Long-Term Relationships Between Religiousness and Posttraumatic Stress Response Following Resource Loss from Hurricane Katrina

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ABSTRACT

LONG-TERM RELATIONSHIPS BETWEEN RELIGIOUSNESS AND POSTTRAUMATIC STRESS RESPONSE FOLLOWING RESOURCE LOSS FROM HURRICANE KATRINA

by Amy Katherine Chamberlain

August 2010

The experience of living through Hurricane Katrina and the resulting losses incurred from the storm have had lasting effects on residents of the United States Gulf Coast. One way in which survivors of Hurricane Katrina have attempted to cope with the resulting stress of such loss is through religious means. The purpose of this study was to examine the impact of resource loss on the resulting stress reactions for survivors, particularly in light of the impact religiosity, religious social support, and religious coping have on long-term stress responses to the disaster. Literature shows that these religious factors have been found to offer positive and negative influences on the recovery process. It was proposed that positive religious coping, positive religious social support, and greater religiosity would mediate a relationship between resource loss and PTSD symptoms, resulting in decreased PTSD symptoms. The hypotheses for mediation were not supported. It was also proposed that negative religious coping, negative religious social support, and resource loss would predict increased levels of PTSD symptoms. These relationships were confirmed, implying the need to combat resource loss, negative religious coping, and negative religious social support following a natural
disaster. Importantly, these results were found over four years after the incident of Hurricane Katrina, showing that the traumatic stress incurred from such an experience can have long-term effects on mental health.
The University of Southern Mississippi

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POSTTRAUMATIC STRESS RESPONSE FOLLOWING RESOURCE LOSS FROM
HURRICANE KATRINA

by

Amy Katherine Chamberlain

A Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

Approved:

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Director

____________________________________

____________________________________
Dean of the Graduate School

August 2010
DEDICATION

To Allen, Cora, and Mira.
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I would like to thank several people who have helped me along this journey.

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CHAPTER I
INTRODUCTION AND LITERATURE REVIEW

Introduction

Hurricane Katrina devastated the Gulf Coast region of the United States on Monday, August 29, 2005. To date it was one of the most deadly and the most costly natural disasters ever to hit the United States. The region amassed over 100 billion dollars in economic losses, over 500,000 people were displaced, and well over 1,000 deaths occurred (CNN, 2005). The city of New Orleans flooded and entire communities along the Gulf Coast of Mississippi were washed away by the flood surge that accompanied the Hurricane. Over 70,000 homes in Mississippi alone were damaged or destroyed (International Medical Corps, 2006).

In addition to physical losses, significant negative mental health effects, such as posttraumatic stress disorder, were also reported by Katrina survivors (International Medical Corps, 2006). These effects of the disaster persisted in many survivors for several years following the hurricane (Galea et al., 2007). In a study conducted two years after the hurricane, it was found that over 20% of Gulf Coast residents experienced symptoms of posttraumatic stress disorder, an increase over the previous year (Kessler et al., 2008). One area of impact on the lives of Katrina survivors that has received little attention is the impact religiosity has on the traumatic stress responses that followed exposure to Hurricane Katrina. According to Aten et al. (2008), exposure to a disaster such as Katrina can impact one’s religious and spiritual life as well as their physical and mental health. Alternately, people’s religious life appears to influence one’s response to disasters; the way people use their religion (e.g., creating meaning) seems to influence
both positive and negative responses to disasters (e.g., using the disaster as an opportunity for growth vs. viewing it as a punishment from God).

This study examined the long-term relationships between religiousness (religiosity, religious coping, and religious social support) and posttraumatic stress responses following resource loss from exposure to Hurricane Katrina. The Conservation of Resources (COR) Stress Model (Hobfoll, 1989) provided a structure for the assessment of distress participants in this study experienced resulting from Hurricane Katrina. How participants used religious factors to cope with this loss and how that coping affected current stress reactions was the main focus of this study.

Religion often moderates the effects of life stress when people feel challenged or vulnerable (Pargament, 1997). Various aspects of religiousness have the potential to impact one’s response to resource loss from a disaster. One aspect of religiousness assessed in this study was religiosity. For this variable, this researcher measured church attendance, use of prayer, and experiencing the presence of the divine in one’s life (Duke Religion Index; Koenig, Parkerson, & Meador, 1997).

Another aspect of religiousness assessed in this study was religious social support. This study assessed the types of support received through others at religious institutions—emotional support received from others, negative interactions, and anticipated support. The impact these types of support have on stress resulting from the disaster was measured. Finally, this researcher examined the use of religious coping methods in response to resource loss from Hurricane Katrina. Positive coping methods such as viewing God as a benevolent being to help guide one through the difficult time was expected to be a helpful response; while negative coping methods such as viewing God as
a punisher who sent the disaster as a punishment were expected to exacerbate stress responses.

Resource Loss

Being exposed to a natural disaster, such as Hurricane Katrina, and experiencing the resulting resource loss of the disaster can result in psychological distress, posttraumatic stress symptoms, or even Posttraumatic Stress Disorder (Kaiser, Sattler, Bellack, & Dersin, 1996; Phifer & Norris, 1989). The impact of exposure to a traumatic event creates significant disturbances in the person’s life through such symptoms as avoiding similar situations, re-living the experience, and an increased state of arousal (DSM, 4th ed.; APA, 1994). Over the years researchers have studied resource loss in an effort to understand how resource loss affects mental and physical health (Hobfoll, 1989; Kaiser, Sattler, Bellack, & Dersin, 1996; Sattler et al., 2002; Schuster et al., 2001; Smith & Freedy, 2000; Stein et al., 2004).

Psychological distress is defined by Hobfoll (1989) as one’s response to the threat of losing resources, actually losing resources, or not gaining resources after making an investment designed to profit in a gain of resources. Stress may be produced both from actual losses or perceived losses along these lines. Resources are defined as “objects, personal characteristics, conditions, or energies” (p. 516) that a person values or uses to gain further resources. Hobfoll describes four types of resources. Object Resources are valued for their physical nature or because they bring status due to their rarity and expense. One example is a home, which provides shelter, or a mansion, which also implies status. Condition resources represent values. Marriage and seniority are good examples of condition resources. Personal Characteristic resources assist in the
resistance of stress. These are often personality traits or skills, such as confidence or self-esteem. Social support can also provide this. Finally, *Energies* such as time, money, and knowledge are resources that are valued for their ability to help one acquire other resources.

*Conservation of Resources Stress Model*

According to the Conservation of Resources (COR) stress model (Hobfoll, 1989), resources are often threatened by environmental circumstances. When facing threats (stressors) people cope by using their resources to try to minimize their resource losses, which may result in resource-depletion (Hobfoll, 1989). When their efforts at coping use more resources than the comparative benefit from coping, the coping outcome will likely be negative. For example, if a person uses all of their money to procure basic survival needs following a disaster, but still do not have enough to buy everything they need to survive, their coping effort will likely result in greater distress because now they do not have the supplies they need and they are out of money. When not threatened, people try to store up a surplus of resources in the event of future losses (e.g., buy hurricane survival supplies at the beginning of hurricane season). If people invest their resources with the expectation of a gain in future resources (spending time reading a self-help book), but do not receive this gain (do not experience increased mental health), it will feel like a loss of resources which can lead to stress. But, investing resources when not under stress often results in increased resources. For example, giving of personal resources to the support of a spouse for the sake of a marriage often results in increased future resources such as love, security, and self-esteem. As the COR Stress model states, positive coping
techniques help to replenish the lost resources, and negative coping does not. The model posits that psychological distress is curbed or improved when resources are regained.

A meta-analysis of disaster studies conducted by Rubonis and Bickman (1991) showed a 17% increase in the prevalence of psychopathology after exposure to a disaster. Psychological distress can develop well after exposure to an event - weeks, months, or even years later. Given this, one study used the COR stress model (Hobfoll, 1989) to examine college students one month after Hurricane Hugo assessing PTSD symptoms and resource loss (Kaiser, Sattler, Bellack, & Dersin, 1996). Evidence of PTSD was found in 15% of the sample, post-disaster. A hierarchical multiple regression was used to determine the importance of the variables in predicting psychological distress, and examined these according to the COR stress model. Resource loss was found to be a better predictor of distress than anxiety (PTSD). Psychological distress was positively correlated with object and condition resource loss. These findings imply that different types of resource loss may lead to different forms of psychological distress.

Resource loss and traumatic stress. Several studies have shown resource loss to be a significant predictor of psychological distress following a disaster (Sattler et al., 2002; Schuster et al., 2001; Smith & Freedy, 2000; Stein et al., 2004). The type of the disaster (natural or technological), the power of the impact, predictability, and controllability are some of the aspects of a disaster that can contribute to psychological distress. Freedy, Shaw, Jarrell, and Masters (1992) used Hobfoll’s (1989) COR stress model to look at short-term adjustment after Hurricane Hugo, which struck Charleston, South Carolina on September 22, 1989. Results of the study showed a strong positive relationship between resource loss and psychological distress. Resource loss accounted
for more variance in distress than both personal characteristics and coping behavior. Participants who experienced high resource loss, compared to low resource loss, had greater prevalence of clinical distress levels. Resource loss was also associated with being female and type of coping used, with the strongest correlation to disengagement (negative) coping. Similar results were found by Freedy, Saladin, Kilpatrick, Resnick, and Saunders (1994) who surveyed survivors of the Sierra Madre earthquake of 1991. Authors used the COR (Hobfoll, 1989) stress model and found that resource loss was the strongest predictor of psychological distress, even after other predictors were controlled. In specific, higher levels of resource loss were related to higher levels of psychological distress.

Another study in which survivors of the 1993 Midwest flood were surveyed also found resource loss to be a significant contributor to post-disaster stress (Smith & Freedy, 2000). Questionnaires were administered through churches across the disaster affected areas of the Midwest 6 weeks and 6 months following the flood. Results showed that flood exposure was significantly related to psychosocial resource loss and that psychosocial resource loss was related to distress 6 months following the flood. The most commonly cited psychosocial resource losses included disruptions in daily routines, a sense of loss of control, weakened optimism, disruptions in accomplishing goals, and an inability to make contact with loved ones. Authors found that psychosocial resource loss was a mediator between flood exposure and both psychological distress and physical symptoms. The study indicated that psychosocial resource loss was important, even in the face of loss in other resources such as money and possessions.
The COR Stress model (Hobfoll, 1989) states that differences in resources can affect the outcome of stress following a disaster. Sattler et al. (2002) studied the preparation for and response to Hurricane Georges (September 21-28, 1998), 4-5 weeks after the storm made landfall by surveying college students from across the Caribbean and the United States Gulf Coast. The cross national sampling was a rare research opportunity that allowed the authors to compare responses across cultures and varying levels of resources. The countries studied were the U.S. Virgin Islands, Puerto Rico, the Dominican Republic, and the United States. They used the COR (Hobfoll, 1989) stress model for their study and measured stress according to levels of Acute Stress Disorder (ASD) following the disaster. Results showed that location accounted significantly for a portion of the variance in predicting ASD symptoms. Specifically, one quarter of participants from Puerto Rico and the Dominican Republic reported several ASD symptoms, whereas less than one tenth of U.S. and U.S. Virgin Island participants reported ASD symptoms. Given the greater wealth and access to resources in the U.S. and the U.S. Virgin Islands compared to Puerto Rico and the Dominican Republic, these results support the COR Stress model’s (Hobfoll, 1989) assertion that fewer initial resources can result in greater distress following a disaster.

One example of pre-storm differences in resources between locations that may have impacted results is shown by the U.S. respondents reporting adequate insurance coverage before the hurricane at a rate of 57%, whereas only 28% of respondents from the Dominican Republic reported adequate insurance coverage. These resource differences likely had a direct impact on the ability of participants to recover from damages incurred by the hurricane, thereby increasing or decreasing stress levels.
according to location. All locations showed ASD was associated with low social support and personal characteristic resource loss (Sattler et al., 2002).

Another study by Sattler et al. (2006), surveyed college students and community members 4 and 7 weeks following a series of earthquakes that struck El Salvador between January and March of 2001. Researchers studied types of resource loss and their impact on acute stress disorder (ASD) and depression. They found considerable overlap in predictors of both acute stress and depression. Both ASD and depression for the college population were best predicted by loss in personal characteristics and energy resources. For the community sample, ASD and depression were best predicted by personal characteristic and object resource losses. This study was unique in that it applied the COR (Hobfoll, 1989) stress model to a culture entirely different from those studied in the United States. The different impact types of resource loss had on the two populations showed that one disaster can create various kinds of resource losses. In this study, one could speculate that object resource loss was significant to the community sample because they likely had loss to homes or possessions that the college student sample simply did not possess. Given the student population of the current study sample, these results may be replicated.

Sattler (2006) showed the relationship between post-disaster stress and resource loss by comparing residents (students at a community college) who experienced the Northridge earthquake to a control group from another city, matched demographically, that did not experience the earthquake. Using the COR (Hobfoll, 1989) stress model, Sattler found participants in the earthquake sample reported greater psychological distress than controls. Resource losses, specifically energy and personal characteristic, accounted
for the largest portion of variance, indicating they had the greatest impact on post-disaster distress. Most participants in the earthquake sample reported moderate to major damage to their homes. With continued stressors after the disaster and prolonged recovery experiences, secondary stressors occurred. In such cases, when necessary resources are not secured quickly (e.g. families must relocate to FEMA trailers, schools openings are delayed due to damages), personal characteristic, personal, and energy resources have the potential to be decreased, thereby creating even more distress.

Results from this study may inform religious and mental health workers on the types of post-disaster interventions that might be helpful in the event of a future crisis on the Mississippi Gulf Coast. Some of those strategies may be similar to the more general suggestions proposed by Sattler (2006) for post-disaster. First, joining community self-help activities can generate feelings of control and self-esteem (personal characteristic resources) that can decrease distress for disaster survivors. Next, pre-planned neighborhood groups can bolster social support by offering assistance in the event of a disaster. Third, stress management techniques and coping strategies can be taught to help people regain a sense of normalcy and routine after a disaster. Finally, learning and using positive coping techniques can reduce distress after a disaster. One venue for positive coping and community support is a religious organization. Spirituality and religious involvement provide the opportunity for an individual to take advantage of post-disaster support and coping. A closer look at the role religion plays in recovering from resource loss is warranted.

Two factors affecting mental health following resource loss from a disaster relate specifically to this study. The first factor is the impact of psychosocial resource loss on
survivors of the 1993 Midwest flood (Smith & Freedy, 2000). Loss of this resource was
greater even than loss of money or possessions. One form of psychosocial resource
mentioned was contact with loved ones. This type of social support may be related to
religious support, as well, if religious social ties are strong. This study examined the
relationship between religious support and resource loss to determine if this specific form
of psychosocial support had a similar impact on survivors of Hurricane Katrina as was
found in the Midwest flood study.

The second factor is the relationship between types of coping and distress
following a disaster found by Freedy, Shaw, Jarrell, and Masters (1992) in their study of
short-term adjustment following Hurricane Hugo. It was found that the type of coping
used, especially negative coping, was strongly related to distress following a disaster. The
current study more specifically examined both positive and negative religious coping to
determine whether or not a strong relationship would be found for Hurricane Katrina
survivors in a long-term adjustment scenario. The longer time period for recovery from
the hurricane in the current study is considered relevant due to Sattler’s (2006) finding
that when necessary resources are not secured quickly (e.g. families must relocate to
FEMA trailers, schools openings are delayed due to damages), personal characteristic,
personal, and energy resources have the potential to be decreased, thereby creating even
more distress.

Religiosity

Religious and spiritual experience is pervasive in American culture. According to
a 2008 Gallup poll, 78% of Americans believe in God, 15% believe in a higher power,
and approximately 85% identify with a spiritual group (Gallup, 2008). Pargament (1997)
defines religion as “a search for significance in ways related to the sacred” (p. 32).

Religion is a dynamic process/experience that changes over time (e.g., childhood versus adult experiences) and across situations. This complexity results in some challenges to assessing religion. As a result of the complexity of religion’s costs and benefits, Pargament (2002) suggested that measuring religion in specific situations is more effective than measuring more global religiosity. For example, religiousness within the marital relationship was a better predictor of marital well-being than general religiosity for the individual spouses (Mahoney et al., 1999). A common approach is to pursue religion through different motivations, often broken into three categories: intrinsic, extrinsic, and quest. Individuals who pursue religion through intrinsic means experience religion as a personal, guiding force. Alternately, people who are externally motivated are described as generating outward benefits from religious involvement, such as social connectedness (Aten & Leach, 2009). Quest religious motivation is characterized by existential questions that spur religious searching and encompass a willingness to change religious views throughout life (Batson, Schoenrade, & Ventis, 1993).

According to Pargament (1997), religion often moderates the effects of life stress when people feel challenged or vulnerable. That is, religion provides people with sacred meaning, support from a spiritual source, answers to life’s biggest questions, and offers a sense of purpose. Pargament (1997) further clarified that this process may not work for all forms of religions and that in some cases, religion may make life crises worse (e.g., a judgmental reaction to a situation considered immoral in that faith, such as teenage pregnancy).
Religion can be both helpful and harmful depending on how it is used by the individual (Pargament, 2002). Not all forms of religion are the same. Some are more helpful than others. Different beliefs and practices can have differing impacts (costs and benefits) on the believers in specific life circumstances. A belief which emphasizes spiritual connection between people will more likely generate well-being than a belief that espouses distrust or enmity. Further, not everyone will receive the same advantages and disadvantages (e.g., sense of connection to a loving community) due to personal differences (e.g., belief in a benevolent or vengeful God) (Pargament, 2002). After reviewing the empirical literature, Pargament (1997) concluded that religion tends to be more helpful for people who are in situations/crises that challenge personal or social resources. Further, those who have integrated religion into their lives rather than those who turn to it solely in times of crisis often experience greater buffering effects. People vary in their levels of religiousness and although greater religiousness can result in greater benefits it can also come with greater pressures and stress when one does not live up to religious expectations (Pargament, 2002).

Religiosity and Religious Coping

Smith, Pargament, Brant, and Oliver (2000) have pursued another way in which religiosity can be deconstructed in order to better assess its multifaceted impact on people's lives. They have broken religiosity into three categories: general religiousness (e.g., frequency of church attendance and prayer), religious attributes (e.g., believing God caused an event out of love or anger), and religious coping methods (e.g., seeking spiritual support from God, voicing anger at God for an event). Pargament stated that religion can be expressed through different forms in times of crisis and he groups a large
set of religious coping methods into positive and negative patterns, which are associated with different mental and physical health outcomes (Pargament, Smith, Koenig, & Perez, 1998). See the Religious Coping section for greater detail.

**Religiosity and Traumatic Stress**

People often experience psychological distress after exposure to a traumatic event (Rubonis & Bickman, 1991). In such cases it is likely for people to have an increased need for religion and spirituality (Argue, Johnson, & White, 1999). This was shown by Overcash, Calhoun, Cann, and Tedeschi (1996) who found that people who had just experienced a traumatic event often showed a strengthening of religious beliefs and seemed to use their religious beliefs as a means of assigning meaning to the traumatic event, thereby helping that person with the coping process. Assigning meaning to a traumatic event, such as a disaster, appears to be a natural response which helps people make sense of their experience (Kroll-Smith & Couch, 1987). Assigning meaning may make the disaster seem less threatening (Shaw, Joseph, & Linley, 2005) than a random, uncontrollable event. Meaning may also be seen by some as an opportunity for growth (Smith, Pargament, Brant, & Oliver, 2000) if they believe the meaning of the event was to provide an obstacle to overcome or served to open new doors of opportunity.

Shaw, Joseph, and Linley (2005) conducted a literature search of eleven empirical studies linking religion, spirituality, and posttraumatic growth. Their findings indicated that religious beliefs may aid in reinterpreting negative events in a more positive light when seen through the lens of religion, (e.g., a challenge to be overcome either given by God or to be survived with God’s help). Results of their survey found that religion and spirituality usually help people deal with trauma (O’Reilly, 1996; Pargament, 1996; Park,
Cohen, & Murch, 1996; Rudnick, 1997; Rynearson, 1995; Schumaker, 1992), and that trauma can lead to spiritual or religious deepening (Carmil & Breznitz, 1991; Khouzam, 2000; Khouzam & Kissmeyer, 1997; Schuster et al., 2001; Siegel & Schrimshaw, 2000).

Trauma can also lead to divine spiritual struggles. Such struggles include questioning God’s role in one’s life, impaired relationships in one’s religious community, or doubting one’s religious values or beliefs (Pargament & Ano, 2006). The threat these struggles incur on one’s spiritual foundation can lead to mental and physical ill-health (Ano & Vasconcelles, 2005).

Looking at the impact of a trauma on religiosity, McConnell, Pargament, Ellison, and Flanelly (2006) conducted a study with people who had experienced a serious illness or injury in the past year. They examined the relationship between spiritual struggles, such as feeling abandoned by God, and psychopathology, including and exceeding anxiety and depression. Results showed strong support for positive associations between spiritual struggles and psychopathology symptoms, including anxiety, depression, phobic anxiety, Obsessive-Compulsive Disorder, paranoid ideation, and somatization. The researchers concluded that either psychopathology triggers spiritual struggles, or conversely spiritual struggles trigger psychopathology. They recommended investigating spiritual struggles for people who experience a stressful event to understand this relationship better.

In this study, religiosity was in part a foundation for the other two religious variables, religious social support and religious coping. This relationship will be more fully defined in later sections. However, religion was also treated as a separate variable which may have a unique impact on distress following a disaster. This assumption is
supported by the above research showing that religion often moderates the effects of life stress when people feel challenged or vulnerable (O’Reilly, 1996; Pargament, 1996; Pargament, 1997; Park, Cohen, & Murch, 1996; Rudnick, 1997; Rynearson, 1995; Schumaker, 1992), and that it is likely for people to have an increased need for religion and spirituality after exposure to a traumatic event (Argue, Johnson, & White, 1999). Alternately, experiencing trauma can lead to spiritual struggles (Pargament & Ano, 2006), which supports the assessment of both positive and negative effects of religiosity in the current study.

Religious Social Support

Religious social support or church-based social support is a multifaceted construct that refers to the various forms of support received through social ties in one’s religious community (Krause, 2002). Krause (2002) describes three main categories of religious social support. The first category, social embeddedness, describes how frequently one has contact with others from church, including frequency of church attendance, prayer and scriptural study groups, and participation in volunteer activities at church. The second category, received or enacted support, includes the amount of support for physical or emotional needs one receives from church members. This category also includes amount of physical or emotional support provided (enacted) to other church members. Provided support, as opposed to received support, was included because the primary focus of most religious institutions is reciprocal support. In addition, there is evidence that people feel better about receiving support in a reciprocal relationship, where they have the opportunity and/or expectation to give back.
The third and final category is *perceived support*. This type of support refers to one’s perception of the support they receive at church, which is what will be examined in the current study. Two forms of perceived support have especially been linked to health and well-being, anticipated support and negative interaction. Anticipated support refers to one’s belief that church members will provide help if it is needed. Negative interaction refers to one’s belief that an interaction at church was unpleasant in some way: for example, experiencing criticism or lack of reciprocity. Negative interaction can have a significant effect on church goers, such as contributing to increased anxiety. This may occur because church social ties are expected to be pleasant and an unpleasant interaction often comes as a surprise, resulting in greater disappointment due to this expectation (Krause, Ellison, & Wulff, 1998).

There is wide-spread support for a strong connection between religious involvement (*embeddedness*) and physical and mental health (George, Ellison, & Larson, 2002). Although church attendance is associated with psychological well-being (Ellison, 1995), a study by Ellison, Musick, Levin, Taylor, and Chatters (1997) found that these effects are fully mediated by religious social support (*received and perceived support*). Attending church services regularly increases one’s chances of developing social relationships with the people one interacts with at church on a regular basis. In a study by Ellison and George (1994), results showed that those who attended church regularly had larger social networks outside of their families than people who attended church infrequently or not at all. This population enjoyed the benefits of more diverse supportive interactions, was more likely to state that they felt cared for and valued, and reported more validating and nurturing interactions with both their family and church social
groups. In summary, researchers found that regular church attendance was related to social networks that were better than non-church social networks in both quantity of members and quality of social interactions.

The previous study was supported by the results of a national survey conducted by Wuthnow (1994). Findings of this study indicated that 40% of Americans belong to a small group “that meets regularly and provides support or caring for those who participate in it” (p. 395). These small formal church groups can encourage the development of close social relationships that are often used in times of crisis for support. Furthermore, members of these groups reported receiving emotional support, belonging, encouragement, and self-acceptance/self-esteem.

Churches also create helpful social networks by providing official support services for individuals in physical or emotional distress, such as food programs and emotional/spiritual support for the bereaved (Ellison & George, 1994). Ellison and George (1994) suggest that church involvement increases social ties due to bringing together people of similar beliefs and backgrounds. Church-goers may feel more supported by church social support because of the homogenous values and cultural ties often shared with their fellow church members. Social support may be better received from a church peer because their support is more likely to be in keeping with the recipient’s belief structure and cultural expectations. They may have the feeling that the people they receive support from at church simply understand them better and know the right things to say to make the person feel supported (Ellison & George, 1994).

Although the benefits of religious involvement and religious social support are a popular focus for research, previous studies have been limited in scope. For example,
they have not often focused on the negative impact of religious social interactions (Krause, Ellison, & Wulff, 1998). Few studies have examined the impact of negative church social interactions and psychological well-being. Krause, Ellison, and Wulff (1998) conducted a study that also looked at how psychological well-being may be negatively impacted by negative religious interactions. Because core values of many religions, Christianity in this case, set an expected standard of helping others, the impact of negative social interactions can be increased due to the fact that they are unexpected and contrary to the shared values espoused by the faith. In this study the psychological health of members was not affected by negative social interactions at church. Instead, the study showed a negative impact on psychological health for church leaders and clergy. The authors posed that greater commitment to the church and their role in the church may have increased the clergy and leader’s exposure and exacerbated their reactions to negative social interactions (Krause, Ellison, & Wulff, 1998). This may point to a greater impact of negative church-based social interactions for people who are more involved in their churches or who hold great personal meaning for their role in their church. Given the greater prevalence of religious involvement in the Gulf Coast region compared to the sample in the previous study, the relationship will be examined in the current study to see if an effect for negative interactions is found for students in this case.

*Religious Social Support and Religious Coping*

The National Institute on Aging/Fetzer Institute Working Group (1997) was convened to examine the measurement of religion and found 10 dimensions that may affect health. The dimensions impact church goers in different ways, two of which are participation and religious coping. Although church attendance has been found to be the
strongest link to mental health (Ellison, 1995) and is often associated with psychological well-being, these effects have been found to be fully mediated by religious social support (Ellison, Musick, Levin, Taylor, & Chatters, 1997; Krause, Ellison, Shaw, Marcum, & Boardman, 2001). Attending church services regularly increases one’s chances of developing social relationships with the people one interacts with at church on a regular basis.

Pargament’s (1997) work found that religious coping uniquely contributes to health outcomes above and beyond non-religious coping. His research showed positive religious coping to be a strong predictor for recovery and survival from physical illness. These two findings taken together suggest that religious involvement may positively impact health by increasing a person’s social resources, both through support and coping techniques (George, Ellison, & Larson, 2002).

One study by Krause, Ellison, Shaw, Marcum, and Boardman (2001) looked at the relationship between these two dimensions of religion (support and coping) and found that people are more likely to engage in positive religious coping when they experience spiritual support from other church members, and to a lesser extent when they receive emotional support from their pastor. Kahn (1994) proclaimed emotional support might be the most important form of secular social support to positively influence health. However, emotional support from members did not have an effect on religious coping in this study (Krause et al., 2001). Results from this study imply that, for religious people, spiritual support may be even more important.

Krause, Ellison, Shaw, Marcum, and Boardman (2001) argued that religious coping generates from the social relationships at church and the shape religious coping
takes is influenced by those relationships. This is supported by their finding that church support resulted in the use of positive religious coping. Another way religious groups can encourage the adoption of specific religious coping techniques is through the power of social influence. People are more likely to adopt the beliefs and practices of other members of a group to which they feel connected and perceive to be cohesive and supportive. Finally, the researchers suggested further studies should look at the impact of negative church social interactions on negative coping. If social interactions at church indeed impact the type of religious coping one chooses in times of crisis, then negative social interactions and negative views of God shared with church members could contribute significantly to adopting negative religious coping techniques, increasing the likelihood of one experiencing resulting anxiety or other forms of distressed mental health.

*Religious Social Support and Traumatic Stress*

When people are faced with life stressors, they often turn to others for help. However, in the face of significant crisis, people don’t usually turn to mental health professionals, they turn to trusted community leaders they already know (North & Hong, 2000; Taylor, Ellison, Chatters, Levin, & Lincoln, 2000). One source often sought for support is the church. Veroff, Douvan, and Kulka (1981) found that 39% of Americans turn to their clergy for help with serious personal problems, including problems typical for clergy to address such as marital problems, as well as more extreme problems such a serious mental illness. Further, clergy often introduce parishioners to traditional mental health services. Specifically, in the wake of a disaster people often turn to religious groups for guidance and support (Pargament, Magyar-Russell, & Murray-Swank, 2005),
usually before turning to professional mental health services (North & Hong, 2000).
According to Koenig (2006), clergy are often responsible for addressing the psychological needs of church members after exposure to a disaster.

In addition to clergy members, faith groups have also been found to help people respond to disaster experiences (Koenig, 2006). After Hurricane Katrina, faith communities were some of the first responders to provide aid to survivors (Evans, Kromm, & Sturgis, 2008) and were reported by Louisiana residents as providing the most effective support (Cain & Barthelemy, 2008). Just as negative religious beliefs can negatively impact mental health (Pargament, Magyar-Russell, & Murray-Swank, 2005), positive religious beliefs and practices after exposure to Hurricane Katrina reduced the effects of symptoms related to posttraumatic stress disorder (Cook, Aten, & Leach, 2007; Johnson, Aten, Madson, & Bennet, 2006). Understanding the relationship between religious involvement and mental health is important given the role the church, and clergy in particular often play in the lives of church members.

Many studies relating religious social support and health focus on physical health, rather than mental health. Others look at general mental health or a broad spectrum of mental health outcomes. It is likely that the relationship between religion and health is due to a combination of effects from both religious and psychosocial mediators (Murphy et al., 2000). For example, religious involvement has been associated with higher levels of psychosocial resources which are often associated with better overall health, including mental health. Psychosocial resources include factors such as self-esteem, self-efficacy, and sense of mastery (George, Ellison, & Larson, 2002). These resources can be depleted
when faced with the stress of a natural disaster (Hobfoll, 1989), and may be an important factor in the effectiveness of church-based social support after such a crisis.

Krause and Wulff (2005) used results from a nationwide survey of people from all age groups to examine the relationships between church-based social support and physical health. They found that people who frequently attend church are more likely to receive church-based social support and to feel a stronger sense of belonging to that community, which in turn was associated with greater satisfaction with health. Relatedly, people who reported negative interactions at church still reported feeling a sense of belonging, but were less satisfied with their health. Church-based social support may help people cope with life stress more effectively (Ellison & Levin, 1998). As was stated above, one way that church-based social support may decrease a member’s stress is through the encouragement to use religious coping in the face of life stressors (Krause, Ellison, Shaw, Marcum, & Boardman, 2001). Religious coping has been found to be helpful in dealing with life stressors (Pargament, 1997), whereas negative interactions at church tend to be associated with greater psychological distress (Krause et al., 1998).

The impact of both positive and negative church-based social support will be examined in the current study given that church-based social support may help people cope with life stress more effectively (Ellison & Levin, 1998) and, conversely, negative interactions at church tend to be associated with greater psychological distress (Krause et al., 1998). The support received from any and all relationships at church will be considered for the current study due to findings that clergy often address the psychological needs of their church members while other members often assist those in need during a crisis (Koenig, 2006). This researcher did not find research on a long-term
recovery from a disaster such as Hurricane Katrina that examined the role of religious social support specifically. Although churches as a whole, and church members individually were found to be quite active in recovery efforts immediately following a disaster (Koenig, 2006; North & Hong, 2000; Taylor, Ellison, Chatters, Levin, & Lincoln, 2000; Wuthnow, 1994), the long-term benefits or detractions of religious support examined in the current study were expected to shed light on this more prolonged process.

Religious Coping

Religious coping refers to the use of religious practices and beliefs in the coping process (Pargament et al., 1990; Pargament et al., 1992). Religion and coping share a bi-directional relationship. Religion can inform coping choices and can also be a result of the coping process. Difficult life experiences can contribute to a person turning to religion, perhaps for the first time, as a means of coping. Religion is one of the aspects of a person’s spectrum of coping resources that uniquely contributes to the coping process (Pargament et al., 1992). For example, a belief in a deity may compensate for feeling a lack of personal control in a stressful life situation (Smith, Pargament, Brant, & Oliver, 2000).

Religious coping can contribute uniquely (above and beyond non-religious coping strategies) to one’s coping response when faced with stressful life events that limit human power and control (Pargament, 1997). Pargament et al. (1990) determined that religious coping, when compared to non-religious coping, was found to be a better predictor of the outcomes of stress, showing that religious coping is a distinct dimension of coping. General religious resources (e. g., simply being religious) did not predict crisis outcome
as well as the specific coping responses applied to that crisis. Therefore, situation-specific coping responses mediate the relationship between religion and crisis recovery/non-recovery. Religious coping can be seen as a distinct construct, separate from religiosity, by which the use of specific coping responses impact recovery from a crisis. Pargament et al. (1992) showed that different religious orientations (not necessarily denominations, but similar to worldviews) are associated with different coping responses in crisis. It is these coping responses, not the religious orientation, that have the significant impact on mental and physical health outcomes of a crisis (Pargament et al. 1992).

The nature of one’s religious coping strategies at the onset of a crisis will influence the types of religious coping chosen and the success of that coping on the outcome of surviving the crisis. Pargament (1997) explained that spiritual values are part of a larger system, which he refers to as an orienting system, which consists of beliefs, practices, relationships, and values that guide the way one interprets and interacts with their world. Included in this system are coping resources, including religious coping, that are utilized during stressful life events. Under great stress this orienting system may reach a breaking point when the coping mechanisms, such as religious coping, can come under question and a divine spiritual struggle may ensue. Examples of a divine spiritual struggle include believing God is punishing one through an event or expressing anger toward God for an event (Pargament et al., 2005). These struggles directly impact religious coping. This is one way in which a crisis can impact coping rather than coping impacting the outcome of the crisis. People who are living more religiously congruent lives before a crisis occurs find more comfort from their religious beliefs and practices in times of stress (Pargament, 2002).
Religion can contribute to life stress as well as help people cope with it. Pargament deconstructed religious coping into positive and negative forms of religious coping to show the more complex nature of this factor and their differing effects on health outcomes. In particular, negative religious coping seems to contribute to increased depression and anxiety (Koenig & Cohen, 1992; Pargament, 1997). Negative interpretations of God’s role in one’s life can result in deleterious effects in a person’s life or encourage negative forms of coping with life stressors (Pargament et al., 2003). For example, a belief in God’s punishment or abandonment can lead to an increase in feelings of being unforgivable or unacceptable as a human being. Believing in a vengeful God can lead to feelings of fear or distrust of God and others (Pargament, Magyar-Russell, & Murray-Swank, 2005). The most significant problems in resolving negative life events, as well as other mental health problems, tend to occur when one endorses negative religious coping strategies such as feeling religious apathy, believing in a punishing God, feeling anger toward God, having religious doubts, and experiencing interpersonal religious conflict. However, researchers caution that these red flags cannot be interpreted as definite causes of ineffective coping, but should be used as warning signs to clinicians and clergy that an individual may not be using the most effective religious coping strategies available or perhaps may be in some form of religious crisis (Pargament et al., 2003).

Alternately, the use of positive religious coping responses to traumatic life events may improve one’s mental health and one’s manner of resolving problems associated with the trauma. Positive religious coping responses to negative life events result in more positive outcomes regarding resolution of the problem and general mental health status
Four positive religious coping responses are especially beneficial in generating better outcomes following the negative life event. These coping responses are a belief in a just and loving God, viewing God as a partner in the coping process, participating in religious rituals (e.g., church attendance and prayer), and turning to God for spiritual and personal support to find closeness and guidance (Pargament et al., 1990).

Religious Coping and Traumatic Stress

Religious coping can impact long-term mental health in a variety of ways. In a review of eleven studies investigating the relationship between traumatic stress and religiosity, Chen and Koenig (2006) found three studies showing a negative relationship between the variables where increased traumatic stress was correlated with decreased religiosity (Krejci et al., 2004; Lee & Waters, 2003, Sprang & McNeil, 1998), four studies showing positive associations where increased traumatic stress was correlated with increased religiosity (Martz, 2004; Plante & Manuel, 1992; Witvliet, Phipps, Feldman, & Beckham, 2004; Maercker & Herrle, 2003), three studies showing both positive and negative associations (Astin, Lawrence, & Foy, 1993; Connor, Davidson, & Lee, 2003; Falsetti, Resick, & Davis, 2003), and one study (Fontana & Rosenheck, 2004) that found no association between traumatic stress and religiosity. The mixed findings were speculated to be likely due to the different measures of religiosity/spirituality used since religion is a multifaceted construct that can be and was measured in very different ways. In particular, the Brief RCOPE (Pargament, Smith, Koenig, & Perez, 1998), the measure used in one of the studies, has a positive and negative subscale structure, thereby expecting mixed results, based on Pargament’s assertion that types of coping selected, not
religiosity, has the ultimate impact on mental health outcome (Pargament et al., 2003). The different sample groups collected across the eleven studies may also explain why the results were mixed. Different types of trauma (e.g., personal attack versus natural disaster) may result in different types of coping.

One type of trauma studied by religious coping researchers is surviving a disaster, as opposed to surviving abuse or a car accident. Schuster et al. (2001) conducted a national telephone survey in America in the few days following the 9/11 terrorist attacks. Results indicated that 44% of adults experienced a substantial stress reaction, and 90% of their sample reported turning to religious faith to cope, even more so if they already had been diagnosed with Post Traumatic Stress Disorder (PTSD). Researchers did a 2-month follow-up study (Stein et al., 2004) to determine how much the terror-related stress was still affecting people and how they had chosen to cope with the stress over the past months. They re-interviewed people from the first survey and results showed that 16% of respondents had persistent stress while 30% had improved stress. Seventy-five percent of people reporting persistent stress were more likely to turn to religion for coping. Although many people reported talking to family, friends, and turning to religion to cope with their stress, very few reported seeking professional help through counseling, showing the importance of the role religious coping played over traditional therapy.

Posttraumatic stress and religious coping were also assessed in a sample of clergy two months after the 9/11 attacks (Meisenhelder & Marcum, 2004). Results showed that 75% of respondents reported experiencing some form of posttraumatic stress. The most frequent coping strategies utilized were looking to God for support, strength, and
guidance, followed by an increased use of prayer. The more stress a respondent experienced, the higher their reported frequency of coping strategies. More positive religious coping was associated with less numbness and avoidance (stress symptoms). Religion seemed to provide a means of positive and effective coping strategies in the face of stress for this population of clergy. Religious coping has been found to play an important role in high stress situations versus low stress situations. Religious coping was found to be related to lower depression and anxiety in situations characterized by high loss, but not low loss (Mattlin, Wethington, & Kessler, 1990). Religious coping seemed to be more frequently used and more helpful when people experience intense stress caused by extreme situations.

Shaw, Joseph, and Linley (2005) conducted a literature search of eleven empirical studies linking religion, spirituality, and posttraumatic growth. They found that posttraumatic growth is usually related to positive religious coping, among other variables, instead of negative religious coping. However, traumatic events can also lead to no religious spiritual change or even destroy religious/spiritual beliefs, particularly depending upon the use of either positive or negative religious coping methods (Herman, 1997; Overcash, Calhoun, Cann, & Tedeschi, 1996; Schwartzberg & Janoff-Bulman, 1991). Looking at the impact of negative religious coping, Witvliet, Phipps, Feldman, and Beckham (2004) assessed Veterans who were diagnosed with PTSD. Results indicated that severity of depression, anxiety, and PTSD were associated with negative religious coping and that PTSD symptom severity was also associated with positive religious coping. These results provided support for both the increased use of religious coping with severity of anxiety and the counter-productive impact of negative religious
coping on mental health outcome. The relationships between both positive and negative religious coping and PTSD symptoms will also be examined for the current sample.

Religious Coping and Resource Loss

One significant factor in the development of anxiety after a crisis is the amount of resource loss experienced. Smith, Pargament, Brant, and Oliver (2000) conducted a study looking at religious coping and psychological outcomes in response to resource loss (exposure) from a natural disaster (the 1993 Midwest flood). Questionnaires were given to members of churches throughout Missouri and Illinois that had experienced flooding in the summer of 1993 at 6 weeks and 6 months following the event. They based their study on the concept that a person’s general religious disposition (religious orientation) likely affects the particular choices one makes when faced with a crisis regarding religious coping methods and religious attributions placed on the event. The coping methods and attributions likely mediate between the religious orientation (disposition) and the outcome of the stressful event. This concept is also supported by Pargament et al. (1990) who stated that it is not the religion that affects the response to the event, but the thoughts and behaviors applied in coping with the event that impact the outcome.

Results from this study by Smith et al. (2000) showed correlations between religious dispositions, attributions, and coping activities with psychological and religious outcomes. Religious attributions and coping activities predicted religious and psychological outcomes at both time periods after controlling for demographics and flood exposure (resource loss). Results suggest that positive religious coping could be a mediator between religious dispositions and outcomes of a psychological and religious nature following a natural disaster. Further, results suggest that religious coping may
have an even greater impact than amount of resource loss from flood exposure. Specifically, spiritually based coping was related to better psychological functioning and spiritual discontent was related to worse psychological outcome.

Both positive and negative religious coping were assessed in the current study given the findings that negative religious coping contributes to increased depression and anxiety (Koenig & Cohen, 1992; Pargament, 1997), while positive religious coping contributes to increased mental health and more positive outcomes regarding resolution of problems (Pargament et al., 1990). As with religious social support, studies covering religious coping in response to disasters were limited to short-term evaluations. The current study hoped to contribute more understanding regarding long-term uses and effects of religious coping in response to a crisis such as a natural disaster.

Purpose Statement

Resource loss resulting from a natural disaster such as Hurricane Katrina can negatively impact mental health. Religious factors such as religiosity, religious social support, and religious coping can positively or negatively impact one’s recovery from resource loss depending upon whether the religious variable is positive or negative in nature. Current research shows that religious variables impact stress reactions following the experience of a natural disaster, but most studies have been conducted in a relatively short time period following the event. Also, this researcher found no studies examining this specific set of variables with a natural disaster. Thus, the primary research question guiding this study was: What religious processes were used and how did they impact long-term stress reactions following resource loss caused by Hurricane Katrina?
In summary, the purpose of this study was to investigate religiosity, positive and negative religious social support, and positive and negative religious coping techniques as variables impacting the long-term effects of resource loss and psychological distress resulting from exposure to Hurricane Katrina. Through the use of multiple regression, it was expected that higher levels of resource loss, negative religious social support, and negative religious coping would contribute to the impact of long-term post-Katrina stressors. Through the use of hierarchical multiple linear regression, it was expected that higher levels of religiousness, positive religious social support, and positive religious coping would weaken the impact of long-term post-Katrina stressors. This study intended to provide information on how religious factors and resource loss affected long-term stress reactions following a natural disaster such as Hurricane Katrina.

Hypotheses

1. Positive religious coping will mediate the relationship between resource loss and PTSD symptoms.
2. Positive religious social support will mediate the relationship between resource loss and PTSD symptoms.
3. Religiosity will mediate the relationship between resource loss and PTSD symptoms.
4. PTSD symptoms will be predicted by increased resource loss, negative religious coping, and negative religious social support.
CHAPTER II

METHOD

Participants

Participants must have been at least 18 years old to participate and must have lived on the Mississippi Gulf Coast in counties directly affected by Hurricane Katrina at the time of the storm. Cohen (1992) suggests a minimum of 91 participants with five variables for a medium effect size, in order to ensure an adequate level of power with an alpha level of .05.

A total of 136 participants were surveyed, including students attending the University of Southern Mississippi (n=69), Hattiesburg campus, and the Mississippi Gulf Coast Community College (n=67). Data on participants was gathered through a demographics survey (Appendix A). The average age of participants was 21.8, ranging between 18 and 54-years-old; showing that their age at the time of Hurricane Katrina was roughly 17-years-old. Regarding gender, 103 females and 33 males completed the surveys. The racial breakdown showed 66.9% of participants were Caucasian and 22.8% were African American. Participants were undergraduate (90.4%), graduate (2.2%) and alternative students (7.4%) who were enrolled at either school but not pursuing a degree, with 61.8% in their freshman year. Of the religious denominations reported, Christians represented 84.5% of the sample, broken down into 39% Baptist, 23.5% Catholic, 16.2% other Christian, 5.1% Methodist, 3.7% Other Protestant, and .7% Lutheran. Other religions represented include Atheist (2.9%), Buddhist (2.2%), Muslim/Islam (.7%), Agnostic (.7%), Pagan/Wiccan (.7%), Unitarian/Universalist (.7%). The final category was Other chosen at a rate of 3.7% by participants. Participants were asked how stressful
Hurricane Katrina was for them and over 80% reported the experience was at least moderately stressful. When asked if they were dealing with some negative emotional consequences of Hurricane Katrina, 47.3% of participants reported that they are not, while 37% said they were somewhat and 11.6% said they were still dealing with negative emotional consequences. Further demographic information can be found in Table 1.

Table 1

Descriptive Statistics of Participants

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>33</td>
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<tr>
<td>Female</td>
<td>103</td>
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<tr>
<td>Native American</td>
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<tr>
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<tr>
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<td>Sophomore</td>
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<tr>
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<td>5.1</td>
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<tr>
<td>Senior</td>
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<td>7.4</td>
</tr>
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<td>Graduate</td>
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<tr>
<td>Other</td>
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<td><strong>Marital Status</strong></td>
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<tr>
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Table 1 (continued).

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<tr>
<td>Family Yearly Income</td>
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<tr>
<td>under $20,000</td>
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<td>23.5</td>
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<td>$20-40,000</td>
<td>22</td>
<td>16.2</td>
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<td>$40-60,000</td>
<td>27</td>
<td>19.9</td>
</tr>
<tr>
<td>$60-80,000</td>
<td>13</td>
<td>9.6</td>
</tr>
<tr>
<td>$80-100,000</td>
<td>9</td>
<td>6.6</td>
</tr>
<tr>
<td>Above $100,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How stressful was Hurricane Katrina for you?</td>
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<td></td>
</tr>
<tr>
<td>Not stressful</td>
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<td>3.7</td>
</tr>
<tr>
<td>Slightly</td>
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<tr>
<td>Moderately</td>
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<td>24.3</td>
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<tr>
<td>Very</td>
<td>38</td>
<td>27.9</td>
</tr>
<tr>
<td>Extremely</td>
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<tr>
<td>Continued negative emotional consequences?</td>
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<td>11.6</td>
</tr>
<tr>
<td>Somewhat</td>
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<td>Unitarian/Universalist</td>
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<td>.7</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Measures

*Demographics Measure* (Appendix A)

See measures in Appendix B.
Duke Religion Index (DRI; Koenig, Parkerson, & Meador, 1997)

The DRI is a 5-item self-report measure designed to assess religiosity. The first two items assess extrinsic religiosity through attendance at religious services and amount of prayer or religious study. These items are scored on a 6-point frequency scale ranging from (1) never to (6) several times per week. The measure also assesses intrinsic religiosity qualities such as experiencing the presence of the Divine. These 3 items are responded to on a 5-point frequency scale ranging from (1) definitely not true to (5) definitely true. All items are summed for a single score of religiosity with a possible range of scores from 5 to 27, with higher scores indicating greater religiosity.

The authors originally intended the items to be grouped into three subscales based on the three dimensions of religiosity. However, a factor analysis conducted by Storch et al (2004) found support for only one over-arching factor of religiosity. In the first of two studies, both of which were sampled from a college student population, Storch et al (2004) conducted a principal components analysis with varimax rotation on the DRI items. Analysis of the Scree plot delivered one factor, labeled Religiosity, with an Eigenvalue= 3.81 that represented 76.24% of the variance. In their second study, the one-factor model was supported through a confirmatory factor analysis, with a maximum likelihood estimation method used to test the covariance matrix that assessed model fit from the sample data. Results indicated that their proposed one-factor model was the best fit for the sample data (Goodness of Fit Index = .931, Comparative Fit Index = .955, Incremental Fit Index = .956, and Relative Fit Index = .907). Therefore, in this study all five items were summed for a single religiosity score as recommended by Storch et al (2004).
Concurrent validity was found for the original three DRI subscales (Koenig, Parkerson, & Meador, 1997) when it was compared with other measures of religiosity such as the Santa Clara Strength of Religious Faith Questionnaire \( r(523) = .86, p < .0001 \); Storch, et al, 2004) and the Hoge intrinsic religiosity scale \( r = .85; \) Hoge, 1972). Reliability alpha estimates ranged from .75 to .91 (Koenig et al., 1997; Storch et al., 2004).

**Brief RCOPE (Pargament, Smith, Koenig, & Perez, 1998)**

The Brief RCOPE is a 14-item self-report measure of the use of religious coping in response to difficult life events. The measure consists of two subscales, positive and negative religious coping. The items are scored on a 4-point Likert scale ranging from (0) not at all to (3) a great deal. The 14 items are split in half. Seven items represent a loving, supportive (positive subscale) view of God. Seven items represent a rejecting, punishing (negative subscale) view of God. Within each subscale of possible scores ranging from 0 to 21, scores are summed and averaged with higher scores indicating a greater presence of that type of coping. Ultimately, two subscale scores are created on the Brief RCOPE: positive religious coping and negative religious coping.

Pargament, Smith, Koenig, and Perez (1998) developed the Brief RCOPE to be a more succinct version of the longer RCOPE (Pargament, Koenig, & Perez, 2000). Researchers conducted a factor analysis of the RCOPE given to a student sample and found two distinct factors, positive and negative religious coping, which accounted for 38% of the variance. Then, they selected the 14 items for the Brief RCOPE from RCOPE items that had large factor loadings and clearly loaded on one factor. Chronbach’s
Coefficient alpha was determined showing internal consistency estimates for positive religious coping at .90 and negative religious coping at .81. Confirmatory factor analysis completed on the 14 Brief RCOPE items showed a good fit of the two-factor model (GFI = .945, DELTA2 and RNI both = .954).

Discriminant validity of the scales was supported by low correlations found between the positive and negative subscales with college and hospital samples (r = 17, p<.001 and r = .18, p<.001, respectively). In correlational tests researchers found negative religious coping to be related to higher levels of emotional distress and positive religious coping to be related to lower levels of psychosomatic symptoms.

Internal consistency measures of the Brief RCOPE on a hospital patient sample showed Chronbach’s coefficient alpha estimated at .87 for positive coping and .69 for negative coping. This showed stronger support for the positive coping scale, with weaker support of internal consistency for the negative coping scale. Cronbach’s alpha coefficients of .92 for negative religious coping and .85 for positive religious coping were later found in a study by Davis, Hook, and Worthington (2008).

*Religious Support-Short Form (The National Institute on Aging/Fetzer Institute Working Group, 1997)*

The Religious Support-Short Form is an 8-item self-report measure of religious social support. Item answers range from (1) very often/a great deal to (4) never/none, depending on the item. Items in each scale are summed to equal four total scores of religious social support: emotional support received from others, emotional support provided to others, negative interactions, and anticipated support. Scores on each subscale (each containing 2 items) may range from 2 to 8, with lower scores indicating
more presence of the construct being measured. Based on support from the literature on
the relevance of the four subscales to this study, only two subscales were used: emotional
support received from others (positive social support) and negative interactions (negative
social support). The authors encourage researchers to prepare participants to think of the
amount of support they have received over the amount of time since the key event being
studied- Hurricane Katrina in this case.

The National Institute on Aging/Fetzer Institute Working Group (1997)
developed the Religious Support-Short Form to assess issues pertaining to the
relationships one has with people in their religious congregations. Krause and Wulff
(2005) used the emotional support and negative interaction scales in their study on social
ties at church. Using a formula by Rock, Werts, Linn, and Joreskog (1977), they found a
reliability estimate for the emotional scale of .785 and an estimate of .697 for the
negative interaction scale. Estimates for factor loadings on individual items are also
provided in their study. Several items from the scales were measured in a confirmatory
factor analysis of religious social support items conducted by Krause (2002) where he
found evidence of marginally good psychometric properties with standardized factor
loadings above the recommended .400 across all items. This study reports standardized
factor loadings of .831 for emotional support received item 1, .611 for emotional support
received item 2, and .523 for negative interaction item 6. These results suggest relatively
good psychometric properties for these items. Finally, Idler et al. (2003) conducted
reliability estimates and found a reliability estimate of .64 on the negative interaction
scale.

Resource Loss (Sattler, 2006)
The Resource Loss measure is an 18-item self-report measure of the amount of resources lost resulting from a stressful or traumatic event. Items are scored on a 4-point Likert scale with answer ranging from (1) No Loss to (4) Extensive Loss. All answers are summed for one total score of resource loss, with a possible range from 18 to 72, with higher scores indicating greater loss.

Sattler (2006) created a measure of resource loss that was condensed from a longer scale by Freedy et al. (1994). The Sattler measure is a measure assessing loss of objects, conditions, personal characteristics, and energy on populations surviving natural disasters such as hurricanes and earthquakes. Examples of items include loss of food and sentimental possessions (object resources), family and employment stability (condition resources), sense of optimism and humor (personal characteristic resources), and free time and adequate sleep (energy resources). Sattler found excellent reliability on the scale with $a = .91$ (Sattler, 2006). Sattler (2006) used this measure in a study with a population that survived a natural disaster, as did this study.

**PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993)**

The PCL is a 17-item self-report measure of the 17 symptoms of Post-Traumatic Stress Disorder (PTSD) as described in the DSM (4th ed.; APA, 1994). Respondents are asked to indicate the degree to which they have been bothered by each PTSD symptom in the last month. Answers range from (1) not at all to (5) extremely. Items are summed to reach scores between 17 and 85, with higher scores indicating greater PTSD symptoms.

The PCL was originally normed on male Vietnam veterans, showing good validity and test-retest reliability (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996). Expanding the norm samples of the test to survivors of motor vehicle accidents
and sexual assaults, Blanchard et al. (1996) found an internal consistency coefficient (Chronbach’s alpha) for the entire scale of .939. They also determined that if they lowered the diagnostic cutoff score from the recommended 50 (Weathers et al., 1993) to 44, they increased their overall diagnostic efficiency from .825 to .900, their sensitivity from .778 to .944, and their correct diagnosis from 14 to 17 participants out of a total of 18 previously diagnosed with PTSD.

Concurrent validity was supported for the PCL when compared to the CAPS (Clinician-Administered PTSD Scale; Blake et al. 1990), a test Blanchard et al. (1996) referred to as the “Gold Standard” in PTSD diagnosis. Analysis determined a significant overall correlation of .929 between the PCL and the CAPS, and significant correlations on all 17 PCL items when compared to the corresponding CAPS scores. These two measures were also compared using confirmatory factor analysis on a sample of nearly 3,000 utility workers exposed to the World Trade Center Ground Zero site (Palmieri, Weathers, Difede, & King, 2007). When comparing comparable subscales of each measure, Palmieri et al. (2007) found strong convergent correlations ranging from .58 to .74.

Procedure

This project was approved by the Human Subjects Review Committee at The University of Southern Mississippi (see Appendix C). Data collection for this project also received permission from the Dean of Student Services, Bill Yates, at the Mississippi Gulf Coast Community College. Questionnaire packets contained informed consent forms (Appendix D), a demographics page (Appendix A), and the five measures (Appendix B). Not including the demographics page, the total number of items equaled
60 and should have taken participants approximately 30 minutes to complete. All participation was on a voluntary basis. Surveys were distributed on-line through Survey Monkey and, in the case of the University of Southern Mississippi students, through an extra-credit system for Psychology students. Professors at the Mississippi Gulf Coast Community College were contacted and asked to pass the link to the on-line survey along to their students. On-line packets were distributed to the Mississippi Gulf Coast region that was directly affected by Hurricane Katrina. The minimum participant age was 18 years, and participants must have lived on the Gulf Coast in counties directly affected by Hurricane Katrina at the time of the storm. Students answered a screening question in advance and participants who endorsed this item were included in the final data set, resulting in 136 participants. Professors at the Mississippi Gulf Coast Community College who wished to provide extra credit to their students for participation were encouraged to do so.

All participants were offered, through the informed consent form, the opportunity to request the results of the completed study from the researcher. Phone numbers for counseling services were also provided in the event that completing the questionnaires lead to distress on the part of any participants.

Hypotheses

1. Positive religious coping will mediate the relationship between resource loss and PTSD symptoms.

2. Positive religious social support will mediate the relationship between resource loss and PTSD symptoms.
3. Religiosity will mediate the relationship between resource loss and PTSD symptoms.

4. PTSD symptoms will be predicted by increased resource loss, negative religious coping, and negative religious social support.

These hypotheses were to be tested using several multiple regressions (Baron & Kenney, 1986). The first three hypotheses were tested for mediation in a three-step process. First, the strength of the correlation between PTSD symptoms and resource loss was measured. Since this relationship was significant, the next step was to examine the relationships between the positive religious variables and both PTSD symptoms and resource loss. Significant outcomes for all of these relationships would have precipitated moving on to the final step of testing for mediation by running a hierarchical multiple regression predicting PTSD symptoms by resource loss while controlling for positive religious coping, positive religious social support and religiosity. The control variables would have been entered into the regression model first, followed by resource loss. Because the relationships in the second step were not significant, it was not advisable to analyze the hierarchical regression because mediation was not indicated. The fourth hypothesis was tested with a multiple linear regression model using a forced entry method, with PTSD symptoms predicted by resource loss, negative religious coping, and negative religious social support.
CHAPTER III

RESULTS

Preliminary Analyses

In order to test for a need to control for demographic variables in the analyses, gender and socioeconomic status (SES) were assessed in relation to resource loss and PTSD symptoms. To test for differences among means, t-tests were run for gender and low SES versus high SES on both PTSD symptoms and resource loss, as well as ANOVA’s for income and PTSD symptoms and resource loss. No significant differences were found. Additionally, correlations were determined for PTSD symptoms, resource loss, and religiousness among males and females, as well as for high and low SES. Again, no significant relationships were found. It was determined that there was no need to control for these demographics in this study.

Descriptive Statistics of Measures

Table 2 shows the descriptive statistics of the measures used in this study. The mean Duke Religion Index score of 18.8 is slightly higher than the average score of 13.5 found in another student population in a study by Plante, Yancey, Sherman, Guertin, and Pardini (1999), but is considered reasonable given the religious cultural differences between the two regions where these samples were collected (West Coast versus Deep South). This study showed an average resource loss score of 34.5, greater than the average score of 24 found in a United States sample after the less damaging Hurricane Georges also struck the Gulf Coast region in 1998 (Sattler, Preston, Kaiser, Olivera, Valdez, & Schlueter, 2002). The average PTSD Checklist (PCL) score of 31.1 is a sub-threshold score (as outlined by Blanchard, Jones-Alexander, Buckley, & Forneris, 1996)
indicating, as expected, a sample of participants that largely are not experiencing clinical PTSD symptoms, but do show signs of anxiety related to their experience of Hurricane Katrina. In addition, no single item on the PCL indicated stronger responses than any other item. Responses on both positive and negative religious coping scales showed an average score in the middle of the range of possible scores (7 – 28), with the negative religious coping scale resulting in an average of 11.4 and positive religious coping showing an average of 22.1. For the church-based social support scales, out of a possible range of 4-10, the average emotional support score was 5.7. This was a lower score for this scale. The negative interactions scale resulted in a slightly low average score of 3.8, with possible scores ranging from 2 to 10.

Table 2

Descriptive Statistics of Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>n</th>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duke Religion Index</td>
<td>130</td>
<td>5 - 27</td>
<td>18.8</td>
<td>6.3</td>
</tr>
<tr>
<td>Resource Loss</td>
<td>123</td>
<td>18 - 72</td>
<td>34.5</td>
<td>11.6</td>
</tr>
<tr>
<td>PTSD Checklist</td>
<td>130</td>
<td>17 - 78</td>
<td>31.1</td>
<td>12.2</td>
</tr>
<tr>
<td>Religious Coping, positive subscale</td>
<td>129</td>
<td>7 - 28</td>
<td>22.1</td>
<td>6.3</td>
</tr>
<tr>
<td>Religious Coping, negative subscale</td>
<td>126</td>
<td>7 - 28</td>
<td>11.4</td>
<td>5.2</td>
</tr>
<tr>
<td>Religious Support, Emotional Support Subscale (reverse coded)</td>
<td>130</td>
<td>2 - 8</td>
<td>5.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Religious Support, Negative Interactions Subscale (reverse coded)</td>
<td>130</td>
<td>1 - 8</td>
<td>3.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Valid N (list wise)</td>
<td>116</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To ensure adequate reliability of measure used in this study, Cronbach’s alpha was calculated for every scale or subscale on all of the measures, as seen in Table 3 above. Cronbach’s alpha was above .70 on all of the measures, indicating adequate reliability for all scales used in this study.

### Relationships Among the Variables

Pearson product moment correlations were conducted to measure the strength of the relationships between the variables. As shown in Table 4, the relationship between Resource Loss and PTSD symptoms (PCL) was strong, with a correlation of .49. In addition, Resource Loss was positively correlated with negative religious coping (.28) and negative religious social support (.19). The PCL was also positively correlated with negative religious coping (.31) and negative religious social support (.25). Presence of PTSD symptoms and negative religious coping in survivors of Hurricane Katrina was expected to increase with greater resource loss.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Cronbach’s alpha</th>
<th>N of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duke Religion Index</td>
<td>.873</td>
<td>5</td>
</tr>
<tr>
<td>Resource Loss</td>
<td>.909</td>
<td>18</td>
</tr>
<tr>
<td>PTSD Checklist</td>
<td>.929</td>
<td>17</td>
</tr>
<tr>
<td>Religious Coping, Positive Subscale</td>
<td>.948</td>
<td>7</td>
</tr>
<tr>
<td>Religious Coping, Negative Subscale</td>
<td>.881</td>
<td>7</td>
</tr>
<tr>
<td>Religious Support, Emotional Support Subscale (reverse coded)</td>
<td>.818</td>
<td>2</td>
</tr>
<tr>
<td>Religious Support, Negative Interactions Subscale (reverse coded)</td>
<td>.758</td>
<td>2</td>
</tr>
</tbody>
</table>
There was no specific prediction for the relationship between resource loss and negative religious social support, but these results indicate that participants who experienced greater resource loss reported greater negative interactions with fellow members of their faith community. Those who experienced more negative religious social interactions
were expected to report greater PTSD symptoms and greater use of negative religious coping, which they did. Positive religious coping was correlated with religiosity (.71) and positive religious social support (.54). Religiosity was also related to positive religious social support (.40). Religiosity and the positive religious variables (coping and social support) were expected to be correlated with each other. Participants who reported greater religiosity also reported more positive interactions with members of their faith community and greater use of positive religious coping techniques. The negative religious variables were also expected to be related to one another. This study found that negative religious coping was related to negative religious social support (.33), indicating that participants who experienced negative social interactions with other members of their faith community were more likely to engage in negative religious coping techniques.

Tests of Hypotheses

Four hypotheses were presented in this study. In the first three hypotheses, the positive religious variables (religiosity, positive religious coping, and positive religious social support) were assessed for their mediational properties between resource loss and PTSD symptoms. They were assessed to determine if they would minimize the relationship between resource loss and PTSD symptoms (Baron & Kenney, 1986).

To test for mediation of positive religious variables on the relationship between resource loss and PTSD symptoms, the correlations between all variables were first assessed. The relationship between resource loss and PTSD symptoms was determined and found to be significant (r = .493, p<.01). This was the first step in determining the mediation model on the first three hypotheses. The next steps for each of hypotheses one
through three was to determine the correlations between the positive religious variables and both resource loss and PTSD symptoms. If these relationships had been significant, it would have resulted in moving to the third and final step of running a hierarchical multiple regression predicting PTSD symptoms by resource loss, but controlling for positive religious variables. The positive religious variables would have been entered into the regression model first, followed by resource loss. This would have shown the amount of change in PTSD symptoms that could be predicted by each variable. However, this third step was never conducted because of the lack of significant correlations among the positive religious variables with resource loss and PTSD symptoms.

Hypothesis 1. Positive religious coping will mediate the relationship between resource loss and PTSD symptoms. In order for the mediation model to be supported for hypothesis 1, a significant relationship was recommended between resource loss and positive religious coping (r = .090, not significant), and between positive religious coping and PTSD symptoms (r = .012, not significant). Without a significant relationship along these two paths, the mediation model is not supported, so the hierarchical multiple regression was not conducted.

Hypothesis 2. Positive religious social support will mediate the relationship between resource loss and PTSD symptoms. In order for the mediation model to be supported for hypothesis 2, a significant relationship was recommended between resource loss and positive religious social support (r = -.097, not significant), and between positive religious social support and PTSD symptoms (r = -.165, not significant). Without a significant relationship along these two paths, the mediation model is not supported, so the hierarchical multiple regression was not conducted.
Hypothesis 3. Religiosity will mediate the relationship between resource loss and PTSD symptoms. In order for the mediation model to be supported for hypothesis 3, a significant relationship was recommended between resource loss and religiosity (r = .094, not significant), and between religiosity and PTSD symptoms (r = .046, not significant). Without a significant relationship along these two paths, the mediation model is not supported, so the hierarchical multiple regression was not conducted.

Hypothesis 4. PTSD symptoms will be predicted by increased resource loss, negative religious coping, and negative religious social support. This hypothesis was supported when significant relationships were found in a multiple linear regression of negative religious coping, negative religious social support, and increased resource loss with PTSD symptoms. Using a forced entry method, a significant model emerged with the predictor variables producing an adjusted R2 of .281 (F(3,114) = 16.214, p < .001), indicating that 28% of the effect seen in PTSD symptoms following Hurricane Katrina can be predicted by the negative religious variables in this sample. The greatest impact on PTSD symptoms was found in the predictor variable resource loss, with a beta weight of .418, p < .001 (see Table 5). The next most significant negative variable was the use of negative religious coping, with a beta weight of .184, p < .032. Finally, the impact of negative religious social support on PTSD symptoms had a beta weight of .127, p = .130.
Table 5

Coefficients of Predictor Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Loss</td>
<td>.449</td>
<td>.088</td>
<td>.418</td>
<td>5.115</td>
<td>.000</td>
</tr>
<tr>
<td>Neg. Rel. Coping</td>
<td>.446</td>
<td>.205</td>
<td>.184</td>
<td>2.173</td>
<td>.032</td>
</tr>
<tr>
<td>Negative Interactions</td>
<td>.884</td>
<td>.580</td>
<td>.127</td>
<td>1.526</td>
<td>.130</td>
</tr>
</tbody>
</table>
CHAPTER IV
DISCUSSION

Review of Hypotheses

The purpose of this study was to examine the long-term impact of religiousness on the experience of PTSD symptoms in people who sustained resource loss after Hurricane Katrina. Only one of the four hypotheses presented in this study was support by the data. In the first three hypotheses, the positive religious variables (religiosity, positive religious coping, and positive religious social support) were assessed for their mediational properties between resource loss and PTSD symptoms. Results for these hypotheses were not significant and did not support any mediation effects. The fourth hypothesis measured an expected positive relationship between resource loss and the negative religious variables (negative religious coping and negative religious social support) with PTSD symptoms. This hypothesis was supported. In summation, no significant relationships were found for the positive religious variables in relation to symptoms of PTSD following resource loss from Hurricane Katrina. However, resource loss and both of the negative religious variables did contribute to increased symptoms of PTSD more than four years after experiencing Hurricane Katrina.

Hypotheses 1-3: The mediation of positive religious variables on the relationship between resource loss and PTSD symptoms following Hurricane Katrina.

It was predicted that being religious, using positive religious coping, and having positive religious social support would decrease the PTSD symptoms reported by participants who experienced resource loss compared to participants who did not experience positive religiousness after the hurricane. It was expected that the positive
religious responses to the hurricane would be insulating factors that partially protected participants from the long-term anxiety that resulted from resource loss. This, however, was not supported for this population. Participants did report more PTSD symptoms with more resource loss, but their PTSD symptoms did not lessen with the experience of positive religious factors.

In order to test for a mediation effect of the positive religious variables between resource loss and PTSD symptoms, this author first had to test the relationship between resource loss and PTSD symptoms. It was found to be significant, as expected. These results indicate that, for this study, the more resources a participant lost after hurricane Katrina, the more PTSD symptoms they reported. This relationship will be examined further in the discussion of the fourth hypothesis. Secondly, the correlations between the religious variables and the dependent and independent variables (resource loss and PTSD symptoms) should be significant before testing for mediation. Pearson correlations were conducted on these relationships and they were not significant. Therefore, none of the mediational expectations for this study were met.

The results of the current study did not find a significant relationship between religiosity and PTSD symptoms experienced several years after Hurricane Katrina. However, religion and spirituality have often been found to help people deal with trauma (O’Reilly, 1996; Pargament, 1996; Park, Cohen, & Murch, 1996; Rudnick, 1997; Rynearson, 1995; Schumaker, 1992). In support of the proposed hypotheses, two recent studies on post-Katrina distress found positive religious beliefs and practices utilized soon after exposure to Hurricane Katrina reduced the effects of symptoms related to posttraumatic stress disorder (Cook, Aten, & Leach, 2007; Johnson, Aten, Madson, &
Bennet, 2006). However, the religious constructs assessed were often different from the current study, likely contributing to differing results.

Another study by Sprang and McNeil (1998) showed that PTSD symptoms decreased for adults who had lost loved ones to a drunken driving accident as their scores on a religiosity measure increased. This relationship between religiosity and PTSD symptoms held even when controlling for social support. These findings indicate that religiosity could have a helpful impact on anxiety following a disaster such as Hurricane Katrina. However, that was not found to be the case in the current study. One main difference between the current study and the Sprang and McNeil (1998) study is the population sample. There could be significant differences in effect of the trauma between those who lost loved ones in a drunken driving accident and people who lived through a natural disaster such as Hurricane Katrina. In support of this theory, a meta-analysis of 66 studies evaluating conditions of a traumatic event with the resulting traumatic stress found that the type of trauma experienced greatly impacted the level of the resulting traumatic stress (Sundin & Horowitz, 2003).

The outcome of the current study might be better explained by other studies that show no significant relationship between religiosity and traumatic stress. A Mississippi Gulf Coast-based study on religion following Hurricane Katrina also examined religiosity and found it was not related to post-disaster health (Cook, Aten, & Leach, 2007). Another study that showed no relationship between religiosity and traumatic stress asked veterans who had displayed PTSD symptoms how much the importance of their religiosity had changed since before they entered the military and no significant difference was found (Fontana & Rosenheck, 2004). This shows that religion may not always be related
traumatic stress. If these results hold true after further study for survivors of natural disasters, it may be that religiosity alone is not the best indicator of religious factors impacting traumatic stress. Or, perhaps the participants in the current study have been living with the traumatic stress from Hurricane Katrina for so long that the immediate effects of religiosity, which may have had a greater impact at the time of the disaster, have worn off now that several years have passed. It is possible that the positive effects for mental health religiosity provides after a natural disaster are more salient immediately following the event and are no longer measurable several years later.

Another possible difference explaining the lack of significance of religiosity in this study is that the construct of religion is complex and may be too broad to compare results from other studies if not more narrowly defined. Religion has been deconstructed in many ways. For example, Smith, Pargament, Brant, and Oliver (2000) have broken religiosity into three categories: general religiousness (e.g., frequency of church attendance and prayer), religious attributes (e.g., believing God caused an event out of love or anger), and religious coping methods (e.g., seeking spiritual support from God, voicing anger at God for an event). If differing aspects of religion are assessed in different studies, it may be a difficult construct to compare across studies.

In addition to religiosity reducing traumatic stress, research has shown that the experience of a traumatic event can also lead to divine spiritual struggles. Such struggles include questioning God’s role in one’s life, impaired relationships in one’s religious community, or doubting one’s religious values or beliefs (Pargament & Ano, 2006). The threat these struggles incur on one’s spiritual foundation can lead to mental and physical ill-health (Ano & Vasconcelles, 2005), which would seemingly increase one’s distress
levels following the traumatic event, not decrease them as the current study hypothesized.

One explanation for the varied effects of religiosity found in the literature is to propose that the nature of one’s religiosity has the greater impact on the outcome of distress than the amount of religiosity. This was intended to be accounted for in the current study by considering the impact of religious coping and religious social support, both of which could illuminate the nature of a participant’s religiosity.

It was predicted that positive religious coping would lessen the effects of resource loss on anxiety. This hypothesis was made based upon support from studies such as the one conducted by Mattlin, Wethington, and Kessler (1990) who found that religious coping was related to lower depression and anxiety in situations characterized by high loss, but not low loss. Religious coping seemed to be more frequently used and more helpful when people experienced intense stress caused by extreme situations. Hurricane Katrina was deemed as one such extreme situation. Amount of resource loss was assessed to provide an objective measure of the extremity of the situation to be associated with resulting traumatic stress. Indeed, over 80% of participants reported the experience of Hurricane Katrina to be at least moderately stressful. Nearly 60% of participants stated their experience of the storm was “very” or “extremely” stressful, and 48.6% said they believed they are still dealing with some negative emotional consequences from Hurricane Katrina. It seems clear that surviving Hurricane Katrina was a significant event for participants and that it continues to impact their lives even four and a half years later.

Another study supporting the current hypothesis came from Smith, Pargament, Brant, and Oliver (2000) who looked at religious coping and psychological outcomes in
response to resource loss from a natural disaster (the 1993 Midwest flood). Results suggest that positive religious coping could be a mediator between religiosity and outcomes of a psychological nature following a natural disaster. The vast difference in the time of data collection following these natural disasters (up to 6 months for the Midwest flood; four and a half years for Hurricane Katrina) likely contributed to the difference in results regarding the impact of positive religious coping on post-disaster distress.

Results may be better supported by a study in which Veterans who were diagnosed with PTSD reported that PTSD symptom severity was associated with positive religious coping (Witvliet, Phipps, Feldman, & Beckham, 2004), suggesting that positive religious coping can increase with increased severity of anxiety. This would counteract the mediation hypothesis for the positive religious coping variable. This outcome suggests that positive religious coping may be utilized more when one experiences greater stress without resulting in a decrease in the amount of distress. One difference to consider that may have contributed to such differing results in the literature regarding religious coping and traumatic stress is the populations, their precipitating traumatic events, and the severity of PTSD symptoms. Although the current study did evaluate survivors of what was considered an extreme event with natural causes, the samples were very different. As opposed to the current sample of primarily young college students with only mild to moderate symptoms of traumatic stress, the Veteran sample consisted largely of middle-aged soldiers with a diagnosis of PTSD resulting from combat in war. It is entirely likely that these samples differed in results due to their differences in demographics.
Alternately, a study conducted shortly after Hurricane Katrina from a similar population showed that positive religious coping did not moderate the effect of loss following Hurricane Katrina on post-disaster health (Johnson, Aten, Madson, & Bennet, 2006). This study was conducted years before the current study, yet time since the storm did not produce different results. There may be about a cultural or regional difference among the Mississippi Gulf Coast student population that differs from studies supporting an effect for religious coping on traumatic stress. Only further evaluation of the long-term effects of religious factors on traumatic stress following such a natural disaster can clear up the wide and varied results found in the literature.

In this study, positive religious social support was also expected to shed light on the nature of the participant’s religiosity by decreasing the effects of resource loss on PTSD symptoms. After all, according to a survey by Wuthnow (1994), 40% of Americans belong to a small [religious] group that can encourage the development of close social relationships which are often used in times of crisis for support. This author anticipated that such close and supportive social ties would, at least in part, counterbalance the negative effects of resource loss after a disaster by reducing anxiety. This hypothesis was supported by a study in which survivors of the 1993 Midwest flood reported loss of social resources to be a significant contributor to post-disaster stress up to six months following the flood (Smith & Freedy, 2000). If losing these ties due to the natural disaster contributes to distress, then maintaining these ties after a disaster might indicate a buffering effect against distress. However, that was not supported in this study. Perhaps losing social ties (Smith & Freedy, 2000) after a disaster has a greater negative impact on distress than any positive impact maintaining those ties may have.
Perhaps the nature of the social ties in the Midwest flood (loved ones) was more significant than the ties to religious support people in the current study. It is also possible that, after more than four years, the need for such supportive social ties has lessened. The effect of positive religious social support may be more salient in the immediate response to a disaster.

Further support for the hypothesis regarding positive religious social support in this study comes from research showing that faith groups have been found to help people respond to disaster experiences (Koenig, 2006). After Hurricane Katrina, faith communities were some of the first responders to provide aid to survivors (Evans, Kromm, & Sturgis, 2008) and were reported by Louisiana residents as providing the most effective support (Cain & Barthelemy, 2008). In a Mississippi-based study using a similar population as the current study, seeking spiritual support was related to less PTSD response (Johnson, Aten, Madson, & Bennet, 2006). So much evidence points to a support for this hypothesis, that further examination of the effect of religious social support on post-Katrina stress is required to explain the lack of significance for that relationship in this study.

A demographic factor that may have contributed to the lack of results in hypotheses one through three is that nearly half of the participants stated they felt they were no longer dealing with negative emotional consequences of Hurricane Katrina. Similarly, 43% said they never experienced more than moderate stress from Hurricane Katrina at the time of the storm. It is possible that half of the participants in this sample have simply had enough time to recover from their losses after the storm and are no longer significantly affected, or that nearly half never even had a significant amount of
distress in order to result in the need for positive religious interventions. It is also possible that using positive religious responses in the face of this disaster did not hold the same impact that was seen in the use of negative religious responses to the storm. The positive religious factors may simply be less powerful in this case. Or, perhaps the use of positive religious coping at the time of the storm aided mental health and is no longer measurable or relevant due to the time elapsed since the event.

Hypothesis 4: PTSD symptoms will be predicted by increased resource loss, negative religious coping, and negative religious social support.

This hypothesis was supported when significant relationships were found in a multiple linear regression of negative religious coping, negative religious social support, and increased resource loss with PTSD symptoms. The outcome indicated that 28% of the effect seen in PTSD symptoms following Hurricane Katrina could be predicted by resource loss and the negative religious variables in this sample. The greatest impact on PTSD symptoms was found in the predictor variable resource loss, followed by the use of negative religious coping, and finally negative religious social support. This author expected a strong positive relationship between resource loss and anxiety following hurricane Katrina. This hypothesis was supported and the results indicate that, for this study, the more resources a participant lost after hurricane Katrina, the more PTSD symptoms they reported. It was also expected that using negative religious coping and experiencing negative religious interactions in one’s faith community would contribute to one’s anxiety following the storm. This hypothesis was fully supported in this study. Participants who experienced resource loss after Hurricane Katrina reported more PTSD
symptoms if they also engaged in negative religious coping techniques and experienced negative interactions with fellow members of their faith community.

The literature on resource loss supports the results of the fourth hypothesis of this study in that it shows a strong relationship between resource loss and anxiety following a natural disaster. Being exposed to a natural disaster, such as Hurricane Katrina, and experiencing the resulting resource loss of the disaster can result in psychological distress, posttraumatic stress symptoms, or even Posttraumatic Stress Disorder (Kaiser, Sattler, Bellack, & Dersin, 1996; Phifer & Norris, 1989). Several studies have shown resource loss to be a significant predictor of psychological distress following a disaster (Sattler et al., 2002; Schuster et al., 2001; Smith & Freedy, 2000; Stein et al., 2004). Disaster and resource loss literature largely centers on studies where responses were collected shortly after a disaster. Results of the current study show evidence that the impact of resource loss can last for years beyond the precipitating event. This adds important information to the body of disaster and resource loss literature which support the need for further emphasis on long-term recovery.

There is also support in religious coping literature for the relationship found between negative religious coping and PTSD symptoms. First, negative religious coping seems to contribute to increased depression and anxiety (Koenig & Cohen, 1992; Pargament, 1997). Cook, Aten, and Leach (2007) looked at the relationship between religious strain (similar to negative religious coping) and responses to surviving Hurricane Katrina. Results indicate that religious strain was related to more health problems and decreased emotional well-being. This outcome was also found in another study of Hurricane Katrina, religious factors, and traumatic stress. In this case, negative religiosity and
religious coping were related to increased PTSD symptoms (Johnson, Aten, Madson, & Bennet, 2006). Again, the timing of the studies becomes relevant when considering similar results were found in the current study which was conducted with much more time between the disaster and assessment. This continues to show support for the significant, lasting effects of negative religious factors on mental health after a natural disaster.

Literature also supports the results showing a relationship between negative religious social support (negative interactions) and PTSD symptoms. Krause, Ellison, and Wulff (1998) conducted a study that looked at how psychological well-being may be negatively impacted by negative religious interactions. They found a negative impact on psychological health for church leaders and clergy (not members) who experienced negative interactions with other church members. The authors suggested that this result may point to a greater impact of negative church-based social interactions for people who are more involved in their churches or who hold great personal meaning for their role in their church. In the current study, however, negative social interactions seemed to contribute to greater anxiety for all participants, and it can be assumed they are not all clergy or church leaders. This lends even more support to this relationship for the body of literature. Perhaps participants in the current study are more involved in their churches or hold greater meaning for their religious social involvements than the population of the comparison study. Or, perhaps the combination of the natural disaster with experiencing negative religious social interactions magnified the experience of anxiety for participants. Interestingly, the impact of negative religious social support held years after Hurricane Katrina, but the expected helpful impact of positive religious support was not found. This
may indicate a need for more emphasis on avoiding and rectifying negative religious interactions in one’s faith community following a shared disaster.

Although this study adds evidence to the literature supporting a positive relationship between negative religious factors and post-disaster distress, the reverse was not supported for the positive religious factors. The lack of support found for the first three hypotheses in this study were likely a result of many contributing factors. Many of these factors may be addressed by considering the limitations of this study and potential changes to the research methodology.

Limitations of the Current Study

This study had some limitations that may have prevented finding a mediation effect for the positive religious factors. The first limitation may have been the demographics of the participants. The average age of participants in this study was 21.8, with 77.9% of the participants falling at or under age 22. This means that over three-fourths of the participants were teen agers or younger when they experienced Hurricane Katrina. Multiple assumptions can be made about the significance of an adolescent population regarding the impact of positive religious coping on post-Katrina distress. The religiosity of the participants may not have been as mature as that of adult participants from other studies showing mediation effects between religiosity and traumatic stress. For example, research shows that religiosity increases significantly between the ages of 18 and 30 (Argue, Johnson, & White, 1999), which is clearly beyond the average age of participants at the time of the hurricane in this study. Pargament (2002) found that people who are living more religiously congruent lives before a crisis occurs find more comfort from their religious beliefs and practices in times of stress. This population may not have
been old enough to experience religious congruence in their lives at the time they experienced Hurricane Katrina.

In addition, it can be assumed that participants were living with a parent or guardian at the time of the hurricane. The types of resource loss after a natural disaster, although not considered in the hypotheses of this study, impact the amount of distress experienced by a disaster survivor. The nature of loss experienced by the majority of this population would have been quite different from that of adults from other disaster studies assessing loss and resulting anxiety. It is possible that the types of resource loss experienced by participants in this sample did not lend themselves to the long-term mediating effects of positive religiosity regarding PTSD symptoms. For example, adolescents after Hurricane Katrina were not likely responsible for finding alternate housing, acquiring food, water, and medicine, or coordinating aid with insurance agencies and the state and national government. The young people of this study would have been more likely to suffer losses to social ties and personal belongings lost in the storm, without having the added pressures their parents faced of providing for the basic necessities of their families. It is possible the stressors this sample experienced were simply not as stressful and those of adults examined in other disaster and resource loss studies. And although these resource losses were clearly significant in that they contributed to resulting PTSD symptoms in this study, they may not have been severe enough to respond to the positive religious factors examined in hypotheses one through three of the current study. It is also possible that the young age of most study participants at the time of Hurricane Katrina may have proven a resilience factor in their ability to avoid more intense traumatic stress resulting from resource loss, therefore not needing to
use religious coping as a response to the disaster. Finally, it is likely that positive religious coping responses were used immediately following the disaster and had beneficial effects on subsequent mental health, thereby resulting in a lack of significant results in the current study.

In addition to the restricted average age of participation in the study, another demographic limitation is the limited generalizability of the sample. The majority of participants were either Caucasian or African American and 88.2% were Christian. Of the Christian respondents, 39% were Baptist and 23.5% were Catholic. Only very small percentages of this sample represented Buddhist, Muslim, Atheist, Agnostic, or Pagan/Wiccan religions. This sample had no representation from LDS, Hindu, or Jewish faiths. All participants were living in the Deep South on the Gulf Coast both at the time of the hurricane and at the time of the survey. These results are not generalizable to other areas or populations in the United States. The demographic make-up of this sample set likely shaped the results to a certain extent and should be interpreted with caution when compared to other populations and regions of the country. In order to increase the diversity of the sample for future studies, sampling should be conducted throughout the geographical range of the hurricane, or multiple regions experiencing multiple hurricanes, or even multiple forms of natural disasters throughout the nation. Future studies should also make an effort to sample across age groups, religions, and racial/ethnic diversity in order to better generalize the results to a national population.

Other limitations of this study include a selective sampling of students, many of whom participated in exchange for extra credit in their classes. A more comprehensive picture of the relationship between resource loss, PTSD symptoms, and religious factors
would result from assessing a more diverse set of respondents. Another consideration is the lack of pre-disaster assessment of the variables. Traumatic stress can occur from many different experiences and participants may not have been able to distinguish their anxiety from other causes when responding. In addition, knowing more about a participant’s religiousness before Katrina could indicate possible changes that resulted from experiencing the storm. This information could be invaluable in understanding ways to respond to disasters in religious communities.

**Directions for Future Research**

Previous research had not examined the relationship between resource loss, religiosity, and traumatic stress from such a temporal distance after the causal natural disaster. Most studies collected traumatic stress and resource loss data within days, weeks, or months following a natural disaster. This study examined traumatic stress from resource loss four and a half years after Hurricane Katrina. And, although there is strong evidence that people of the Mississippi Gulf Coast region are still suffering from complications resulting from the storm, the current study found support for only one of four hypotheses. This should not imply that residents of the region are “over” their troubles from Hurricane Katrina. However, it does bring in to light the complexity of the factors considered in this study. It also suggests that some participants of the current study are no longer significantly distressed by their experience with the storm.

Although the positive religious variable were not found to be mediating factors between resource loss and traumatic stress in this sample, the negative religious variables were found to contribute to traumatic stress. This indicates that religiosity is an important factor to be considered in research on traumatic stress that is still being experienced by
residents of Mississippi after Hurricane Katrina. It is entirely possible that positive religiosity is important to post-Katrina stress, but not in a mediating relationship. For example, it could be tested for playing a moderating role, instead. Given the complexity of religious constructs, future research may benefit from expanding the number and type of religious responses assessed following a disaster. More comprehensive studies could point to more specific or nuanced religious variables that shape traumatic stress responses following resource loss. Further research into the impact of natural disasters on traumatic stress in relation to religious variables is needed to fully understand these relationships.

Despite the results of this study, Pargament et al. (1990) have shown greater mental health benefits from the use of positive religious coping. Perhaps the effect of positive religious coping is more dramatic immediately following a disaster. Comparative studies of short-term and long-term data sets could shed light on this potential difference.

Based on the significant results of the current study for the role negative religiosity plays on post-disaster mental health, future research could expand the negative religious constructs examined. Other aspects of religiosity, such as God attachment or spiritual maturity, may also contribute uniquely to increased PTSD symptoms following resource loss. Greater knowledge of the types of religiosity that affect mental health can inform community and religious leaders on ways to prepare their communities and help them respond to disasters. Finally, given the young student population of the current sample, future studies could look at the long-term effects of resource loss and negative religiousness for older community samples to see if differences exist in the ways these groups respond to disasters long-term.
Practical Implications

Strategies for future post-disaster intervention could be gleaned from the results of this study. Some may be similar to the more general suggestions proposed by Sattler (2006) for post-disaster recovery. First, joining community self-help activities can generate feelings of control and self-esteem that can decrease distress for disaster survivors. Next, pre-planned neighborhood groups can bolster social support by offering assistance in the event of a disaster. Third, stress management techniques and coping strategies can be taught to help people regain a sense of normalcy and routine after a disaster. Finally, learning and using positive coping techniques, as opposed to destructive negative coping, can reduce distress after a disaster. One venue for positive coping and community support is a religious organization. Spirituality and religious involvement provide the opportunity for an individual to take advantage of post-disaster support and coping. A closer look at the role religion plays in recovering from resource loss is warranted for further studies on post-disaster distress responses. Ultimately, finding answers to these questions is important in that they could aid mental health workers, clergy, and church members in developing useful and productive religious responses in the face of loss incurred from natural disasters, responses that could ultimately reduce one’s experience of traumatic stress.

Conclusion

The experience of living through Hurricane Katrina and the resulting losses incurred from the storm have had lasting effects on residents of the United States Gulf Coast. One way in which survivors of Hurricane Katrina have attempted to cope with the resulting stress of such loss is through religious means. The purpose of this study was to
examine the impact of resource loss on the resulting stress reactions for survivors, particularly in light of the impact religiosity, religious social support, and religious coping have on long-term stress responses to the disaster. Literature shows that these religious factors have been found to offer positive and negative influences on the recovery process. It was proposed that positive religious coping, positive religious social support, and greater amounts of religiousness would mediate a relationship between resource loss and PTSD symptoms, resulting in decreased symptoms. The hypotheses for mediation were not supported. It was also proposed that negative religious coping, negative religious social support, and resource loss would predict increased symptoms of PTSD. These relationships were confirmed, implying the need to combat negative religious coping and social support following resource loss from a natural disaster. Importantly, these results were found over four years after the incident of Hurricane Katrina, showing that the traumatic stress incurred from such an experience can have long-term effects on mental health.
APPENDIX A

DEMOGRAPHICS QUESTIONNAIRE

1) Were you living in a Mississippi Gulf Coast county directly affected by Hurricane Katrina when the storm hit?  
   A) ___ Yes             B) ___ No

2) Sex: ___A) Female     ___B) Male

3) Age: _______

4) Year in school: ___A) Freshman ___B) Sophomore ___C) Junior ___D) Senior 
   ___E) Graduate Student ___F) Other

5) What is your racial or ethnic background? (Check all that apply)
   _____A) African-American     _____F) Native American or Alaska Native 
   _____B) African     _____G) Hispanic/Latino 
   _____C) Asian-American     _____H) Pacific Islander 
   _____D) Asian     _____I) Other 
   _____E) Caucasian (White, Non-Hispanic)

6) Religious Denomination – Select the one item that best describes your current religious identification:
   _____A) Buddhist     _____J) Muslim/Islam 
   _____B) Christian – Catholic     _____K) Jewish 
   _____C) Christian – Lutheran     _____L) Atheist 
   _____D) Christian – Methodist     _____M) Agnostic 
   _____E) Christian – Baptist     _____N) Taoist 
   _____F) Christian – Other Protestant     _____O) Pagan/ Wiccan 
   _____G) Christian – LDS (Mormon)     _____P) Unitarian-Universalist
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_____ H) Christian – Other Denomination  _____Q) Other
_____ I) Hindu

7) Marital Status:
____ A) single/never married  C) living as married  E) married
____ B) divorced  D) other (widowed, separated, etc.)

8) Are you currently employed?  _____ A) yes  _____ B) no

9) What is your family yearly income?  _________  (fill in the blank)

10) How stressful was Hurricane Katrina for you?

1) Not stressful  4) Very stressful
   2) Slightly stressful  5) Extremely stressful
   3) Moderately Stressful

11) Do you believe that you are still dealing with some negative emotional consequences from Hurricane Katrina?

1) No  2) Somewhat  3) Yes
APPENDIX B

MEASURES

PTSD Checklist Civilian Version (PCL)

INSTRUCTIONS TO PATIENT: Below is a list of problems and complaints that people sometimes have in response to stressful experiences. Please read each one carefully, put an X in the box to indicate how much you have been bothered by that problem in the past month.

1. Repeated, disturbing memories, thoughts, or images of a stressful experience?
   

2. Repeated, disturbing dreams of a stressful experience?
   

3. Suddenly acting or feeling as if a stressful experience were happening again (as if you were reliving it)?
   

4. Feeling very upset when something reminded you of a stressful experience?
   

5. Having physical reactions (e.g., heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience?

6. Avoiding thinking about or talking about a stressful experience or avoiding having feelings related to it?


7. Avoiding activities or situations because they reminded you of a stressful experience?


8. Trouble remembering important parts of a stressful experience?


9. Loss of interest in activities that you used to enjoy?


10. Feeling distant or cut off from other people?


11. Feeling emotionally numb or being unable to have loving feelings for those close to you?


12. Feeling as if your future will somehow be cut short?

13. Trouble falling or staying asleep?


14. Feeling irritable or having angry outbursts?


15. Having difficulty concentrating?


16. Being "super-alert" or watchful or on guard?


17. Feeling jumpy or easily startled?

Duke Religion Index (DRI)

1. How often do you attend religious services or meetings?
   (1) Never  (2) Once a year  (3) A few times a year (4) A few times a month
   (5) Once a week  (6) More than once a week

2. How often do you spend time in private religious activities, such as prayer, meditation, or Bible study?
   (1) Never or rarely  (2) A few times a year  (3) A few times a month (4) Once a week  (5) More than once a week  (6) More than once a day

3. In my life, I experience the presence of the Divine.
   Definitely not true (1)----------(2)----------(3)----------(4)----------(5) Definitely true

4. My religious beliefs are what really lie behind my whole approach to life.
   Definitely not true (1)----------(2)----------(3)----------(4)----------(5) Definitely true

5. I try hard to carry my religion into all other dealings in life.
   Definitely not true (1)----------(2)----------(3)----------(4)----------(5) Definitely true
Brief RCOPE

*Please indicate the extent to which you used each of these religious methods of coping on a four-point Likert scale ranging from 0=not at all to 3=a great deal.

1. Looked for a stronger connection with God.
   
   Not at all (0)---------(1)---------(2)---------(3) A great deal

2. Sought God’s love and care.
   
   Not at all (0)---------(1)---------(2)---------(3) A great deal

3. Sought help from God in letting go of my anger.
   
   Not at all (0)---------(1)---------(2)---------(3) A great deal

4. Tried to put my plans into action together with God.
   
   Not at all (0)---------(1)---------(2)---------(3) A great deal

5. Tried to see how God might be trying to strengthen me in this situation.
   
   Not at all (0)---------(1)---------(2)---------(3) A great deal

6. Asked forgiveness for my sins.
   
   Not at all (0)---------(1)---------(2)---------(3) A great deal

7. Focused on religion to stop worrying about my problems.
   
   Not at all (0)---------(1)---------(2)---------(3) A great deal

8. Wondered whether God had abandoned me.
   
   Not at all (0)---------(1)---------(2)---------(3) A great deal

9. Felt punished by God for my lack of devotion.
   
   Not at all (0)---------(1)---------(2)---------(3) A great deal
10. Wondered what I did for God to punish me.

   *Not at all (0)----------(1)----------(2)----------(3) A great deal*

11. Questioned God’s love for me.

   *Not at all (0)----------(1)----------(2)----------(3) A great deal*

12. Wondered whether my church had abandoned me.

   *Not at all (0)----------(1)----------(2)----------(3) A great deal*

13. Decided the devil made this happen.

   *Not at all (0)----------(1)----------(2)----------(3) A great deal*

14. Questioned the power of God.

   *Not at all (0)----------(1)----------(2)----------(3) A great deal*
Resource Loss Questions

Below is a list of resources or potential sources of strength or comfort which could be lost as a result of a stressful or traumatic event. Please rate each item about the degree to which these may have been lost as a result of Hurricane Katrina. Circle the number corresponding to your answer (1 = no loss to 4 = extensive loss).

1) Feeling that you have control over your life

   \textit{No Loss} (1)----------(2)----------(3)----------(4) \textit{Extensive Loss}

2) Motivation to get things done

   \textit{No Loss} (1)----------(2)----------(3)----------(4) \textit{Extensive Loss}

3) Feeling that your life has purpose

   \textit{No Loss} (1)----------(2)----------(3)----------(4) \textit{Extensive Loss}

4) Sense of humor

   \textit{No Loss} (1)----------(2)----------(3)----------(4) \textit{Extensive Loss}

5) Sense of optimism

   \textit{No Loss} (1)----------(2)----------(3)----------(4) \textit{Extensive Loss}

6) Feeling independent

   \textit{No Loss} (1)----------(2)----------(3)----------(4) \textit{Extensive Loss}

7) Closeness with one or more family members

   \textit{No Loss} (1)----------(2)----------(3)----------(4) \textit{Extensive Loss}

8) Companionship

   \textit{No Loss} (1)----------(2)----------(3)----------(4) \textit{Extensive Loss}
9) Feeling valuable to others

No Loss (1)--------(2)---------(3)----------(4) Extensive Loss

10) Support from coworkers

No Loss (1)---------(2)---------(3)----------(4) Extensive Loss

11) Closeness with at least one friend

No Loss (1)---------(2)---------(3)----------(4) Extensive Loss

12) Sentimental possessions (e.g., photos, mementos)

No Loss (1)---------(2)---------(3)----------(4) Extensive Loss

13) Personal transportation

No Loss (1)---------(2)---------(3)----------(4) Extensive Loss

14) Furniture, appliances, and household contents

No Loss (1)---------(2)---------(3)----------(4) Extensive Loss

15) Time for adequate sleep

No Loss (1)---------(2)---------(3)----------(4) Extensive Loss

16) Free time

No Loss (1)---------(2)---------(3)----------(4) Extensive Loss

17) Food, water

No Loss (1)---------(2)---------(3)----------(4) Extensive Loss

18) Money for living expenses

No Loss (1)---------(2)---------(3)----------(4) Extensive Loss
Religious Support Short Form

**Emotional Support Received from Others**

The following questions deal with the relationships you’ve had with the people in your congregation.

1.) How often do the people in your congregation make you feel loved and cared for?
   1 - Very often   2 - Fairly often   3 - Once in a while   4 – Never

2.) How often do the people in your congregation listen to you talk about your private problems and concerns?
   1 - Very often   2 - Fairly often   3 - Once in a while   4 – Never

**Negative Interaction**

Sometimes the contact we have with others is not always pleasant.

3.) How often do the people in your congregation make too many demands on you?
   1 - Very often   2 - Fairly often   3 - Once in a while   4 – Never

4). How often are the people in your congregation critical of you and the things you do?
   1 - Very often   2 - Fairly often   3 - Once in a while   4 – Never
APPENDIX C

INSTITUTIONAL REVIEW BOARD APPROVAL FORM

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

Institutional Review Board
118 College Drive #5147
Hattiesburg, MS 39406-0001
Tel: 601.266.6820
Fax: 601.266.5509
www.usm.edu/irb

HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the “Adverse Effect Report Form”.
- If approved, the maximum period of approval is limited to twelve months.

Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 29112201
PROJECT TITLE: Long-Term Relationships Between Religiousness and Posttraumatic Stress Response Following Resource Loss From Hurricane Katrina
PROPOSED PROJECT DATES: 11/12/09 to 03/24/10
PROJECT TYPE: Dissertation or Thesis
PRINCIPAL INVESTIGATORS: Amy K. Chamberlain
COLLEGE/DIVISION: College of Education & Psychology
DEPARTMENT: Counseling Psychology
FUNDING AGENCY: N/A
HSPRC COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 11/30/09 to 11/29/10

[Signature]
Lawrence A. Hosman, Ph.D.
HSPRC Chair
[Date]
APPENDIX D

INFORMED CONSENT

Informed Consent
The University of Southern Mississippi
Authorization to Participate in Research Project

Consent is hereby given to participate in the study titled: LONG-TERM RELATIONSHIPS BETWEEN RELIGIOUSNESS AND POSTTRAUMATIC STRESS RESPONSE FOLLOWING RESOURCE LOSS FROM HURRICANE KATRINA

1. Purpose:
I understand that the purpose of this study is to explore the long-term relationships between religiousness (religiosity, religious coping, and religious social support) and posttraumatic stress responses following resource loss from exposure to Hurricane Katrina.

2. Description of Study:
I understand that I will be participating in an on-line survey. I understand that the survey will last approximately 30-45 minutes. The information collected from the survey will be examined and analyzed by the lead researcher. I understand that this survey does not incorporate any invasive procedures.

3. Benefits:
I understand that I will not receive any direct benefits from this study. Broader benefits of this investigation may include: (1) suggestions for improvement in the response to hurricane exposure (2) a deeper understanding of how individual’s respond to a traumatic event such as a hurricane (3) implications for future research

4. Risks:
Risks associated with this research are minimal. I understand that I may experience some discomfort as a result from thinking about, and discussing events and emotions related to my experiences. In addition, I understand that I can stop participating in the study at any time without any consequence. I understand that I will be able to contact the principle investigator Amy K. Chamberlain, M.A. at any time throughout the study at amykchamberlain@usm.edu, or at (660) 888-2127: or her supervisor Jamie D. Aten, Ph.D. Jamie.ATen@usm.edu, or at (601) 266-6246.

5. Confidentiality:
I understand that, to protect my identity, the researcher will take every reasonable precaution to protect my confidentiality. My responses will be confidential and Survey Monkey will not keep identifying information such as my name, email address or IP address. Survey Monkey will do its best to keep my information confidential. All data is stored in a password protected electronic format. The results of this study will be used for scholarly purposes only. Hattiesburg students who fill in their name for the purpose of
receiving credit will have their names deleted as soon as credit is assigned through Sona.

6. Alternative Procedures:
I understand that I may stop participating in this study at any time without consequence.

7. Subjects Assurance:
Whereas no assurance can be made concerning results that may be obtained (since results from investigational studies cannot be predicted) the researcher will take every precaution consistent with the best scientific practice. Participation is completely voluntary, and participants may withdraw from the study at any time without penalty or negative consequence. Questions concerning the research should be directed to Amy K. Chamberlain, M.A. at amykchamberlain@usm.edu, or at (660) 888-2127. This researcher is working under the supervision of Jamie D. Aten, Ph.D., who can be reached at (601) 266-6246 or Jamie.Aten@usm.edu.

This project and this consent form have been reviewed by the Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820.

8. Selecting the "next" button indicates that you have read and understand the information provided above, and that you willingly agree to participate with the option to withdraw your consent at any time and discontinue participation without penalty.

_______________________________________  ____________________
Name        Date
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