays, Flint, Koenig, and Blazer (2000) similarly examined private religious activity and survival in a 6-year follow-up study with 3,851 older adults. Results revealed that those who participated in private religious activity before losing their daily living skills survived longer than their non-religious counterparts. Koenig et al.'s (2001)

review of the literature on mortality reported that 75% of studies found that the higher religious groups survived longer but 19% showed no association.

Although most studies reported positive relationships between religiosity and various physical health outcomes, there have been questions about the quality of studies and the effects of confounding variables (Powell et al., 2003). Longitudinal studies with large samples of American adults (e.g., Hummer, Rogers, Nam, & Ellison, 1999; Oman, Kurata, Strawbridge, & Cohen, 2002) have reported links between weekly church attendance and reduced incidence of cardiovascular mortality. However, after demographic factors and healthy lifestyle behaviors were considered, the relationship was weakened. Powell et al. (2003) suggested that the religiosity might encourage people to have a healthier life style, which in turn contributes to overall better health status.

Both Oman et al. (2002) and Hummer et al. (1999) also examined the effect of weekly church attendance and cancer mortality. Although both found a link between weekly church attendance and a reduction in cancer mortality, this relationship was weakened significantly or disappeared when preexisting health status was considered. This may suggest that people who become ill may likely pursue religion. Studies examining the links between religiosity and the progression of cancer also reported similar findings (e.g., Gardner, Sanborn, & Slattery, 1995; Zollinger, Phillips, & Kuzma, 1984). After adjusting confounding variables and health behaviors, no significant relationship was observed.

In several studies, the effects of religiosity and recovery from acute illness were examined. Using a single item, Oxam et al. (1995) found that even after adjusting confounding variables, a relationship existed between religiosity and six-month mortality

in patients with elective cardiac surgery. However, the results of this study were questioned on its statistical limitations. Further studies in this area not only reported inconsistent results, but also some evidence of a negative effect of religiosity on recovery (Fitchett, Rybarczyk, DeMarco, & Nicholas, 1999; King, Speck, Thomas, 1999). Thus, more research considering confounding variables and careful operationalization of religiosity are necessary to investigate the relationship between religiosity and various physical and mental health outcomes.

Mechanisms of the Effects of Religiosity on Health and Well-being

In recent years, there has been increasing interest in understanding pathways of the relationship between religiosity and health and well-being. Research reviews pointed out that although the relationship between religiosity/spirituality and health seems to exist, the nature of this relationship, the “how,” has not been clarified (George et al., 2002). By knowing the function of the mediator, one can understand how religiosity exerts its impacts on health.

George et al. (2002) reviewed research on psychosocial mediators of the link between religiosity and health. They concluded that most of mediating variables such as stress, social support and health behaviors did not sufficiently mediate the relationship between religiosity/spirituality and health. In more detail, George et al. (2002) identified four potential mediators in the literature: health practices, social support, psychosocial resources, and belief structures. Regarding health practices, religiosity leads to good health routines, which would lead to better health. It is hypothesized that health practices occur among the religious because a specific religion prescribes them, or more generally

teaches one to take care of one's body. However, there is limited research with inconsistent results.

Second, social support was examined as another potential mediator of the religion-health link, especially in conjunction with religious attendance. The benefits of social support on mental and physical health have been well documented in the literature (e.g., Arafa, Nazel, Ibrahim, & Attia, 2003; Taylor, Dickerson, & Klein, 2002). Religious attendance is an obvious means to develop social support/networks, compared to private religious involvement (Ellison & George, 1994). Researchers reported that formal social integration/support is a mediator for the relationship between church attendance and lower levels of depression (Nooney & Woodrum, 2002; Schnittker, 2001). Spiritual support from church members was related to one's use of religious coping responses (Krause, Ellison, Shaw, Marcum, & Boardman, 2001). Koenig et al. (2001) reported that 19 out of 20 studies they reviewed reported a positive relationship between religiosity and social support. However, there is mixed evidence for social support as a mediator. For instance, social support satisfaction was not found to be a mediator for religious coping and ambulatory blood pressure, although it was related to lower blood pressure for African Americans at awake times (Steffen et al., 2001).

Psychosocial resources have also been noted as a possible mediator. Religious participation is linked to increased psychosocial resources, which is associated with improved health. Psychosocial resources include self-esteem, self-efficacy, and mastery (George et al., 2002). Belief structures (e.g., finding life meaning from religiosity) also have been implicated as a possible mediator in examining the religion-health connection (Antonovsky, 1980; Ellison, 1991; Fredrickson, 2002). For instance, Ellison (1991)

reported that existential certainty, which can be defined as a person's belief in religion providing life meaning, is a mediator between religious attendance and well-being. Antonovsky discussed the construct *sense of coherence* (SOC; which consists of meaning, predictability, and manageability) to understand situations in which stress doesn't damage health.

Although there have been attempts to understand the pathways between religiosity and health, only a few studies have utilized adequate measures of mediating variables in their study of religiosity/spirituality and health (Miller & Thoresen, 2003). Even existing empirical studies of possible psychosocial mediators have shown inconclusive results. Seeman, Dubin, and Seeman (2003) reached a similar conclusion with potential biological mediators of religiosity/spirituality and health. Considering the significance of understanding mediators, it is necessary to include possible mediating variables in the studies of religiosity and health.

Positive Emotion as a Mediator. Review of the literature on mediators of religion and health reveals positive emotion as a potential mediator of the religion-health link. In fact, all four of these potential mediators discussed in the previous section could conceivably be linked to positive emotion. According to Baron and Kenny (1986), research examining the mechanism should examine mediators, the approach adopted in the current study.

In recent years, with the development of positive psychology, there has been growing interest in the relationship between positive emotion and health. Positive emotion is one component of subjective well-being, which is comprised of life satisfaction, positive affect, and low levels of negative affect (Diener, 2000). Positive and

negative affect have been found to be relatively distinct dimensions (Watson, Clark, & Tellegan, 1988). Positive affect is defined as “the extent to which a person feels enthusiastic, active, and alert” (Watson, Clark, & Tellegan, 1988, p. 1063), whereas negative affect is “a general dimension of subjective distress and unpleasurable engagement that subsumes a variety of aversive mood states, including anger, contempt, disgust, guilt, fear, and nervousness” (p.1063).

Frederickson (1998, 2000, 2001, 2003) has developed a model of the effects of positive emotions, termed the *broaden-and-build theory*. The theory states that specific distinct positive emotions, such as joy, interest, contentment, pride, and love, all have the capability to broaden a person’s momentary thought-action repertoire and build their enduring personal resources. These resources may consist of intellectual, social, physical as well as psychological resources (Fredrickson, 2001).

Fredrickson (2002) has suggested positive emotions as a mediating link to religiosity and health. According to Fredrickson’s theory, one can assume that there is a correlation between positive emotion and level of spirituality. She speculated that religious persons experience meaningful positive emotions more than non-religious persons, which accounts for the benefits to health and well-being. Fredrickson (2002) also recognized that positive emotions are not the only factor that may be contributing to physical health and well-being. She has, however, indicated that positive emotion is the central factor due to having an intrinsically motivating component and providing the energy for healthy growth and development.

Specifically, religious practice leads to positive meaning in life, which leads to positive emotions, expanded thought processes, then increased personal resources, and

finally to enhanced health and well-being. Her theory encompasses all four potential mediators reported in a recent review of the literature (George et al., 2002). However, researchers have suggested that religion can promote negative emotions and unhealthy coping mechanisms (Exline, 2002; Frederickson, 2002; Pargament, 2002). Thus, it is imperative to examine the positive emotion as a potential mediator between religiosity and health.

Studies have explored the relationship between positive emotion and well-being on health and longevity. For instance, Moskowitz's (2002) study with HIV positive, homosexual men found that higher average scores of positive affect was related to a significantly lower risk of death from AIDS. Positive affect was found to be the "active ingredient" with mortality with this particular sample. Another study examined longevity by looking at the autobiographies of 180 Catholic nuns at their final vows (Danner, Snowdon, & Friesen, 2001). Results revealed that those with the strongest positive emotional content in early-life had a strong association with longevity 60 years later. In addition, positive mood states have also been associated with lowered risk of developing the common cold and fast recovery (Cohen, Doyle, Turner, Alper, & Skoner, 2003).

Positive emotions have also been examined as buffers for stress. Positive emotions seem to be an essential factor that buffers resilient people against depression after crises, for instance the September 11 attack (Fredrickson, Tugade, Waugh, & Larkin, 2003). The buffering effects of positive emotions have also been displayed in two similar studies. Positive emotions negated the cardiovascular activation effects, of negative emotions, thus acting as a buffer for stress reduction and health-promotion (Frederickson & Levenson, 1998). In addition, researchers have examined disease

progression among HIV positive men and reported that beliefs, such as meaning, control, and optimism are beneficial to both physical and mental health states (Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000)

Most models of coping with stress have not considered the role of positive emotion, yet evidence has indicated that positive emotion occurs during severe stress (Folkman, 1997; Folkman, & Moskowitz, 2000a, 2000b, Taylor et al., 2000). Folkman (1997) examined caregivers of partnered men with AIDS and found that the caregivers reported positive emotional states during periods of care giving and bereavement. The following four types of coping were reported in this study: “positive reappraisal, goal-directed problem-focused coping, spiritual beliefs and practices, and the infusion of ordinary events with positive meaning” (Folkman, 1997, p. 1212). Positive meaning was noted to be the underlying theme of all four methods of coping. When examining the coping mechanism of spiritual beliefs and practices, it was concluded that under severe and chronic stress, spirituality/religiosity helped bring about positive reappraisals of the difficult circumstances, while these reappraisals help sustain positive emotions. When examining responses regarding positive meaning, three main sources came to surface: feeling connected and cared about, having a sense of achievement/self-esteem, and being distracted from everyday concerns. The “feeling connected and cared about” source supports the idea of a link among positive meaning, positive emotion, and social support. Frederickson (2000b) has noted that positive meaning leads to positive emotion. Pargament et al. (2001) reported that participants in his study who used religious coping by seeking support from clergy or others reported more positive emotions than those who did not. However, there were inconsistencies in the research findings.

Thus, in the current study, positive emotion will be tested as a possible mediator. This information will allow investigation of whether or not religiosity is a potential source to cultivate positive emotions, which in turn could improve mental and physical health and well-being.

Cross-cultural and Demographic Issues.

In a recent decade, there has been increasing interest in and research investigating the influence of culture on individual's psychological processes and well-being. Research repeatedly has shown the significant effect of cultural or social factors on cognition, emotion and behaviors (e.g., Markus & Kityama, 1991; Markus, Kitayama, & Heiman, 1996).

One major limitation was raised concerning the characteristics of individuals who participated in studies of religiosity and health. Most research, so far, has been conducted with individuals from Judeo-Christian traditions living in the U.S. (George et al., 2002; Koenig et al., 2001; Powell et al., 2003). Furthermore, these participants are primarily European Americans practicing Protestant religions (Bergan, 2000; Crawford et al., 1989; Donahue, 1985). This poses a limitation on the generalization of research findings on religiosity and health.

Although limited, there are indications of cultural influences on the relationship between religiosity and health. For instance, in one study, Jewish participants were less likely to become depressed, than Catholic participants (Idler & Kasl, 1992), although the reasons are unknown. There also seem to be denominational differences in relationships between religiosity and well-being (Ellison, 1991). Specifically, nondenominational

Protestants, liberal Protestants, Mormons, and Jehovah's Witnesses reported higher life satisfaction compared to those with no religious affiliation.

Types of religion and regional factors might also have an influence on the relations between religiosity and well-being. In one study, religious faith and psychological functioning was examined with college students (Plante, Yancey, Sherman, & Guertin, 2000). Participants consisted of three groups from different religions and regions of the United States. Group one was located in the West, and consisted of mostly Catholics. Group two was from a Southern public university, and consisted of mostly Baptists. Group three was from a Southern private university and mostly Protestants. Differences were found among the three groups. Strength of faith was related to meaning in life and optimism among groups one and two, but not three. Strength of faith was also related to experiencing life as a positive challenge among groups two and three (Southern samples), but not group one (Western sample). Strength of faith was also higher for the two Southern samples.

Religious involvement has been reportedly inversely related to suicide. Although it is inconsistent, differences in the suicide rates among different religions have been reported. Durkheim's (1951) research in the area of religiosity and suicide revealed that Catholics had lower suicide rates than their Protestant counterparts in Europe. These findings were thought to be due to greater social integration among the Catholics. In another study with a unique sample of Afghan, Muslim, depressed refugee patients, the number of depressive symptoms and a degree of religiosity was assessed. Results showed that individuals with a higher level of religiosity showed fewer suicidal plans/attempts.

This finding was attributed to the teachings of the Islam religion, in which suicide is considered to be an unforgivable sin (Jahangir et al., 1998).

In the Arab world, religion is very central to the lives of the inhabitants. The majority of the Arab population is Muslim. In certain countries, Muslim prayers are announced on loudspeakers throughout the country, and businesses close at designated prayer times. Coptic Orthodox Christians (Copts) comprise the largest Christian group in the Middle East, and most of them live in Egypt, where they are the minority (10-16%) (Zeidan, 1999). Zeidan (1999) noted that the relationship between Muslims and Copts in Egypt is very complex and has a long history. Tension between the two groups has historical roots, and according to Zeidan, is the result of lack of consensus for a national identity as well as the more recent emergence of Islamic fundamentalism. Copts are in general perceived negatively by their Muslim neighbors. They are at risk for being persecuted, forced to convert, and even murdered. Muslims often view the Egyptian history in a more positive light, and emphasize what they see as tolerance by Islam (1999).

Overall, there are many cultural similarities between Copts and Muslims, yet many distinct differences (Zeidan, 1999). Similarities between Muslims and Copts include unified Arabic language, same country of origin, cultural similarities, and the pride/importance of religion as major part of their culture/life. In addition, both religions incorporate fasting, prayer, and rituals. However, the differences between teachings for each religion are abundant. For instance, each religion has its own spiritual book, which contains different beliefs about God and practices. Other differences include majority versus minority status in Arab countries as well as differences in religious

rituals/practices. Despite these differences, most of the research has focused on Christians.

There are not enough studies on health related issues among different religions, in particular among Arab populations. But based on limited literature, there seem to be more similarities than differences in health related issues between Copts and Muslim faiths. Both religions adhere to the idea of taking care of the body. In particular the Muslim religion prohibits the consumption of alcohol, tobacco, and others drugs since the body is considered to belong to God. The Middle Eastern / Arab culture in general is based on religion and modesty, thus Arabs are very conservative regarding out-of-wedlock relations, homosexual relations, and alcohol and drug use (University of Michigan, 1999). Both religions practice times of fasting throughout the year. For Copts, certain periods of the year require a vegan diet and also times without food or water until the afternoon/evening hours, for instance during the 55 days of Lent. Muslims refrain from food and water from sunrise to sunset, during the month Ramadan, but then can eat any food except pork. For both religions, these limitations in diet and prayer make accommodations for the sick, pregnant, children, and elderly so as not to harm anyone. Also, regardless of their religious background, both Copts and Muslims (Arab Americans in general) try to hide illness. Having either physical or mental illness is considered to be shame in Arab cultures where illnesses are often perceived as a hereditary defect in the family or caused by divine will (University of Michigan, 1999).

In addition, there are changes in religious demographics in the US. The numbers of White Protestants, who are mostly studied in the literature, are decreasing while other minority religions are increasing. More specifically, a recent survey from the National

Opinion Research Center (NORC) at the University of Chicago reported that the Protestant majority in the United States is decreasing. Numbers of Protestants in U.S. have decreased from 63% in 1993 to 52% in 2002. On the contrary, Muslims and Orthodox Christians, among others, have increased from 3% to 7% from 1993 to 2002. In addition, Husain (1998) has reported the sharp growth of Islam in the United States, indicating if this movement continues, Islam will be the second largest religion in the U.S. Thus, it is important to examine other cultures and religions as they continue to grow in the US. Thus, in the current study, the relationship between religiosity and health will be explored with a sample of individuals of Middle Eastern / Arab Muslims and Christians in the U.S.

Not only are there reported differences in religious affiliation, but also racial, gender, and socioeconomic status (SES) differences, which may affect the relationship between religiosity and health and well-being. Only a few studies have reported racial differences in religiosity (Ferraro & Koch, 1994; Jacobson, Heaton, & Dennis, 1990) as well as religiosity and health (Ellison, 1995; Steffen et al., 2001). One particular study examined the strength of religious affiliation/attendance, while making a racial comparison (George & McNamara, 1984). Religiosity was a better predictor for Black participants of well-being than their White counterparts. Examination of betas showed gender differences. For Black women, attendance predicted life satisfaction, while for Black men affiliation was a better predictor of life satisfaction.

Steffen, et al. (2001) found a significant negative relationship between religious coping and ambulatory blood pressure for African Americans, but not for Whites. Ferraro and Koch (1994) found that African Americans had significantly higher overall religious

coping scores than their White counterparts. Ellison (1995) also reported that church attendance was negatively related to depression with White participants, but not Blacks, while lack of denominational affiliation was positively related to depression among Black persons, but not Whites.

However, empirical research to support the impact of age, race, and SES on the relationships between religiosity and health is limited. In fact, age, race and SES could be confounding factors, since older people, the poor, and racial minorities tend to be more religious (Ferraro & Koch, 1994; Levin, Taylor, & Chatters, 1994; Steffen et al., 2001) and are at higher risk for health problems. Also, women tend to have higher levels of religiosity (Ferraro & Koch, 1994; Levin & Taylor, 1993) and on average live longer. Thus, more research is necessary to sort out the impact of demographic variables and control these potentially confounding variables from true effect of religiosity on outcome variables. In the current study, demographic variables such as age, gender, race, and SES were measured and included in the main data analyses.

Importance of Understanding Mediators in Psychology

It is important to study mediators in order to understand how the independent variable influences the dependent variable: “mediators explain how external physical events take on internal psychological significance” (Baron & Kenny, 1986, p.1176). Instead of examining multiple causes in psychology, it is recommended to look at mediators. A variable is considered a mediator to the extent it accounts for the relationship between the predictor and the criterion (Baron & Kenny, 1986).

The mediator model consists of a three variable system, where there are two causal paths toward the outcome variable. There is a direct path from the independent

variable (e.g., religiosity), to the outcome variable (e.g., health). There are two other paths: one from the independent variable (religiosity) to the mediator (positive emotion), and one path from the mediator (positive emotion) to the outcome variable (health). According to Baron and Kenny (1986), a variable functions as a mediator when the following conditions are met: variations on the independent variable (religiosity) significantly account for variations in the mediator (positive emotion), variations in the mediator (positive emotion) significantly account for variations in the dependent variable (health), and when the path from the independent variable to the mediator and the path from the mediator to the dependent variable are controlled, the previously significant relationship between the independent and dependent variables are no longer significant.

For the current study, latent variable modeling was used to analyze the data using Structural Equation Modeling (SEM) techniques. SEM is powerful in that it allows for researchers to test relationships among variables simultaneously rather than one at a time. Understanding mediators in psychology allows for a better understanding of the relationship between variables and their pathways, which will provide valuable information for prevention and intervention strategies.

Purpose of the Study

Along with the growing interests among the general public as well as among scientists on the benefits for religiosity on health and well-being, there have been numerous studies over the years examining the nature of the relationships between religiosity and mental and physical health and well-being (Bergin, 1983; Donahue, 1985; George et al., 2002; Hackney & Sanders, 2003; Koenig & Larson, 2001; Larson et al., 1992; Matthews et al., 1998; McCullough et al., 2000). Although most of these research

findings reported a positive relationship between religiosity and various health and well-being outcomes, there are still inconsistent research findings reported. The processes are not clear and evidence of this link may be exaggerated because of other confounding variables (Miller & Thoresen, 2003; Powell et al., 2003), lack of studies including mediating variables, issues of measurements, and limitations in participants, who were mainly White older Christians in U.S. Most early studies of religiosity and health used only one measure of religiosity, despite of evidences of religiosity as a multidimensional construct (Miller & Thoresen, 2003). Research has shown that different aspects of religiosity are related to outcome variables in different ways. Researchers have also emphasized the importance of examining diverse ethnic groups and different religions in order to further understand the relationship between religion and health and well-being with different populations. Although limited, studies on various psychosocial and biological mediators in religiosity and health have yielded inconsistent results (George et al., 2002; Seeman et al, 2003). Most psychosocial mediators are potentially related to positive emotion, which has also been suggested as a possible mediator for religiosity and health (Fredrickson, 2002).

Thus, the current study examined the relationship between intrinsic and extrinsic religiosity and health and well-being, along with the potential mediating mechanism of positive emotion, in samples of two different religious groups - Arab Muslims and Christians in the U.S. who are from various levels of SES, gender and age.

Research Questions

1. How do different types of religiosity (e.g., extrinsic and intrinsic religiosity) affect physical and mental health among Middle Eastern/Arab Muslims and Christians?

2. Does positive emotion mediate the relations between religiosity and physical and mental health?
3. Are there cross-cultural differences between Middle Eastern/Arab Muslims and Christians when examining the relationships between religiosity and physical and mental health?

Chapter II

Method

Participants

One hundred eighty-nine adults completed the questionnaire packets for the current study. One hundred sixty-nine datasets were included in the current study analysis. One hundred sixty-five (91.2%) of the participants are Middle Eastern, Arab American, or Arab, and 16 (8.8%) are other.

Of these participants, 106 (58.6%) were Christians, 75 (41.4%) were Muslim. Specifically, 76 (42%) were Coptic Orthodox, 8 (4.5%) were other Eastern Orthodox, 17 (9.4%) identified as "Christian," 7 (3.9%) were Catholic, and 73 (40.3%) were Muslim. Participants reported the following frequencies for church or mosque attendance (N=181): 17 (9.4%) One to several times per day; 51 (28.2%) A few times per week; 76 (42%) Once a week; 21 (11.6%) One to a few times per month; 13 (7.2%) Once every few months/only on holidays (holy days) or special occasions; and 3 (1.7%) Never. The majority of participants 164, 90.6%, participated in religious practices, such as fasting, while 15 (8.3%) reported they do not participate in such practices, and 2 (1.1%) did not specify either way.

The participants' time of residence in the United States ranged from 2 months to 81 years ($M = 18.50$, $SD = 13.58$). Six (3.5%) participants resided in the United States for less than 2 years, 20 (11.1%) for 2-5 years, 45 (24.9%) for 6-10 years, 39 (21.7%) for 11-20 years, 70 (39.3%) for more than 20 years, and one (0.6%) participant did not specify. Countries of Origin included: 101 (55.8%) Egypt, 21 (11.6%) United States, 13 (7.2%) Morocco, 13 (7.2%) Syria, 8 (4.4%) Jordan, 4 (2.2%) Yemen, 4 (2.2%) Lebanon, 3

(1.7%) Algeria, 3 (1.7%) Palestine, 2 (1.1%) Pakistan, one (0.6%) Eritrea, one (0.6%) Iraq, one (0.6%) Kuwait, one (0.6%) Libya, one (0.6%) Mauritania, one (0.6%) Saudi Arabia, one (0.6%) Turkey, one (0.6%) Uzbekistan, and one (0.6%) who did not specify the country of origin.

Most participants were recruited from the Eastern part of United States, mostly New England area. Participants ranged in age from 18 to 81 years ($M = 40.11$, $SD = 14.81$). There were 30 (16.7%) participants between the ages 18-25 years, 62 (34.6%) between 26-39 years, 60 (33.5%) between 40-59 years, 22 (12.5%) over the age of 60 years, and 7 (3.9%) who did not specify their age. There were 104 (57.5%) male and 77 (42.5%) female participants. The majority of participants were married or remarried 115 (63.5%), 56 (30.9%) were single, and 10 (5.6%) were divorced, widowed, or separated. The education level for the participants was as follows: 13 (7.2%) high school, 88 (48.6%) college, and 80 (44.2%) graduate school. Estimated annual income was fairly evenly represented among participants: 36 (19.9%) were under \$29,990; 36 (19.9%) 30,000-49,990; 35 (19.3%) 50,000-74,990; 24 (13.3%) 75,000-100,000; 35 (19.3%) over 100,000; and 15 (8.3%) did not specify their estimated annual income. For comparative demographic data based on religious group, see Tables I, 2, and 3.

Measures

Religiosity. Religious Orientation Scale (ROS; Allport & Ross, 1967). This measure contains two subscales: extrinsic and intrinsic religious orientations. According to Allport and Ross (1967) extrinsic religiosity is characterized by having a pragmatic function, such as one's desire to obtain status, social needs, and comfort, while intrinsic

religiosity is defined as more of an internal motivation from the traditions of the religion, which is no longer simply established by self-interest.

Internal consistencies for the Intrinsic scale range on average with Chronbach alphas in the mid .80s, whereas the extrinsic scales have comparably lower Chronbach alphas in the low .70s but still acceptable for research purpose (Hill & Hood, 1999). In the current study, the Chronbach alpha for the extrinsic scale is .77, and the intrinsic scale is .84. It has been noted that this relatively lower reliability in the extrinsic scale may be due to measuring several aspects of the extrinsic orientation. Research showed that two subscales were related but still separable (Batson, 1976). The extrinsic subscale consists of 12 items and the Intrinsic subscale consists of 9 items. Both scales are measured by a 5-point scale, in which the responses include: 1 = "strongly disagree," 2 = "disagree," 3 = "neutral," 4 = "agree," and 5 = "strongly agree." A sample extrinsic item includes, "The church (or mosque) is most important as a place to formulate good social relationships." An intrinsic sample item is "My religious beliefs are really what lie behind my whole approach to life." Items were modified to make appropriate for current sample. For instance when the word "church" was used in an item, "or mosque" was added. Each subscale will be scored separately by adding responses.

Prior to running the main analyses for the current study, a factor analysis was conducted on the religiosity scale. The results showed a three-factor scale for the current sample. Upon reviewing the items, it appeared that the intrinsic scale would remain the same, and the extrinsic scale had two separate factors. These two factors appeared to represent items that reflect a factor of protection, and one that seemed to show other things rather than religion were important in life. This hypothesis was tested with

confirmatory factor analysis, which again confirmed a two-factor model fit for the extrinsic scale. Therefore, for the current study, the intrinsic scale was used (consisting of the original 9 items) and the five items were used for the extrinsic scale (items: 3,4,5,11,12). These two factors provided the best fitting model according the confirmatory factor analysis, thus the following extrinsic items were not utilized in the analysis for the current study: 1,2,6,7,8,9,10. The Chronbach alpha for the extrinsic scale is .74, and .84 for the intrinsic scale (see Appendices C & D).

Positive Emotion. Positive emotion was measured with two scales. A composite score was created by adding total scores from two measures that were used for final data analyses.

Positive Affect Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). This scale was developed to measure both positive and negative affect, which they find to be related, but distinct dimensions. The authors defined positive affect as the degree to which an individual feels enthusiastic, active, and alert, whereas negative affect is a broad aspect of subjective distress and unpleasurable commitment that subsumes a range of aversive moods, including the following: anger, contempt, disgust, guilt, fear, and nervousness (Watson, Clark, & Tellegan, 1988). The measure was scored by summing positive affect (PA) and negative affect (NA) items separately, and subtracting NA from PA. The PANAS consists of total 20 feeling words, 10 items per NA and PA, in which the participant rates each emotional word using a 5-point Likert scale, which is characterized by: 1 = "very slightly or not at all," 2 = "a little," 3 = "moderately," 4 = "quite a bit," and 5 = "extremely." Reported reliabilities measured by coefficient alpha range from .84 to .90. In the current study, the coefficient alpha is .77. The construct

validity of PANAS has been well reported with numerous studies (see Watson, Clark, & Tellegan, 1988 for details) (see Appendix E).

Differential Emotions Scale-Modified (DES-MOD; Fredrickson, 2003). This scale was used as a second measure of positive emotion in order to measure wider range of emotion. The DES was created to evaluate occurrences of discrete emotions by Izard (1977). Later, Fredrickson (2003) modified this scale by adding eight additional positive emotions: amusement, awe, contentment, gratitude, hope, love, pride, and sexual desire. For purposes of the current study, items of sexual desire were excluded due to the religious nature of the questionnaire packet. The DES-MOD is included in order to cover a wider range of positive emotions in addition to the PANAS. The coefficient alpha for the current study is .86. Participants rated their experience of 20 groups of positive emotions in the past two weeks. Participants were expected to respond based on 4-point scale which measuring frequency of each emotion from “never” to “most of the time.” Negative emotion word items were reverse scored and the total score was obtained by adding each response (see Appendix F). The total PANAS score was added to the total DES-MOD score and divided by two, providing an average composite positive emotion score for the current analysis.

Mental Health: Absence of Disease. Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977). This measure was developed to measure depression by The National Institute of Mental Health (Radloff, 1977). The CES-D is widely used to assess for depressive symptoms in the general population. The scale consists of 20 self-report items. It assesses aspects of depression over the past week. Responses based on a 4-point scale, ranging from 0 = “rarely or none of the time” to 4 =

“most or all of the time.” Internal consistencies of the scale reportedly range from .85 to .90 (Radloff, 1977). In the current study, there is an internal consistency of .90. Sample items include “I felt that everything I did was an effort”, and “I was bothered by things that usually don’t bother me”.

Overall, CES-D demonstrated high internal consistency, acceptable test-retest and concurrent validity with self-report criteria, and considerable evidence of construct validity (Radloff, 1977). Negative items were reversely scored. The total score was computed by adding all responses (see Appendix I).

Mental Health: Well-being. The presence of positive mental health will be measured with two scales: 1) Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) and 2) Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994). The SWLS assesses global life satisfaction, which is a component of subjective well-being. It consists of five items using a 7-point Likert scale, ranging from 1 = “strongly disagree” to 7 = “strongly agree.” Sample items include, “I am satisfied with my life,” and “In most ways my life is close to my ideal.” The items are summed for one overall score. It has good reliability with a coefficient alpha of .87. The current study has a coefficient alpha of .79. Construct validity has been reported by numerous studies (see Diener, Emmons, Larsen, & Griffin, 1985 for details) (see Appendix G). The LOT-R is a measure of optimism, which assesses for generalized expectations for positive and negative outcomes. It allows for the measure of a generalized sense of optimism. It contains ten items, 6 items that are scored (three items in the positive direction and three items in the negative direction) and 4 filler items that are not scored. The LOT-R uses a 5-point Likert scale, ranging from 0 = “strongly disagree” to 4 = “strongly agree.”

Sample items include “In uncertain times, I usually expect the best,” and “I rarely count on good things happening to me.” Reliability measured by Chronbach alpha was reported as .78. The current study has a Chronbach alpha of .63. The LOT-R demonstrated stability over time with high test-retest correlations. The LOT-R also reported good construct validity with modest correlations with other measures such as positive relationship with self-esteem and negative relationship with neuroticism and anxiety (Scheier, Carver, & Bridges, 1994). The items were summed for one overall score (not including the filler items) (see Appendix H).

Physical health. Physical health was measured with the Illness Scale (Peterson, 1988). It contains 5 items that assesses type and quantity of physical illness, number of doctor visits, and amount of time for missed school or work over the past month as well as a subjective rating of general health using a 10 point-Likert scale, ranging from 1 = “much worse than average” to 10 = “much better than average.” The items were standardized and then summed for one overall score. We added an item to assess the presence of a chronic mental or physical illness to screen out individuals who have chronic illness from the study, but all participants were included in the analysis (see Appendix J). In conducting the model testing, physical health was dropped from the analysis due to poor model fit (see results below).

Demographic Questionnaire. The demographic questionnaire was presented at the beginning of the survey packet. It included gender, age, ethnicity, education, marital status, country of origin, duration of being in the U.S., religion, and socioeconomic status (see Appendix B).

Procedure

Permission was obtained from priests and imams from Coptic Orthodox churches and mosques prior to data collection. After receiving approval from the IRB committee at the University of Rhode Island data collection began. The principal investigator and other assistants explained the purpose of the study during the visit to churches and mosques and recruited research participants at the completion of prayer services. Informed consent (Appendix A) was reviewed for all persons willing to participate in the study. It was an anonymous survey, so informed consent was understood by completing the survey packet. Participants were informed of the potential risks and benefits from participating in the current study. Participants were also informed that they could withdraw from the study at any time for any reason without penalty. For those who gave consent, the researcher gave detailed verbal directions for completing the survey. Participants were given time to complete the survey anonymously. The principle investigator or another religious member was present the entire time during the data collection to answer any questions from the participants regarding the completion of the survey. The questionnaire packets were collected upon completion.

Some priests and imams did not allow for permission to enter their places of worship, due to the political nature of the country at this time / sensitivity of the subject matter. Some surveys were mailed to persons willing to participate in the study. And some participants took the survey and completed it at home, either mailing or returning the survey the following week.

Chapter III

Results

Data Screening

Prior to the main analysis, careful data screening procedures were conducted. Univariate descriptive statistics were conducted to examine for missing data and accuracy of data entry. If less than 20% of items for a scale were missing, that participant's data was deleted. The data set originally had a total of 189 participants, but 8 of those were deleted ($N = 181$) due to having 20% or more missing items.

Normality of the data was then examined, checking the skewness and kurtosis values. Six of the seven target variables were within normal limits, between -1 and $+1$. The physical health measure displayed a skewness of 1.87 and a kurtosis value of 4.64, which may be considered acceptable since having a kurtosis value less than 8.0 and a skewness value less than 3.0 (Kline, 1998).

Correlational Analysis

Correlation analyses were conducted to assess the relationship among the seven target variables (see Table 4). As seen, most variables were significantly related to each other. As expected there were significant positive correlations with the following: satisfaction with life with optimism ($r = .28$), positive emotion ($r = .47$), and intrinsic religiosity ($r = .29$); optimism with positive emotion ($r = .50$), and with intrinsic religiosity ($r = .29$); depression and poor physical health ($r = .31$).

Furthermore there were significant negative correlations among the following variables: satisfaction with life with depression ($r = -.48$), poor physical health ($r = -.18$); optimism with depression ($r = -.46$), and with poor physical health ($r = -.16$); depression

with positive emotion ($r = -.72$), and with intrinsic religiosity ($r = -.35$); and poor physical health with positive emotion ($r = -.24$). One notable finding is extrinsic religiosity was not related to any other variables at the significant level. This is consistent with existing literature.

Demographic Variables

A series of ANOVA results revealed some significant differences between demographic variables (age, education, marital status, gender, and SES) and the seven dependant variables (optimism, satisfaction with life, depression, physical health, positive emotion, and extrinsic and intrinsic religiosity). Due to the large number of variables, only significant results will be presented here. There was a significant negative relationship between estimated annual income and depression $F(4,161) = 2.66, p = .035, \eta^2 = .06$. There was also a significant relationship between level of education and depression $F(6, 174) = 2.15, p = .05, \eta^2 = .07$. There was also a significant positive relationship between length of time in the United States and satisfaction with life scores $F(50,129) = 1.55, p = .026, \eta^2 = .38$ and also with extrinsic religiosity $F(50,129) = 1.81, p = .004, \eta^2 = .41$. However, controlling for age, the results were not significant $F(2,173) = .722, p = .487$.

Christian and Muslim Group Comparisons. First, an analysis of variance (ANOVA) was conducted to examine differences between the Muslim and Christian groups on demographic variables. The dependent variables were age, length of time in the USA, SES, and level of education. The independent variable was religion (Christian and Muslim). The Muslim group was younger ($M = 34.97$) on average $F(1,172) = 16.96, p < .000, \eta^2 = .09$ than the Christian group ($M = 43.92$). The Muslim group resided in the

United States significantly fewer years ($M = 14.26$) than the Christian group ($M = 21.47$), $F(1,178) = 13.13, p < .000, \eta^2 = .07$. There were no significant differences between groups when comparing education level, $F(1,179) = 1.37, p = .244$ and SES, $F(1,164) = .900, p < .344$. Next, comparisons between the Christian and Muslim groups were conducted with the seven variables (optimism, satisfaction with life, depression, physical health, positive emotion, and intrinsic and extrinsic religiosity); there were significant differences for most variables. The results are presented in Table 5.

A Multiple Regression analysis was then conducted to examine differences between the Muslim and Christian groups ($N = 161$) on the various dependant variables, while controlling for SES, length of stay in the USA, and age. When controlling these three demographic variables, there were still significant differences between religious groups on optimism, $F(4,156) = 3.70, p = .007$. The Muslim group scored significantly higher on optimism ($M = 16.18$) compared to the Christian group ($M = 14.72$). Depression scores were also significantly different between the two groups, $F(4,156) = 9.793, p < .000$. The Muslim group scored lower on depression ($M = 11.10$) in comparison to the Christian group ($M = 16.26$). There were no significant results for satisfaction with life and extrinsic religiosity. There were significant differences between the two groups on positive emotion, $F(4,156) = 9.03, p < .000$. Likewise, the Muslim group also scored higher on positive emotion ($M = 37.16$) compared to the Christian group ($M = 32.43$). Furthermore, there were group differences regarding intrinsic religiosity, $F(4,156) = 4.41, p = .002$. The Muslim group scored significantly higher on intrinsic religiosity ($M = 37.93$) in comparison to the Christian group ($M = 34.39$). Regression results are displayed in Table 6.

Model Testing

In order to address the proposed research questions of the relationship between different types of religiosity (intrinsic and extrinsic) and health and well-being with the positive emotion as a mediator, model evaluation was conducted using structural equation modeling (SEM). In general, large sample sizes are required in structural equation modeling to secure enough power. In SEM, many different issues determine power. There is no clear guideline for an optimal sample size. Some scholars recommend a sample of at least 150 (Anderson & Gerbing, 1988), while others recommend at least 100 subjects per group for latent variable modeling (Loehlin, 2004). Furthermore, 5-20 subjects per parameter has also been recommended. For this study, at least 100-200 Arab American participants were the target number of participants to be recruited for each group (Muslim and Christian). After numerous attempts and several months of recruiting participants, such large numbers were not obtained for both Muslim and Christian groups. The final model testing / mediator analysis was conducted with only a combined sample ($N = 181$). Thus, making model comparisons with more than one sample (two religious groups) using a multiple samples test could not be achieved in the current study.

Latent variable modeling (LVM) was used for my application of structural equation modeling. LVM is used when there are one or more latent variables, each with one or more measures. LVM takes into account measurement error and does not assume measures are perfectly reliable as does path analysis, and multiple regression. In addition, having multiple reliable measures lends to having greater validity. The goal is to assess overall fit of a hypothesized model based on theoretical/empirical research. A maximum likelihood estimation will be used through the EQS 6.1 program (Bentler, 2004).

An overall good fit is expected because the model is based on theory/empirical research. A small, nonsignificant χ^2 value is also expected anywhere between 2-5 times the degrees of freedom, keeping in mind a perfect fit occurs when χ^2 is equal to the degrees of freedom. Also expected are low residuals (ideally .08 or less); for the root-mean-square-error of approximation (RMSEA) values $< .05$ represent a very good fit; for the average absolute standardized residuals (AASR), values $< .05$ are preferred), and fit indices to be very close to 1.00 (the comparative fit index (CFI) and goodness of fit index (GFI) should be .90 or higher) (Hu & Bentler, 1999; Schumacker & Lomax, 2004). These values range from 0 (no fit) to 1 (perfect fit). In addition, there should be significant paths from the factors to the measured variables. Significant values are as follows (Z-ratio > 1.96 , $p < .05$; $Z > 2.58$, $p < .01$; $Z > 3.33$, $p < .001$) (Schumacker & Lomax, 2004). It would be ideal to have medium to large effect sizes by examining R^2 . According to Cohen (1992), $R^2 > .02$ (small), .13 (medium), and .25 (large). RMSEA has also been suggested as a measure for power (Loehlin, 2004).

In order to address the proposed research questions, model comparisons were conducted using three nested models. There are conditions these models have to meet to provide evidence for the mediator model. First, there should be similarities between the full and mediation model, and no significant difference. Second, the direct-effects model should be significantly different from the full model, which will provide evidence for the fit of the mediation model. In addition, the direct-effects model should have the largest χ^2 , a significant p value, the most degrees of freedom, high residuals, and less significance at the micro level.

All three models contain two latent variables: religiosity and mental health. Religiosity consists of intrinsic and extrinsic constructs, while mental health consists of satisfaction with life, optimism, and depression. Positive emotion is the proposed mediator in this model. And physical health was initially considered as a dependent variable. The three models that were tested in the current study are as follows: 1) the mediator model (see Figure 1) has a path from religiosity to positive emotion and two paths from positive emotion (one toward mental health and one toward physical health; 2) the full model (see Figure 2) has two more paths added, one from religiosity to mental health, and the other to physical health; 3) the direct-effects model (see Figure 3) has paths deleted from religiosity to positive emotion and positive emotion to both physical and mental health. Descriptive statistics for the combined sample ($N = 181$) for the SEM analysis are displayed in Table 7.

First, the results in the current study revealed a large significant χ^2 value for all three models, thus the data did not fit the proposed models. Upon further examination of the results, physical health potentially appeared to be contributing to the poor fit of the model (having a small effect size), having a large χ^2 and a significant p value. Once physical health was removed from the models, the χ^2 values became smaller and nonsignificant for both the mediator $\chi^2 (9) = 13.72, p = .133$ and full $\chi^2 (8) = 10.76, p = .216$ models with a large significant χ^2 value for the direct effects model $\chi^2 (9) = 169.40, p < .000$. In addition, other macro level indices of fit improved, this included a lower RMSEA and AASR as well as other fit indices.

The mediator model (Figure 2) has a path from religiosity to positive emotion and one path to mental health. Additional macro level results for the mediator model

included: AASR = .028, RMSEA = .054, CFI = .983, GFI = .976. Figure 3, the full model, contains the same variables and paths, but with one additional path directly from religiosity to mental health. Additional macro level results for the full model included: AASR = .022, RMSEA = .044, CFI = .990, GFI = .981. And, Figure 4, the direct effects model, also consists of the same variables, but with only one path directly from religiosity to mental health. Additional macro level results for the direct effects model included: AASR = .118, RMSEA = .315, CFI = .428, GFI = .823.

Next, a χ^2 test was conducted to further assess if any of these models do not fit the data. After conducting a χ^2 difference test between the two models, there was no significant difference between the full and mediator models, but there was a significant difference between these two models and the direct effects model. The $df_{\text{mediator}} (9) - df_{\text{full}} (8) = df_{\text{difference}} (1)$. Also, the $\chi^2_{\text{mediator}} (13.721) - \chi^2_{\text{full}} (10.755) = \chi^2_{\text{difference}} (2.996)$. The $\chi^2_{\text{difference}}$ is less than $\chi^2_{.05} = 3.84$, and thus is not considered significant at .05 level. Furthermore, comparing the direct effects model with the full / mediator, there is a significant difference, thus the direct effects model poorly fits the data. Specifically, $\chi^2_{\text{direct}} (169.404) - \chi^2_{\text{full}} (10.755) = \chi^2_{\text{difference}} (158.634)$. The $\chi^2_{\text{difference}}$ greatly exceeds the $\chi^2_{.05} = 3.84$, thus showing a significant difference between these two models. These findings lend support for the evidence for the mediator model (Loehlin, 2004).

For both the mediator and full model all paths were significant, except the two parameters that were fixed in the model, optimism and intrinsic religiosity. Effect sizes were large for most variables ($R^2 > .25$), except for extrinsic religiosity as a factor of religiosity, which had a small effect size ($R^2 > .02$) and a medium effect size for the relationship between religiosity and positive emotion ($R^2 > .13$) (Cohen, 1992).

Upon examining the relationship among variables in the path diagrams (Figures 2-4), several interpretations can be made. In all three models, extrinsic religiosity had a weak correlation with the religiosity construct, $r = .170$, while intrinsic religiosity had a very strong correlation, $r = .986$. Depression had a moderately high negative relationship with the construct of mental health from $r = -.811$ to $-.836$; satisfaction with life had a moderate relationship with mental health, with the following range, $r = .554 - .586$; and optimism also had a moderate relationship with mental health, with the following range, $r = .552 - .561$.

In the Direct Effects model (see Figure 4), the direct path from religiosity to mental health was a weak correlation, $r = .109$. There appeared to be a moderate correlation between religiosity and positive emotion for the full and mediator models, $r = .426$. A strong relationship existed between positive emotion and mental health, $r = .820$ -. $.836$ (see Figures 2 and 3). These results suggest that the level of religiosity, in particular intrinsic religiosity, contributes to mental health and well-being by increasing positive emotion.

Chapter IV

Discussion

There has been increasing interest in the effects of religiosity in individuals' lives. In particular, there is a growing body of literature devoted to investigating the relationship between religiosity or spirituality and health and well-being. Most research today indicates a positive relationship between religiosity and health and well-being, but the findings are still inconsistent to a certain degree. The current study attempted to provide some evidence toward resolving this issue.

The first research question proposed was related to comparing the relationship of different aspects of religiosity (intrinsic and extrinsic) on health and well-being; this led to the findings regarding the factor structure of the religiosity scale in the current study. Results showed a two-factor model for extrinsic religiosity, which is similar to other researchers who have modified the measure to created two extrinsic scales, the use of religion for personal benefit (Ep) and for social reward (Es) (Genia, 1993; Gorsuch & McPherson, 1989; Leong & Zachar, 1990).

In the current study, however, the exact same items did not load upon the three scales as in previous research. Similarly, upon further investigation of the extrinsic items, it appeared one factor included items that religion is a protective factor and the second factor appeared to contain items that other things than religion are important in life, such as social relationships, economic status, and morality. Allport and Ross (1967) defined extrinsic religiosity as the desire to obtain comfort, status, and social needs. It appears in the current study these were separated between two factors. For purposes of the current study, one extrinsic scale was utilized in order to make comparisons between an intrinsic

and extrinsic scale. The extrinsic items that represented comfort and some aspects of obtaining social needs were utilized in the current study as the measure of extrinsic religiosity. The intrinsic items more or less appeared to measure aspects of spirituality, which is concerned more with the role of religion in meaning and purpose of life (Koenig et al., 2001). There are some inconsistencies in the literature with some findings suggesting that intrinsic religiosity may be related to spiritual well-being (Ellison, 1983), while other findings suggest that extrinsic religiosity is related to life satisfaction (Bergan, 2000).

In the current study, there was evidence that intrinsic religiosity had a strong relationship with positive emotion and health and well-being compared to extrinsic religiosity in this model. This is consistent with some previous findings that intrinsic religiosity / private religiosity are related to mental health measures (Baker & Gorsuch, 1982; Idler & Kasl, 1992; Koenig et al., 2001). Thus, the current study provides evidence that not all forms of religiosity are related to health and well-being. Previous research found that different aspects of religiosity are related to different health outcome variables (Baker & Gorsuch, 1982; Nooney & Woodrum, 2002; Schnittker, 2001).

In the current study, extrinsic religiosity did not strongly relate to positive emotion and mental health and well-being. Furthermore, it appears intrinsic religiosity, using religion as a means for finding meaning and purpose in life, is what contributes to the strong relationship with positive emotion and mental health and well-being. This is consistent with prior evidence that intrinsic religiosity is related to constructs that lead to well-being (such as purpose in life and lack of anxiety), with the opposite occurring for

extrinsic religiosity, which has been related to prejudice and dogmatism (Donahue, 1985).

The next proposed research question examined positive emotion as a mediator for the relationship between religiosity and physical and mental health. Researchers have documented a positive relationship between religiosity and improved mental and physical health and longevity (George, Ellison, & Larson, 2002). Yet very few have assessed for the process of such effects (George, Ellison, & Larson, 2002); the current study found evidence that religiosity may not provide the direct mental health benefits. Rather it contributes to mental health and well-being through a mediating factor, positive emotion. Previous research has linked positive emotion with improved health and well-being (Cohen et al, 2003; Moskowitz, 2002), but few have documented a link between religiosity with positive emotion (Ellison & Levin, 1998).

The current study provided evidence that positive emotion is a mediating link between religiosity and mental health/well-being as well as evidence toward a more complex theory. Fredrickson (2002) hypothesized that religious practice leads to positive meaning in life, which leads to positive emotions, expanded thought processes, then increased personal resources, and finally to enhanced health and well-being. According to her proposed theory, positive emotion may be one of several possible mediators. As the results revealed, intrinsic religiosity, which is related to positive meaning in life, was related to positive emotion, which linked religiosity to mental health and well-being. Previous research suggested that positive meaning leads to positive emotion (Frederickson, 2000b). Furthermore, it has been recommended to view religion as a meaning system for several reasons, including understanding the role of emotions, goals,

and actions as well as contributing to research regarding religion and individual and societal well-being (Silberman, 2005).

The last proposed research question examined possible cross-cultural differences between Middle Eastern/Arab Muslims and Christians when examining the relationships between religiosity and physical and mental health. Since, most research in the area of religiosity, health and well-being has been conducted mainly with a Christian, Western population (George et al., 2002; Koenig, McCullough, & Larson, 2001), there have been problems generalizing research findings. Researchers are questioning if different denominations account for health benefits, or are some religions more likely than others to generate positive emotions, and furthermore, if so what accounts for such differences (Fredrickson, 2002). The current study used a nontraditional sample, of orthodox Christians and Muslims, most of which are immigrants from Middle Eastern / Arab countries to begin to address such questions. It is important to note that the current sample is highly educated and primarily from high socio-economic backgrounds.

Although limited, some differences appeared. The Muslim group was more optimistic, less depressed and had higher intrinsic religiosity compared to their Christian counterparts. These results should be interpreted with caution as the sample was very heterogeneous despite being of Arab / Middle Eastern descent. For instance, the Muslim group was significantly younger and lived in the United States for a shorter period of time compared to Christian group; the two groups also differed on country of origins.

Implications

The first research question examining the different aspects of religiosity and health/ well-being produced an important finding. The results provided more evidence of

the importance of distinguishing and defining religiosity as a multidimensional construct because each dimension can potentially have a different impact or relationship with the outcome measure. Specifically, the results revealed the strong relationship of intrinsic religiosity, which in the current study is comprised of religion as a tool for finding meaning and purpose in life. This information can be used to inform the public that there is some evidence that intrinsic religiosity is related to positive emotions and well-being / mental health, essentially a healthier life. It also implies that purpose and meaning in life may be a strong contributor toward these outcome variables (positive emotion / mental health and well-being) and may be cultivated through religion or other avenues.

The current study suggested that intrinsic religiosity is significant for mental health. Mental health professionals, who work with such populations, may emphasize the importance of intrinsic religiosity / spirituality or help their clients to enhance this aspect in their lives. Simply attending church or following the rituals of a religion may not be as beneficial for individuals' well-being as understanding the true meaning of religion and internalizing the religious teachings, while living life with higher purpose and meaning. This is important especially with groups that may currently be experiencing stressors or life challenges such as with immigrants and minorities; thus, this may provide a way to prevent mental health problems and foster well-being. Furthermore, clinicians and researchers may want to explore other activities that may increase positive emotions, which turned out to be the important pathway for mental health and well-being in this study.

Limitations/Future Directions

There are a few limitations in the current study. Most importantly, the current study is limited in that it is based on a cross-sectional design. The issue of causality cannot be determined from a cross-sectional design. There are 3 requirements for true causation: 1) association (correlation of at least two variables) – in this case religiosity, positive emotion, and health; 2) temporal ordering; and 3) isolation (taking into account extraneous variables) (Bullock, Harlow, & Mulaik, 1994). A longitudinal design lends more toward evidence for causality by providing some support for temporal ordering. Although, statistically a causal relationship can be tested, future longitudinal studies are necessary to clarify the effects of religiosity on health and well-being and its' mechanisms.

In the current study, due to lack of participants from the Muslim group, the mediating relationship between religiosity and health and well-being comparing different religious groups (Muslim vs. Christian groups) could not be tested. Although, the current study with the combined sample of Arab/ Middle Eastern Muslim and Christian groups provided rare and meaningful information, it still left an unanswered question whether there are differences or similarities in the relationship between religiosity and health for different religions. Thus future research should utilize larger, multiple samples to contribute more evidence toward generalizing the results. Furthermore, replication with diverse religions, gender, ages, races/ethnicities, and countries, using large and multiple samples would also lend more insights toward generalizing the beneficial effects of religiosity on health and the mechanisms.

Despite having a majority Middle Eastern / Arab sample, it was a heterogeneous group; such group differences included country of origin, age, and length of time in the United States. In addition, according to the Middle East Information Network, the Middle East / Arab world consists of at least twenty-one countries. Future studies should also examine within group differences. Other limitations include the use of the English language. For many participants, English is not their first or preferred language; future studies should include both Arabic/English versions of items.

The results of the current study support the need for more research on the effects of religiosity on physical health. Some authors claim that there has been evidence that religious attendance is a powerful predictor for health and mortality (George, Ellison, & Larson, 2002). Although, this may be disputed with the idea that healthy people will attend religious services regularly and non-healthy people may not have that option. In the current study, it appeared that most younger participants were in good health, leaving only older participants more likely to have chronic diseases, such as hypertension, arthritis, diabetes, etc. Because of these issues with the data, in the current study, the relationship between religiosity and physical health could not be tested. The majority of studies examining religion and physical health utilized a population above the age of 60 years (George et al., 2002). Since young adults usually have good health, regardless of their life style, it is hard to test the effect of religiosity on physical health with this group. However, there might be way to test this question using various objective health indicators such as number of sick days taken. Also, in the future studies with various age groups, it would be important to examine the relationship between religiosity and physical health as a function of age.

Due to the inconsistencies in the literature when comparing different aspects of religiosity, future researchers may consider collaborating to use one multidimensional measure of religiosity among multiple, diverse samples in order to make clearer comparisons across studies. This may lead to less confusion about the results and lead to improving generalizability of the results regarding religiosity and health and well-being. These results should also be replicated with larger, diverse samples before making such conclusions. It is also important to remember when interpreting these results that positive emotions and religiosity have been described as dynamic and changing and may be transient over time (Fredrickson, 2002).

Lastly, there is the issue of common method variance. Future research should apply various methods of data collection, rather than solely relying on self-report. These methods may include observation, gathering information from peers, parents, co-workers and reviewing various documents. In addition, rather than using only subjective methods, objective measures should also be included in the analysis.

Significance of the Current Study

The current study is significant in that it examined the relationship between different aspects of religiosity (intrinsic vs. extrinsic) and mental health and well-being with a function of positive emotion as a mediator using a sophisticated data analyses technique, SEM. This is one of few, if not the only study with a rare sample of Arab/Middle Eastern Christian and Muslims living in USA. As such, this study expanded our knowledge on the relationship between religiosity and health and well-being beyond a typical sample by utilizing an understudied sample. In addition, this study is the first study that tested the mediator role of positive emotion for the religiosity-mental health

link. Thus, current findings contributed to our understanding of mechanisms of the possible effects of religiosity on mental health and well-being.

Table 1
Demographic Mean Score Comparisons

	<u>Christian (N = 106)</u>	<u>Muslim (N = 75)</u>
Source	<i>M</i>	<i>M</i>
Age	43.92	34.97
Length of Time in USA	21.47	14.26

Table 2
Demographic Comparisons of Ethnicity and Religion

Source	<u>Christian (N = 106)</u>		<u>Muslim (N = 75)</u>	
	<i>n</i>	%	<i>n</i>	%
Race / Ethnicity				
Arab American / Middle Eastern / Arab	103	97.2	62	82.7
Other	3	2.8	13	17.3
Church/Mosque Attendance				
Several Times per Day	3	2.8	12	16
Few Times per Week	24	22.6	27	36
One Time per Week	53	50	23	30.7
One-Few Times per Month	17	26	5	6.6
Once every Few Months/ Only on Holy days	7	6.6	6	8.0
Never	2	1.9	1	1.3
Participation in Rituals (e.g. fasting)				
Yes	90	84.9	74	98.7
No	14	13.2	1	1.3
Unknown	2	1.9		

Table 3
Demographic Comparisons for Country of Origin

Source	<u>Christian (N = 106)</u>		<u>Muslim (N = 75)</u>	
	<i>n</i>	%	<i>n</i>	%
Algeria	0	0	3	4
Egypt	86	81.1	15	20
Euretria	0	0	1	1.3
Iraq	1	0.9	0	0
Jordan	1	0.9	7	9.3
Kuwait	0	0	1	1.3
Lebanon	4	3.8	0	0
Libya	0	0	1	1.3
Mauritana	0	0	1	1.3
Morocco	0	0	13	17.3
Pakistan	0	0	2	2.7
Palestine	0	0	3	4
Saudi Arabia	0	0	1	1.3
Syria	2	1.9	11	14.7
Turkey	1	0.9	0	0
United States	11	10.4	10	13.3
Uzbekistan	0	0	1	1.3
Yemen	0	0	4	5.3
Unknown	0	0	1	1.3

Table 4

Correlations Among Variables Used in SEM Analysis

	Satisfaction With Life	Optimism	Depression	(Poor) Physical Health	Positive Emotion	Extrinsic Religiosity	Intrinsic Religiosity
Satisfaction With Life	1.000						
Optimism	.280**	1.000					
Depression	-.483**	-.455**	1.000				
(Poor) Physical Health	-.182*	-.155*	.307**	1.000			
Positive Emotion	.469**	.497**	-.720**	-.240**	1.000		
Extrinsic Religiosity	.060	-.131	-.046	-.095	.015	1.000	
Intrinsic Religiosity	.294**	.293**	-.351**	-.011	.420**	.169*	1.000

** p < .01 * p < .05

Table 5
Descriptive and Post-Hoc ANOVA statistics

Source	<u>Christian (N = 106)</u>		<u>Muslim (N = 75)</u>		<i>F</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Satisfaction With Life	25.16	5.34	25.48	6.02	0.14	.707
Optimism	14.72	3.42	16.18	3.73	7.43**	.007
Depression	16.26	10.32	11.10	8.57	12.57***	.001
Physical Health	0.11	2.37	-0.10	2.83	0.30	.583
Positive Emotion	32.43	9.71	37.16	9.73	10.39***	.002
Intrinsic Religiosity	34.39	6.00	37.93	5.18	17.01***	.000
Extrinsic Religiosity	17.42	4.42	17.23	4.76	0.08	.779

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

Table 6
Regression Analysis Statistics for Religious Group Differences

Variable	B	SE B	β	<i>p</i>
Intrinsic Religiosity	3.68	0.96	0.31**	.000
Extrinsic Religiosity	-2.59	0.76	-0.29	.734
Positive Emotion	7.27	1.54	0.36**	.000
Satisfaction with Life	0.52	0.95	0.47	.582
Optimism	1.57	0.60	0.21**	.010
Depression	-7.53	1.53	-3.76**	.000
Physical Health	-0.29	0.43	-0.06	.510

*p <.05. **p <.01

Table 7
Descriptive Statistics for Variables Examined in SEM Analysis (N = 181)

Source	<i>M</i>	<i>SD</i>
Intrinsic Religiosity	35.86	5.92
Extrinsic Religiosity	17.34	4.55
Positive Emotion	34.39	9.97
Satisfaction with Life	25.29	5.62
Optimism	15.32	3.61
Depression	14.12	9.94
Physical Health	0.02	2.57

Figure 1. Proposed Mediation Model

Figure 2. Mediation Model

$\chi^2 (9) = 13.72, p = .133, AASR = .028, RMSEA = .054, CFI = .983, GFI = .976$
 $*p < .05. **p < .01 ***p < .001$

Figure 3. Full Model

$\chi^2 (8) = 10.76, p = .216, AASR = .022, RMSEA = .044, CFI = .990, GFI = .981$
 $*p < .05. **p < .01 ***p < .001$

Figure 4. Direct Effects Model

$\chi^2 (9) = 169.40, p < .000, AASR = .118, RMSEA = .315, CFI = .428, GFI = .823$
 $*p < .05. **p < .01 ***p < .001$

Appendix A

Consent Form

The University of Rhode Island
Department of Psychology
Kingston, RI 02881

Title of Project: Religiosity and Health and Well-being among Arab Muslims and Arab Christians

CONSENT FORM FOR RESEARCH

Dear Participant:

You are being asked to take part in a research project. You must be at least 18 years old to be in this study.

The purpose of this study is to examine the relationship between religiosity and health among Arab Christians and Arab Muslims. Also, understanding how this relationship occurs will also be investigated.

If you decide to take part in this study, your participation will involve filling out questionnaires pertaining to your religiosity, physical health, feelings and thoughts, personal well-being and personal background information. It is estimated to take approximately 20 minutes to complete all survey questionnaires.

There are no known risks associated with individual's participation in these types of studies, although you may be uncomfortable to answer some of questions.

Your part in this study is anonymous. That means that your answers to all questions are private. No one else can know if you participated in this study and no one else can find out what your answers were. Scientific reports will be based on group data and will not identify you or any individual as being in this project. In addition, all questionnaires will be stored in a secured filing cabinet.

Participation to this study is voluntary. You do not have to participate if you do not want. If you decide to take part in the study, you may change your mind at any time. You may stop at any time you feel uncomfortable. Whatever you decide will in no way penalize you.

Although there are no direct benefits of this study to you, your answers will help increase the scientific knowledge regarding the relationship between religiosity and health and its pathway.

If you are not satisfied with the way this study is performed, you may discuss your complaints with the principle investigator or you can write or call Lotus Meshreki (401-

261-0573, imes9560@postoffice.uri.edu) or Dr. Nansook Park (401-874-4243, npark@uri.edu) at the University of Rhode Island.

If you have additional questions or concerns about this study, you may contact, anonymously, University of Rhode Island's Vice Provost for Graduate Studies, Research and Outreach, 70 Lower College Road, Suite 2, URI, Kingston, RI, (401) 874-4328.

You are at least 18 years old. You have read the consent form and your questions have been answered to your satisfaction. Your filling out the survey implies your consent to participate in this study.

Thank you very much for your time and consideration.

Sincerely,

Lotus Meshreki

Appendix B

Demographic Form

I would like to ask you about your life. There are no right or wrong answers. Your individual answers will not be shared with anybody but are needed for completing this research project. Please answer the following questions HONESTLY. Thank you for your help!

*****

For each question, please circle your answer and write any information in the spaces if it is applicable.

1. What is your gender?   Male (   ) Female (   )
2. Age: _____
3. What is your current marital status?
  - A. single
  - B. married or remarried
  - C. divorced
  - D. separated
  - E. widowed
  - F. other, please specify _____
4. What is your highest level of education completed?
  - A. grade school, please specify last grade completed _____
  - B. high school graduate
  - C. some college
  - D. college graduate
  - E. some graduate school
  - F. completed graduate school
5. Your race/ethnicity (circle all that apply):
  - A. African American
  - B. Asian-American or Pacific Islander
  - C. Euro-American (Caucasian)
  - D. Latino(a)
  - E. Native American
  - F. Middle Eastern/Arab American
  - G. Other, please specify _____
6. How long have you lived in the United States? _____
7. What is your country of origin? _____

8. What is your estimated annual family income per year?

- A. under \$29,990
- B. \$30,000-49,990
- C. \$50,000-74,990
- D. \$75,000-100,000
- E. over \$100,000

9. What is your faith tradition? (please circle one answer)

- ___ A. Christian: Coptic Orthodox, Catholic, Protestant,
Other – please specify _____
- ___ B. Muslim: Sunni, Shiiate, Other – please specify _____
- ___ C. Other, please specify _____

10. How often do you attend church services or mosque prayers?

- A. several times a day
- B. once a day
- C. a few times per week
- D. once a week
- E. a few times per month
- F. once a month
- G. once every few months
- H. only on holidays (holy days) or special occasions
- I. never

11. Do you participate in Christian or Islamic practices, such as fasting?

Yes ( ) No ( )

If yes, how often? _____

Appendix C

Religiosity Orientation Scale (ROS; Allport & Ross, 1967)

Please indicate the extent to which you agree or disagree with each item below by using the following rating scale:

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

- _____ 1. Although I believe in my religion, I feel there are many more important things in my life.
- _____ 2. It doesn't matter so much what I believe regarding my religion, as long as I lead a moral life.
- _____ 3. The primary purpose of prayer is to gain relief and protection or salvation.
- _____ 4. The church is most important as a place to formulate good social relationships.
- _____ 5. What religion offers me most is comfort when sorrows and misfortune strike.
- _____ 6. I pray mainly because I have been taught to pray.
- _____ 7. Although I am a religious person I refuse to let religious considerations influence my everyday affairs.
- _____ 8. A primary reason for my interest in religion is that my church is a friendly social activity.
- _____ 9. Occasionally I find it necessary to compromise my religious beliefs in order to protect my social and economic well-being.
- _____ 10. One reason for my being a member in the church is that such membership helps to establish a person in the community.
- _____ 11. The purpose of prayer is to secure a happy and peaceful life.
- _____ 12. Religion helps to keep my life balanced and steady in exactly the same way as my citizenship, friendships, and other memberships do.
- _____ 13. It is important for me to spend periods of time in private religious thought and meditation.
- _____ 14. If not prevented by unavoidable circumstances, I attend church regularly.
- _____ 15. I try hard to carry my religion over into all my other dealings in life.
- _____ 16. The prayers I say when I am alone carry as much meaning and personal emotion as those said to me during services.
- _____ 17. Quite often I have been strongly aware of the presence of God.
- _____ 18. I read the literature about my faith.
- _____ 19. If I were to join a church group I would prefer to join a Bible study group rather than a social fellowship.
- _____ 20. My religious beliefs are really what lie behind my whole approach to life.
- _____ 21. Religion is especially important because it answers many questions about the meaning of life.

Appendix D

Religiosity Orientation Scale (ROS) – Modified Muslim Version

Please indicate the extent to which you agree or disagree with each item below by using the following rating scale:

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

- _____ 1. Although I believe in my religion, I feel there are many more important things in my life.
- _____ 2. It doesn't matter so much what I believe regarding my religion, as long as I lead a moral life.
- _____ 3. The primary purpose of prayer is to gain relief and protection or salvation.
- _____ 4. The mosque is most important as a place to formulate good social relationships.
- _____ 5. What religion offers me most is comfort when sorrows and misfortune strike.
- _____ 6. I pray mainly because I have been taught to pray.
- _____ 7. Although I am a religious person I refuse to let religious considerations influence my everyday affairs.
- _____ 8. A primary reason for my interest in religion is that my mosque is a friendly social activity.
- _____ 9. Occasionally I find it necessary to compromise my religious beliefs in order to protect my social and economic well-being.
- _____ 10. One reason for my being a member in the mosque is that such membership helps to establish a person in the community.
- _____ 11. The purpose of prayer is to secure a happy and peaceful life.
- _____ 12. Religion helps to keep my life balanced and steady in exactly the same way as my citizenship, friendships, and other memberships do.
- _____ 13. It is important for me to spend periods of time in private religious thought and meditation.
- _____ 14. If not prevented by unavoidable circumstances, I attend mosque regularly.
- _____ 15. I try hard to carry my religion over into all my other dealings in life.
- _____ 16. The prayers I say when I am alone (private prayer, Duaa) carry as much meaning and personal emotion as those said to me during services (Salaat).
- _____ 17. Quite often I have been strongly aware of the presence of God.
- _____ 18. I read the literature about my faith.
- _____ 19. If I were to join a mosque group I would prefer to join a Koran study group rather than a social fellowship.
- _____ 20. My religious beliefs are really what lie behind my whole approach to life.
- _____ 21. Religion is especially important because it answers many questions about the meaning of life.

Appendix E

Positive Affect Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988)

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to the word. Indicate to what extent you have felt this was during the past few weeks.

Use the following scale to record your answers.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely
___ interested			___ irritable	
___ distressed			___ alert	
___ excited			___ ashamed	
___ upset			___ inspired	
___ strong			___ nervous	
___ guilty			___ determined	
___ scared			___ attentive	
___ hostile			___ jittery (shaky)	
___ enthusiastic			___ active	
___ proud			___ afraid	

Appendix F

Differential Emotions Scale-Modified (DES-MOD; Fredrickson, 2003)

For each of the following items, please circle the number on the scale to the right that best describes the greatest amount of each emotion you felt in the past 2 weeks. On this scale, 0 means you did not feel even the slightest bit of that emotion and 4 means that you felt that emotion most of the time.

0 = never   1 = hardly   2 = some of the time   3 = often   4 = most of the time

1. I have felt amused, fun-loving, or lighthearted: _____ (0-4)
2. I have felt angry, irritated, or annoyed: _____ (0-4)
3. I have felt ashamed, humiliated, or disgraced: _____ (0-4)
4. I have felt awe, wonder, or amazement: _____ (0-4)
5. I have felt bored, dull, or uninterested: _____ (0-4)
6. I have felt content, serene, or peaceful: _____ (0-4)
7. I have felt disgust, distaste, or revulsion: _____ (0-4)
8. I have felt embarrassed, self-conscious, or blushing: _____ (0-4)
9. I have felt glad, happy, or joyful: _____ (0-4)
10. I have felt grateful, appreciative, or thankful: _____ (0-4)
11. I have felt hopeful, optimistic, or encouraged: _____ (0-4)
12. I have felt interested, alert, or curious: _____ (0-4)
13. I have felt love, closeness, or trust: _____ (0-4)
14. I have felt proud, confident, or self-assured: _____ (0-4)
15. I have felt repentant, guilty, or blameworthy: _____ (0-4)
16. I have felt sad, downhearted, or unhappy: _____ (0-4)
17. I have felt scared, fearful, or afraid: _____ (0-4)
19. I have felt surprised, amazed, or astonished: _____ (0-4)
20. I have felt sympathy, concern, or compassion: _____ (0-4)

Appendix G

Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985)

Below are five statements that you may agree or disagree with. Using the 1-7 scale below indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7-Strongly agree
- 6-Agree
- 5-Slightly agree
- 4-Neither agree nor disagree
- 3-Slightly disagree
- 2-Disagree
- 1-Strongly disagree

_____ In most ways my life is close to my ideal.

_____ The conditions of my life are excellent.

_____ I am satisfied with my life.

_____ So far I have gotten the important things I want in life.

_____ If I could live my life over, I would change almost nothing.

Appendix H

Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994)

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

4 = strongly agree

3 = agree

2 = neutral (neither agree nor disagree)

1 = disagree

0 = strongly disagree

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

Appendix I

Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977)

Instructions: Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

- 0 = Rarely or None of the Time (Less than 1 Day)
- 1 = Some or a Little of the Time (1-2 Days)
- 2 = Occasionally or a Moderate Amount of Time (3-4 Days)
- 3 = Most or All of the Time (5-7 Days)

During the past week:

- _____ 1. I was bothered by things that usually don't bother me.
- _____ 2. I did not feel like eating; my appetite was poor.
- _____ 3. I felt that I could not shake off the blues even with help from my family or friends.
- _____ 4. I felt that I was just as good as other people.
- _____ 5. I had trouble keeping my mind on what I was doing.
- _____ 6. I felt depressed.
- _____ 7. I felt that everything I did was an effort.
- _____ 8. I felt hopeful about the future.
- _____ 9. I thought my life had been a failure.
- _____ 10. I felt fearful.
- _____ 11. My sleep was restless.
- _____ 12. I was happy.
- _____ 13. I talked less than usual.
- _____ 14. I felt lonely.
- _____ 15. People were unfriendly.
- _____ 16. I enjoyed life.
- _____ 17. I had crying spells (periods of crying).
- _____ 18. I felt sad.
- _____ 19. I felt that people dislike me.
- _____ 20. I could not get "going" (motivated).

Appendix J

Illness Scale (Peterson, 1988)

1. Think back over the past month (30 days). Describe all of the illnesses that you had. When did each start, and when did each finish?

Illness (describe)	started (date)	finished (date)

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

2. Think back over the past month (30 days). How many times did you visit a doctor or other health professional for diagnosis or treatment of an illness? Do not count visits for injuries (e.g., sprained ankle) or for routine checkups.

_____

3. Think back over the past month (30 days). How many days did you miss work or school because of an illness? Do not count days missed because of for injuries (e.g., sprained ankle).

_____

4. Compared to other people your age, how would you rate your health in general?

1	2	3	4	5	6	7	8	9	10
Much worse		average				Much better			
than average						than average			

5. Do you have a chronic (mental and/or physical) illnesses or medical condition?

_____ yes (describe) _____

_____ no

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