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Religious Coping and Psychological and Behavioral Adjustment after Hurricane Katrina

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Abstract

Positive and negative religious coping are related to positive and negative psychological adjustment, respectively. The current study examined the relation between religious coping and PTSD, major depression, quality of life, and substance use among residents residing in Mississippi at the time of Hurricane Katrina. Results indicated that negative religious coping was positively associated with major depression and poorer quality of life and positive religious coping was negatively associated with PTSD, depression, poorer quality of life, and increased alcohol use. These results suggest that mental health providers should be mindful of the role of religious coping after traumatic events such as natural disasters.

Keywords

Hurricane Katrina; natural disaster; psychological adjustment; religious coping

There is a growing body of research addressing the relation between religion, spirituality, and mental health (Pargament & Raiya, 2007). Originally, research in the area focused broadly on the effects of religious orientation or disposition (Astin, Lawrence, & Foy, 1993; Park, Cohen, & Murch, 1996); however, more recently researchers have sought to understand the mechanisms underlying the effects of specific religious practices and beliefs upon an individual's physical and mental health, not merely one's religious orientation

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(Ellison & Levin, 1998; Hill & Pargament, 2003). Summarizing the state of the science, Pargament (1997) concluded that specific religious coping methods mediated the relationship between religious orientation and individual outcome after exposure to stressful life experiences. In addition, Pargament suggested that specific coping methods have more implications for an individual's well-being than general religious beliefs.

Two specific patterns of religious coping have been identified: positive religious coping and negative religious coping (Pargament, Smith, Koenig, & Perez, 1998). Pargament et al. (1998) explained positive religious coping as including aspects of "benevolent religious reappraisal, collaborative religious coping, seeking spiritual support, spiritual connection, religious purification, seeking help from clergy members, religious helping, and religious forgiveness", and negative religious coping as "punitive religious reappraisals, demonic religious reappraisals, reappraisals of God's powers, spiritual discontent, self-directing religious coping, and interpersonal religious discontent." (p. 712). In other words, Pargament et al. conceptualized positive religious coping as a sense of spirituality and spiritual connectedness with others, a secure relationship with God, and a belief that there is meaning in life. They conceptualized negative religious coping as a less secure relationship with God, a tenuous and ominous view of the world, and a struggle in the search for significance.

In a review of published empirical studies, religion and spirituality were found generally to be beneficial to people in coping with a traumatic experience (Linley & Joseph, 2004; Shaw, Joseph, & Linley, 2005). Furthermore, positive religious coping in particular was associated with positive psychological adjustment and negative religious coping was associated with poorer emotional and physical well-being (Ano & Vasconcelles, 2005; Smith, Pargament, Brant, & Oliver, 2000). Similar findings have emerged in studies of patients undergoing serious medical procedures (Ai, Park, Huang, Rodgers, & Tice, 2007; Sherman, Plante, Simonton, Latiff, & Anaissie, 2009; Sherman, Simonton, Latif, Spohn, & Tricot, 2005).

Religious coping strategies are related both to measures of general well-being and emotional health, and also to specific forms of psychopathology, including general anxiety, phobic anxiety, depression, paranoid ideation, obsessive-compulsiveness, and somatization (McConnell, Pargament, Ellison, & Flannelly, 2006). For example, individuals who report high levels of positive religious coping also report lower levels of depression after a negative life event than individuals with low levels of positive religious coping (Bjorck & Thurman, 2007). Religious coping strategies are also related to posttraumatic stress disorder (PTSD), particularly the avoidance symptoms of PTSD (Harris et al., 2008; Witvliet, Phipps, Feldman, & Beckham, 2004). For example, after the World Trade Center and Pentagon terrorist attacks on September 11, 2001, clergy who more frequently used positive religious coping strategies were less likely to experience numbness and avoidance compared to clergy who used positive religious coping less frequently (Meisenhelder & Marcum, 2004).

The purpose of this study was to examine the relation between positive and negative religious coping after exposure to Hurricane Katrina and psychological (i.e., PTSD, depression, quality of life) and behavioral (i.e., cigarette and alcohol use) adjustment. We hypothesized that positive religious coping would be negatively correlated with PTSD,

major depression, poorer quality of life and increases in cigarette and alcohol use. We also hypothesized that negative religious coping would be positively associated with these outcomes and, furthermore, be associated with these outcomes when controlling for other hurricane-related factors.

Methods

Participants

Detailed information regarding the procedure and methods are published elsewhere (see Galea, Tracy, Norris, & Coffey, 2008) and are only briefly reviewed here. Participants were adults (18 years of age or older) who lived in the 23 southernmost counties of Mississippi before Hurricane Katrina ($N = 810$). Participants were representative of the 2000 United States Census data for these counties (Bureau of the Census, 2000) after application of weights in statistical analyses. When interviewed, 109 respondents (13.5% of the sample) were living at a different address from where they lived immediately before Hurricane Katrina and 22 of these respondents were living in states other than Mississippi.

A computer-assisted interview system was used to conduct interviews with participants (mean length of interview was 37 minutes). Twenty-one percent of interviews were conducted in-person, with the remaining 79% conducted via telephone. All interviews were conducted between February 24, 2007 and July 31, 2007. Respondents were randomly selected from all eligible household members, and after a complete description of the study was provided, oral informed consent was obtained.

Measures

Information was collected on gender, age, race/ethnicity, educational attainment, household income, and marital status from each respondent. Experiences during Hurricane Katrina were assessed, including whether the respondent was exposed to any potentially traumatic events during the hurricane (being physically injured, knowing someone who was injured or killed, seeing dead bodies) or experienced financial loss as a result of the hurricane (reporting “a lot” of damage to property or possessions, losing a job, experiencing a decline in household income as a result of the hurricane).

To measure post-disaster stress, other stressors related to Hurricane Katrina were assessed, including: (a) being displaced from home, (b) losing sentimental possessions like photographs, and (c) experiencing any of six stressors in the six months after the hurricane (e.g., shortage of food or water, difficulty finding sufficient housing). These eight items were modified from scales that have been used after other natural disasters, including Hurricane Andrew (Norris, Perilla, Riad, Kaniasty, & Lavizzo, 1999), and were summed to create a post-disaster stressor variable (ranging from 0 to 8; Cronbach's $\alpha = .72$). This variable was included as a covariate in the logistic regression analyses.

The Crisis Support Scale (Joseph, Williams, & Yule, 1992) was used to measure social support in the two months after Hurricane Katrina; items were summed for a total social support score ranging from 6 to 42 (Cronbach's $\alpha = .77$). Higher scores indicate higher

levels of social support. This variable was included as a covariate in the logistic regression analyses.

Information about the participants' experience of lifetime traumatic events was collected using a modified version of the trauma assessment from the Composite International Diagnostic Interview (CIDI; Kessler & Ustun, 2004). For each event reported, respondents were asked whether the event occurred before or after Hurricane Katrina. Twelve types of traumatic events were assessed and the participant's total number of endorsed traumatic experiences was tallied for a composite score.

Depression related to Hurricane Katrina was measured using the Patient Health Questionnaire-9 (PHQ-9). The PHQ-9 is a brief measure of depression severity. All nine the questions were asked in reference to Katrina (e.g., "thinking about the time since Katrina, how often have you been bothered by feeling down, depressed or hopeless?"). Participants responded on a scale of 1 (*not at all*) to 4 (*nearly every day*). Participants met criteria for major depression since Katrina if they endorsed five or more of the depressive symptoms (including either depressed mood or loss of interest/pleasure). The PHQ-9 is considered a reliable and valid measure of depression ($\alpha = 0.86\text{--}0.89$; Kroenke, Spitzer, & Williams, 2001; Merz, Malcarne, Roesch, Riley, & Sadler, 2011) as well as in this sample ($\alpha = 0.87$).

PTSD related to Hurricane Katrina was measured using the PTSD module of the CIDI for DSM-IV (Kessler & Ustun, 2004). All of the 20 questions in the Katrina-related PTSD measure were asked specifically with reference to Katrina (e.g., "did you keep remembering Katrina even when you didn't want to?" and "did you deliberately try not to think or talk about Katrina?"). A respondent was considered to meet diagnostic criteria for PTSD if he or she self-reported feeling: (a) terrified or –(b) helpless, and (c) one or more (out of five) re-experiencing symptoms, (d) 3 or more (out of seven) avoidance symptoms, (e) 2 or more (out of five) arousal symptoms, and (f) that symptoms interfered with their life or activities a lot since Hurricane Katrina (APA, 2000).

Quality of life was measured by asking participants "I'm going to ask you to think back on your life. Would you say you are very satisfied, satisfied, dissatisfied, or very dissatisfied with the way things turned out?" Responses were recorded on a scale of 1 (*very satisfied*) to 4 (*very dissatisfied*) and dichotomized into satisfied/very satisfied versus dissatisfied/very dissatisfied.

Meaningful increases in cigarette and alcohol use were calculated by taking the difference between the frequency of participants' cigarette and alcohol use in the 30 days before Katrina and their current use. Meaningful increases in cigarette and alcohol use were designated as an increase of one pack per week of cigarettes (i.e., 80 or more cigarettes per month) or one drink per day of alcohol (i.e., 30 or more drinks per month).

Hurricane-related religious coping was assessed by two items adapted from the Fetzer Measure of Religiousness and Spirituality, the Brief Religious/Spiritual Coping (Brief RCOPE; Fetzer, 1999). Only participants who responded "yes" or "maybe" when asked if they believed in God or a higher power were asked the religious coping questions. These questions were prefaced with the statement: "Now I would like you to think about how you

have tried to understand and deal with the aftermath of Katrina.” To assess positive religious coping, participants were asked to rate the item: “I look to God for strength, support and guidance.” To assess negative religious coping, participants were asked to rate the item: “I feel God is punishing me for my sins or lack of spirituality.” Participants were asked to rate their response to each item on a 4-point Likert-type scale (1 = *not at all*, 4 = *a great deal*). The Brief RCOPE has exhibited reliability and validity (Fetzer, 1999) and the two items used in this study demonstrated small to moderate reliability within the Positive ($r = 0.65$) and Negative ($r = 0.37$) Religious Coping domains of the Brief RCOPE (Fetzer, 1999).

Description of analyses

Descriptive statistics were analyzed for demographic information and religious coping. Correlational analyses were conducted for religious coping, PTSD, major depression, quality of life, and cigarette and alcohol use variables. A series of logistic regressions were conducted, with hurricane-related factors (i.e., post-disaster trauma, post-disaster stress, low social support, and financial loss) entered as covariates and PTSD since Katrina (both broad and strict criteria), major depression, quality of life, and meaningful increases in cigarette and alcohol use as outcome variables. Data were weighted to represent the 2000 United States Census data.

Results

Descriptive statistics

Descriptive statistics for the sample characteristics are displayed in Table 1 and have been reported in Galea et al. (2008). Fifty-two percent of the sample was female, 25% were between the ages of 35 – 44 years [$M (SD) = 46.5$ years (17.9)], 73% identified their ethnicity as White, non-Hispanic, 31% reported obtaining a high school diploma or equivalent, 29% reported a household income between \$20,000 – 39,999 [median (interquartile range) = \$32,000 (18,000 – 60,000)], and 26% had never been married.

Sixty-five percent of respondents reported experiencing financial loss, 40% reported experiencing three or more post-disaster stressors, 29% reported receiving little social support, and 18% reported experiencing two or more post-disaster traumas. Approximately 15% of respondents met PTSD diagnostic criteria since Hurricane Katrina (Galea et al., 2008). Regarding depression, 11.7% of the sample met diagnostic criteria for major depressive disorder since Hurricane Katrina and 9.1% met criteria for major depressive disorder in the past month (Nillni, Nosen, Williams, Tracy, Coffey, & Galea, in press). Approximately 88% of respondents reported feeling satisfied or very satisfied with their quality of life ($M = 1.75$, $SD = 0.73$). Approximately 3% of respondents reported a meaningful increase in alcohol use and 6.6% reported a meaningful increase in cigarette use.

In the sample, 98% of respondents affirmed the existence of God or a higher power. Of these, 98.7% used some amount (i.e., a score of 2 or higher on the Likert-type scale) of positive religious coping, 18.6% used some amount of negative religious coping, 18.2% used both types of coping, 80.1% used only positive religious coping, and only one individual in the sample reported using only negative religious coping. Given that nearly the

entire sample used some amount of positive coping, religious coping was defined narrowly so as to improve stability of the estimates and provide more variability in the predictors. Thus, the religious coping variables were dichotomized and will be referred to as High Positive Religious Coping (POS) and High Negative Religious Coping (NEG; i.e., a score of 4 on each respective Likert-type scale) throughout the remainder of this report.

Point Biserial Correlations

POS was negatively correlated with PTSD since Katrina ($r = -.13, p < .001$), major depression ($r = -.09, p = .01$), poorer quality of life ($r = -.09, p = .01$), and meaningful increases in alcohol use ($r = -.19, p < .001$). NEG was positively correlated with major depression ($r = .08, p = .02$).

Regression analyses

A series of logistic regression analyses were conducted with high positive religious coping and high negative religious coping as predictors, and PTSD, major depression, quality of life, and meaningful increases in cigarette or alcohol use as dependent variables. The odds ratios and confidence intervals are reported in Table 2.

POS was a significant predictor of PTSD (OR = 0.49, $p = .004$), major depression (OR = 0.50, $p = .01$), poorer quality of life (OR = 0.59, $p = .04$), and meaningful increases in alcohol use (OR = 0.13, $p < .001$) when controlling for the hurricane-related variables (i.e., post-disaster trauma, post-disaster stress, low social support, and financial loss). POS was not a significant predictor of meaningful increases in cigarette use.

NEG was a significant predictor of major depression (OR = 4.55, $p = .002$) and poorer quality of life (OR = 2.68, $p = .04$) after exposure to Hurricane Katrina and when controlling for hurricane-related variables. NEG was not a significant predictor of PTSD or meaningful increases in cigarette smoking or alcohol use.

Discussion

We found that, in the aftermath of Hurricane Katrina, positive religious coping was associated with lower risk of PTSD, major depression, poorer quality of life and increased alcohol use. Thus, positive religious coping may be a protective factor against PTSD, depression, poorer quality of life, and increases in alcohol use post-natural disaster; individuals in this sample who used high levels of positive religious coping were less likely to experience PTSD, depression, poorer life quality or increases in alcohol use compared to individuals who did not use such high levels of positive religious coping. In contrast, negative religious coping was associated with greater risk of major depression and poorer quality of life after controlling for hurricane-related variables such as financial loss, low social support, and exposure to post-hurricane stressors and traumas. Thus, negative religious coping is a risk factor for experiencing depression and poorer life quality; individuals who used high levels of negative religious coping were more likely to experience depression and poorer life quality compared to individuals who did not use such high levels of negative religious coping.

These results are consistent with previous studies that suggest positive religious coping is associated with positive psychological adjustment and negative religious coping is associated with poorer adjustment (Ano & Vasconcelles, 2005; Smith et al., 2000). Furthermore these results are consistent with research that suggests that individuals with high levels of positive religious coping report less depression than individuals with high levels of negative religious coping (Bjorck & Thurman, 2007).

However, the relation between religious coping, psychological and behavioral adjustment, specifically among natural disaster survivors, appears to vary (Chan & Rhodes, 2013). The results of the current study contribute to the current literature by suggesting the role of positive and negative religious coping as protective and risk factors for PTSD, major depression, quality of life and alcohol use. Although positive religious coping was associated with posttraumatic growth among Katrina survivors in a prior study (Chan & Rhodes), these results extend those findings, suggesting that positive religious coping may also serve as a protective factor against PTSD, major depression, poor quality of life, and increased alcohol use. In addition, although negative religious coping was associated with general psychological distress after Katrina (Chan & Rhodes), these results suggest specifically that negative religious coping is a predictor of major depression and poorer quality of life after a natural disaster.

Limitations

A central limitation of this study was that a more comprehensive measure of religious coping was not used. As suggested by Hill and Pargament (2003), specifying the dimensions and measures of religion and spirituality will aid in a better understanding of the relationship with mental health. However, the data reported in this study were collected as part of a larger, epidemiological-based survey of individuals exposed to Hurricane Katrina. In order to reduce the burden to participants the measure of religious coping was truncated to include only two questions. Even though these two items specifically assessed positive and negative religious coping strategies, it is unknown how truncating the measure may affect the psychometric properties of the questionnaire. Therefore, future research investigating the role of religious coping would benefit from a more detailed assessment of religious coping strategies.

A second limitation of this study is the potential lack of generalizability of the results. Given that the majority of this sample used positive religious coping strategies, it could be argued that these results may not generalize to other populations outside of Mississippi or in areas less associated with the “Bible Belt” of the United States. This concern is dampened by at least three points: First, greater use of positive religious coping rather than negative religious coping has been documented in several studies investigating individuals from various geographical areas. Second, these same studies have not explicitly recruited individuals from faith-based organizations (i.e., churches) (Fallot & Heckman, 2005; Feder et al, 2008; McConnell et al., 2006; Pargament et al., 1998; Sherman et al., 2005). Third, as previously noted, the current sample found that only 2% of respondents did not hold a belief in God or a higher power. However, only 5% of respondents to a nationally representative US sample reported nonbelief in God. Although results from the current study must be replicated, these

points suggest that findings from this study may generalize to other samples of large-scale disaster trauma survivors.

A third limitation is the low correlations between POS and PTSD, major depression, poorer quality of life, and meaningful increases in alcohol use as well as NEG and major depression. While statistically significant, the meaningfulness of these correlations should be interpreted with caution.

Implications

Despite these limitations, the results of this study contribute to the existing knowledge base regarding religious coping and its relationship with mental health. Previously the literature supported evidence of associations between religious coping and better adjustment after undergoing surgery (Tix & Frazier, 1998), less distress after surgery (Ai et al., 2007), less depression after a negative life event (Bjorck & Thurman, 2007) and better psychological adjustment (Ano & Vasconcelles, 2005). The results of the current study indicate that high positive religious coping may help to protect against PTSD, major depression, poorer life quality and increases in alcohol use and high negative religious coping predicts an increased risk of major depression and poorer quality of life following a large-scale disaster.

These results also have three important implications for post-disaster clinical services. First, religious coping should be assessed more regularly in the context of initiating clinical services for clients, especially clients referred for mental health services after experiencing a natural disaster or other potentially traumatic event. Second, clinicians are advised to include the client's perception of religion and utilization of religious coping strategies in their conceptualization of the client in order to better understand the client's potential worldview, and to anticipate how the client may interpret and respond to stressful life events. Last, an individual's specific religious coping strategies could potentially be a target in intervention. For example, if an individual presented for treatment and, upon assessment, it was determined that the client used irrational thoughts (that is – "irrational" according to the tenets of his or her particular faith) as part of a religious coping strategy, then intervention targeted at correcting these irrational thoughts may be warranted (Nielsen, 2001).

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Biographies

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Melissa Tracy is an assistant professor in the Department of Epidemiology and Biostatistics at the University at Albany School of Public Health. Her current research interests include the social determinants of mental health and substance use.

Fran H. Norris was formerly the Director of the National Center of Disaster Mental Health Research and a research professor in the Department of Psychiatry at Geisel School of Medicine at Dartmouth, where she was affiliated with the Department of Veterans Affairs National Center for PTSD. She retired in 2014.

Sandro Galea is the Gelman Professor and Chair of Epidemiology at Columbia University. His current research interests are the multilevel determinants of behavioral disorders, particularly in the context of trauma.

Table 1

Sample Demographics N = 810

<u>Characteristic</u>	<u>n</u>	<u>Weighted Percent ^a or Mean (SD)</u>
<u>Gender</u>		
Male	302	47.8%
Female	508	52.2%
<u>Age</u>		46.5 (17.9)
<u>Race/ethnicity</u>		
White non-Hispanic	595	73.1%
Black non-Hispanic	159	24.0%
Hispanic	16	1.2%
Other non-Hispanic	38	1.8%
<u>Education</u>		
Bachelor's degree or higher	203	14.1%
Some college	217	30.2%
High school or equivalent	266	31.3%
< High school	121	24.4%
<u>Household income</u>		\$32,000 (18,000–60,000) ^b
<u>Marital status</u>		
Married	416	53.4%
Divorced/Separated/Widowed	261	20.9%
Never been married	131	25.7%

^aWeight accounts for number of persons in the household, probability of household selection, and adjustments to make the sample representative of the population by age, gender, race/ethnicity, and educational attainment.

^bPast year income is both skewed (3.7) and kurtotic (18.2). Therefore, the measure of central tendency reported is the median and interquartile range.

Table 2Adjusted Logistic Regression Models Predicting Psychological Adjustment After Hurricane Katrina^a

<u>Psychological Adjustment</u>	<u>Positive Religious Coping</u>	<u>Negative Religious Coping</u>
	Odds Ratio (95% CI)	Odds Ratio (95% CI)
PTSD	0.49 (0.30 – 0.79) **	1.57 (0.54 – 4.57)
Major depression	0.50 (0.29 – 0.86) *	4.55 (1.75 – 11.85) **
Poorer quality of life	0.59 (0.36 – 0.96) *	2.68 (1.06 – 6.78) *
Increased smoking	0.76 (0.40 – 1.43)	1.55 (0.42 – 5.76)
Increased drinking	0.13 (0.05 – 0.33) ***	0.46 (0.02 – 12.52)

*
 $p < .05$ **
 $p < .01$ ***
 $p < .001$ ^a Covariates were post-disaster trauma, social support, post-disaster stress, and financial loss