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Research Article

Better to Not Be Alone: Relationships between Hurricane Related Trauma, Spiritual Support, and Social Support

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Abstract

There has been a paucity in the literature on the protective effects of spiritual and social support as it pertains to trauma symptoms following a disaster. This secondary analysis investigated: a) the longitudinal analysis of the effect of perceived spiritual support (PSS; measured using PSSS-S2) on posttraumatic stress symptoms (PTSS); and b) the effect of social support and Wave-1 PTSS results on Wave-2 PTSS among Hurricane-Katrina (H-K) volunteers. We hypothesized that, 1. The shortform PSSS-S2 would have an adequate one-dimensional structure in our H-K sample; 2. PSSS-S2 would be inversely related to Wave-2 PTSS, after controlling for Wave-1 PTSS and other disaster factors; and 3. Wave-2 perceived social support would be inversely related to Wave-2 PTSS. In 2005, researchers of universities the Deep South conducted a questionnaire survey on H-K volunteers, some of whom were also disaster victims (N = 542; age = 29.66 + 9.10, African American = 55%). The Wave-1 survey was delivered at three-months after H-K, the Wave-2 survey was delivered six-months after H-K. Robust Confirmatory Factor Analysis was used to verify the single-item structure of PSSS-S2. Multiple regression analysis was employed using SPSS27. The Robust CFA results indicate good model fit. In our final regression model, Wave-1 PTSS ($\beta = 0.527$, $p < 0.001$) and other H-K stressors ($\beta = 0.154$, $p < 0.035$) were positively associated with Wave-2 PTSS. Being older,

having experienced less PTSS in Wave-1, and perceiving higher rates of social support were negatively related with Wave-2 PTSS. The present study demonstrated the lasting nature of PTSS. The present study demonstrated the lasting nature of PTSS. The six-months follow-up is important because it was the time a diagnosis of posttraumatic stress disorder (PTSD) could be established for volunteers. Our findings underscore the importance of social support and perceived spiritual support in fending off the negative role of disaster-induced stressors [1].

Keywords

Posttraumatic stress disorder and symptoms (PTSD/PTSS); spirituality, perceived spiritual support scale-shortform (PSSS-S2); natural disasters; social support; Hurricane-Katrina/Rita related stressors

1. Introduction

Despite an increase attention to the role of integrative medicine in physical illnesses, there has been little attention to the role of spirituality in psychiatric disorders and mental health in the rising trend of climate changes. Our current study focuses on factors that may affect symptoms of post-traumatic stress disorder (PTSD) of volunteers for disaster relief following Hurricane Katrina/Rita (HK/R). Specifically, we are interested in the potential effect of perceived spiritual support and perceived social support along with trauma symptoms, hurricane related stressors, and peritraumatic emotional responses after.

H-KR is amongst the costliest hurricanes to date, both in terms of human lives and financial damage [2]. In 2005, Hurricane Katrina made landfall on August 29, followed by Hurricane Rita four weeks later on September 24 [3]. Both Hurricane Katrina and Hurricane Rita were Category 3 hurricanes, which means that these hurricanes carried sustained winds of 111-130 mph (178-209 km/hr) [4]. More than 1,800 people lost their lives, and the financial damages were in excess of $108 billion [5]. Examining the protective and risk factor on PTSS among volunteers may have important implications for OBM and disaster areas of work.

Natural disasters can have catastrophic micro and mezzo outcomes for all individuals and communities affected [4]. Among some of these outcomes are states of disrepair within communities' infrastructural, social, institutional, and economic structures [6]. Even more concerning, institutions associated with disaster aid (i.e. hospitals, police departments, and fire departments) are also significantly impacted by disasters, which limit these services' aid capacity [7, 8]. As these services and providers are limited by disaster outcomes, representing one of the initial efforts to help rebuild and heal communities and address community disrepair are volunteers [9]. However, during their aid relief work, volunteers place themselves at risk for physical or psychological harm [10].

1.1 Impact of Natural Disasters on Mental Health

There is a plethora of mental and emotional adverse reactions volunteers might have related to being in a disaster-devastated environment [9, 11]. Some long-term mental health outcomes of disaster exposure have been supported to be burnout [9, 12] post-traumatic stress symptoms (PTSS;

[13-17]), depression [18], anxiety [19, 20], disordered sleep [13, 19], and suicidality [21]. Health behaviors associated with the mentioned mental health outcomes are coping-motivated drinking [22] and increased drug use [23, 24] to name a few.

As first responders, volunteers are exposed to numerous potentially traumatic sights such as human remains [10, 17], structural disrepair [15], psychological distress or other trauma symptoms experienced by victims [25], and scarcity brought on by the disaster which leads to economic disrepair [9]. Combining the potentially traumatic sights with the high demand nature of volunteer work, it is expected that volunteers experience a range of trauma responses. Some of these abovementioned trauma responses can become medical disorders and have long-lasting effects on health, performance, and mobility of the volunteers [19].

1.2 Perceived Spiritual Support

Religiosity and religious practice have been linked to biopsychosocial health. For example, short term and long-term beneficial effects of spirituality (positive religious coping and perceived spiritual support/PSS) were evident in prospective studies on patients following open-heart surgery [26-28]. A new Italian study showed that resilience moderated the link between COVID-19 related concerns and psychological distress during the pandemic, especially among the participants who scored high in PSSS [29]. Religious beliefs are thought to impact psychological, practices are thought to impact biological, and religious community is thought to impact social health of individuals [30]. In natural and man-made disasters, victims tend to pursue their faith for coping [27, 31]. This is because collective trauma is shared by many individuals and communities, leading to a need for deep interconnectedness with a higher power among people suffered together even though they may have diverse beliefs. Davis et al. [32] conducted a qualitative analysis of religiosity in the wake of a flood, finding that survivors find love, comfort, and strength in their connection with God. However, the role of religion and spirituality has remained underinvestigated, particularly within disaster contexts [31, 33].

Cherry et al. [34] examined individuals exposed to HK/R and the 2010 Deepwater Horizon oil spill (n = 219), they found that spiritual support was positively associated with resilience (OR = 1.11, $p \leq$ 0.01). Another study examining family coping for survivors of Hurricane Katrina, found that higher levels of spirituality were significantly related to higher levels of family coping (n = 452; $p < 0.01$) [35]. A study examining PSS in survivors of hurricanes (n = 566) found that it was inversely related to PTSSs and positively related to personal growth after disaster trauma experiences [33]. PSS can be defined as an intrapersonal and internalized resource that is sustained by participants' connection to a higher power, be it God, Jesus, or other cosmic presences. In a September 11 study examining the role of spiritual support in trauma experiences (n = 453), it was found that spiritual support was linked to decreased trauma responses through a pathway of prayer coping [36].

The original Perceived Spiritual Support Scale (PSSS; [37]) has been validated in previous years for individuals who were exposed to crises [33, 38]. Ai and colleagues also established short forms as PSSS-S1 and PSSS-S2 in a hurricane study to meet the challenge of difficulties in studying massive crises [33]. Interestingly, a study analyzing data collected in the Louisiana Health Aging Study (LHAS) found that, amongst those who witnessed the devastation of H-KR (n = 59), religious beliefs and religious coping were negatively correlated with physical function [4]. This suggests that individuals with higher levels of physical function might be less connected to their religious practices in the

wake of a disaster. Therefore, exploring religiosity and its protective effects in volunteers might result in mixed findings in cross-sectional studies. To inform future research in the OBM area, the current study attempted to further validate the PSSS-S2 and explore its longitudinal effect among the H-KR volunteer sample.

1.3 Perceived Social Support

A 9/11 follow-up survey showed that perceived spiritual support and social support had identical benefits for mental health, including PSSD, suggesting that deep interconnectedness occurs in both existential and physical levels [39]. As we are interconnected, so are our needs and health [40]. Social support is the sum of beneficent behaviors, intentions, and consequences of any interpersonal relationship [41]. Social support can take on numerous forms and can be provided by different systems, such as one's family, romantic partner, friends, or larger community [42]. Perceived social support at baseline has been supported to be a protective factor for trauma experiences [43-46].

However, mitigating the effect of trauma through social support might not always be easy or beneficial. A three-wave longitudinal study in Chinese typhoon survivors (*n* = 341) found that negative psychological health outcomes of trauma exposure have a negative relationship with the perception of social support [47]. This indicates that while perceived social support has been supported to be a protective factor during trauma experiences, survivors might feel alienated by their trauma experience and perceive fewer social resources than they possess. A four-wave longitudinal study with Chinese survivors of the Wenchuan earthquake (*n* = 285) found that non-family social support hindered participants' personal growth following their disaster experience in the long-term [48]. Overall, findings suggest that perceived social support has mental and physical benefits, however, these benefits may be limited in acute trauma experiences. The present study thus examined the association between social support perceived in the Wave-2 survey and PTSS.

Based on the literature on spirituality and mental health in disasters, the current study has; first, used confirmatory factor analysis to validate the structure of the PSSS-S2 with an underrepresented group, volunteers. Next, we investigated the overtime influence with perceived social support assessed in the follow-up. Overall, we hypothesize that:
1. The shortform PSSS-S2 would have the adequate one-dimensional structure in this H-KR sample;
2. PSSS-S2 would be inversely related to Wave-2 PTSS, after controlling for Wave-1 PTSS and other disaster factors;
3. Wave-2 perceived social support would be inversely related to Wave-2 PTSS.

2. Method

2.1 Procedure

Wave-1 survey questionnaire was conducted approximately three months after H-K at five public universities in the Gulf Coast affected by the disaster. Wave-2 data were collected six months after H-K, but only two universities could join this follow-up. Researchers at each site employed posters, emails, and direct faculty contact to encourage participation. A package containing an informed consent letter, the consent form, the survey, and a return envelope was, then, distributed to

consented respondents. The consent letter emphasized voluntary participation, freedom to withdraw from the study, and confidentiality, which included a description of the additional protections afforded by the federal Certificate of Confidentiality that was obtained for the study. At each participating universities, the Human Subjects Review Board approved the documents. All subsets of data were aggregated and analyzed at one site.

2.2 Respondents

The average age of the combined sample in Wave-1 (*N* = 542) was 29.66 (*SD* = 9.103) years. Additionally, the age of the youngest and oldest respondents is 17 and 61, respectively. Most respondent volunteers were female (88.4%, *N* = 479) and African American (55.2%, *N* = 298), and were undergraduate (39.1%, *N* = 212) or graduate students (58.5%, *N* = 317) who majored in social work. The average age of the combined sample in Wave-2 (*N* = 201) was 30.38 (*SD* = 9.445) years. In Wave-2, most respondent volunteers were female (91%, *N* = 183) and African American (38.8%, *N* = 78), including undergraduate (20.9%, *N* = 42) and graduate students (78.6%, *N* = 158) of social work. The attrition was mainly due to the availability of study sets for this follow-up. For instance, the number of African American respondents reduced from 298 to 78. According to two sample Z-test for proportions, the number of African American respondents in Wave 1 was significantly higher than in Wave 2 (Z-score = 3.918, *p* < 0.001).

2.3 Measures

2.3.1 PTSD-Like Symptoms

PTSS were measured with the 17-item Modified PTSD Symptom Scale (MPSS-SR) that assesses the 17 *DSM-IV-TR* symptoms of PTSD [49]. When screening for PTSD, a clinical cut off score of 28 is recommended [49]. The current study abides by the *DSM-IV-TR* criteria as data was collected in 2005, 7 years before the publishing of *DSM-5*. For an assessment of differences between the two manuals, see Pai, Suris, and North [50]. Participants indicated how often they experienced particular symptoms (e.g., bad dreams or nightmares, upsetting thoughts or images, trouble concentrating) using a 4-level scale (0 = *Not at all or only one time*, 3 = *5e or more times a week/almost always*). Cronbach's alphas for the MPSS-SR in Waves-1 and 2 were 0.922 and 0.911, respectively.

2.3.2 Perceived Spiritual Support Scale

The initial 12-item Spiritual Support Scale (PSSS) [38] assessed various spiritual relationships (e.g., I have been inspired by my religious or spiritual faith in the face of distress). The structure, construct and predictive validity, and reliability was reported in a landmark book [37]. The present study employed a newly validated short form, the 6-item PSSS-S2 [33], because it included an item on congressional support. The PSSS-S2 was validated using a sample of a H-MM study that demonstrated its one-factor structure and adequate reliability and validity [33]. Respondents were instructed to replace the term God with their preferred higher power in a spiritual or religious faith or belief (e.g., the divine, a higher power, Buddha). Response options ranged from 1 (*Strongly disagree*) to 4 (*Strongly agree*) concerning each statement during the time following H-KR. Cronbach's alpha for the PSSS and PSSS-S2 was 0.967 and 0.912 in this H-KR sample, respectively.

The mean and standard deviation of PSSS-S2 were 1.572 and 0.703 in Wave-1, respectively. Similarly, the mean and standard deviation of PSSS-S2 were 1.663 and 0.724 in Wave-2, respectively.

2.3.3 Perceived Social Support

Social Support was measured with the 12-item Multidimensional Scale of Perceived Social Support from family, friends, and significant others (MSPSS; [51]). Participants were asked "to what extent you agree with these statements *since the time Hurricanes Katrina and Rita*," on a 6-level scale (1 = *very strongly disagree*, 6 = *very strongly agree*; α = 0.971). The mean and standard deviation of perceived social support were 4.979 and 1.167, respectively.

2.3.4 Hurricane-Related Stressors

The stressors experienced in the month following H-KR by respondents were assessed with an 18-item checklist [52]. Stressors included common stressful experiences in various domains of living, ranging from the moderate (e.g., food and gasoline shortages, being an evacuee for less than a week, problems contacting loved ones) to the more severe (e.g., loss of personal property, separation from pets, being an evacuee for a week or more). Items checked on the list were summed to create a composite score. Cronbach's alpha for the Hurricane-related stressor was 0.761 in this H-KR sample. The mean and standard deviation of hurricane-related stressors were 5.431 and 3.273 in Wave-1, respectively. Similarly, the mean and standard deviation of hurricane-related stressors were 5.530 and 3.233 in Wave-2, respectively.

2.3.5 Peritraumatic Emotional Responses

Participants' initial emotional reactions to H-KR were assessed with the 12-item Types of Peritraumatic Emotional Responses checklist, originally developed for a 9/11 study [36], with a contextual modification. Using a 5-level scale (1 = *Not at all*, 5 = *A great deal*), respondents indicated the extent to which they experienced 12 types of emotional reactions (e.g., horror/shock, anger/hatred, fear/anxiety/worry, sympathy for victims and their families, admiration for the first responders, gratitude for the international support) and an additional "Other" item during the month following H-KR. As factored in Ai et al.'s [36] study, the first five items were summed up as negative emotional responses and the remaining seven constituted positive emotional responses. Cronbach's alpha for both subscales was 0.82.

2.3.6 Demographics and Internship Status

Age, race, gender, and study levels (undergraduate and graduate students) were included in the analysis as demographic controls. Age was presented in years. Race, gender, and study levels were dichotomized (African American = 0, White = 1; Male = 0, Female = 1; No = 0, Yes = 1).

2.4 Data Analysis

No missing values were computed. However, in the factor analysis and hierarchical regression these were reduced to 521 and 152, respectively. The sample size 521 was a listwise deletion regarding the PSSS (e.g., 12 item list). The sample size 152 was another listwise deletion regarding

the independent variables (e.g., Race, Age, Gender, PTSS in Wave-1, PTSS-S2, Hurricane stressors, and social support). Descriptive statistics were used to summarize data. Univariate analyses were performed to examine the correlations between independent and PTSD-like symptoms. Using statistical software of R-language [53], Robust Confirmatory factor analysis was conducted to verify the single-item structure of the PSSS-S2 [33], since the data were not normally distributed and with missing data. Finally, a hierarchical multiple regression analysis was performed following preplanned steps (i.e., 1. Demographics; 2. H-KR stressors, Wave-1 PTSS, and PSSS-S2; 3. Wave-2 perceived social support) to explore the association of PSSS-S2 and perceived social support with Wave-2 PTSS, controlling for demographic, Wave-1 PTSS and H-KR stressors.

3. Results

3.1 Factor Analyses

Initially, we adopted the single-item structure of the PSSS-S2 (n = 521). However, the result was not satisfactory. Model fit indices indicate that single-item structure was not a good fit of the CFA: $\chi^2(9) = 57.512$, $p < 0.001$ (significance indicates not a good fit); CFI and TLI were 0.983 and 0.972, respectively [RMSEA = 0.094 (<0.06 is optimal); and SRMR = 0.022 (<0.08 is optimal)], all indicating non-satisfactory fit, except SRMR [54, 55]. In addition to that, the modification index suggests an error variance between V2 and V3. Review Figure 1 for the CFA path diagram.
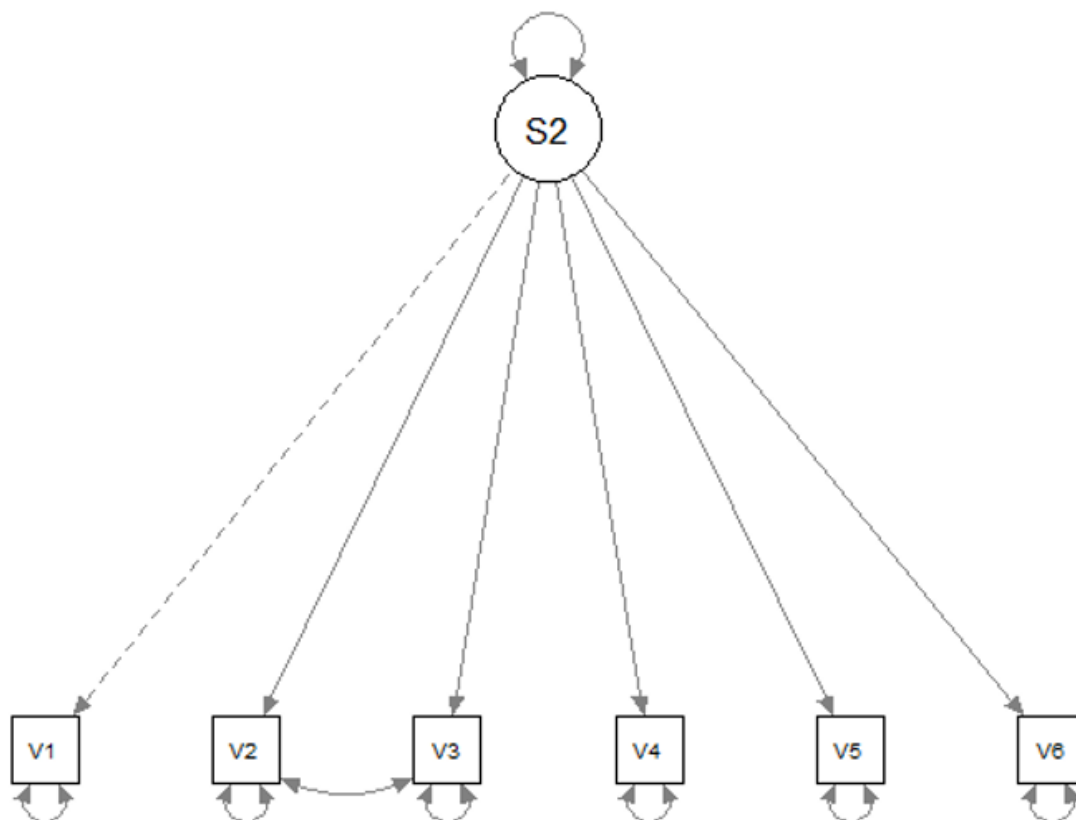

Figure 1 The CFA Path Diagram for PSSS-S2.

Next, Table 1 shows standardized coefficients of Robust CFA using the H-KR sample with a covariance variance 0.312 between V2 and V3. All six items adequately loaded on the single factor

of the PSSS-S2 (i.e., 0.696/v1 to 0.669/v6). Model fit indices indicated an better fit than initial model, $\chi^2(8) = 9.189$, $p = 0.327$ (non-significance indicates good fit); CFI and TLI were 0.999 and 0.998, respectively [RMSEA = 0.022 (<0.06 is optimal); and SRMR = 0.015 (<0.08 is optimal)], all indicating good fit [54, 55].

Table 1 Confirmatory Factor Analysis for PSSS-S2(N = 521).

	Items	Factor Loadings PSSS-S2
V1	I have an inner resource from my spiritual relationship with God (or other spiritual source) that helped me fact difficulties following the hurricanes.	0.696
V2	I experience the love and caring of God (or other spiritual source) on a regular basis.	0.841
V3	I often feel close to God (or other spiritual source) in my heart.	0.803
V4	My religious or spiritual faith has helped my cope during the time of difficulty.	0.953
V5	My religious or spiritual faith has provided me with comfort in uncertainty	0.905
V6	I have received spiritual Support from my religious or spiritual congregation. (PSSS-2 only)	0.669
V2~V3	Covariance between V2 and V3	0.312
	Model Test Statistics	9.189
	Model P-value	0.327
	CFI/TLI	0.999/0.998
	RMSEA	0.022
	SRMR	0.015

3.2 Correlational Analyses

Table 2 showed bivariate relationships among all factors. Wave-1 PTSS and hurricane-related stressors were positively related to Wave-2 PTSS. Race was also positively correlated with Wave-1, and Wave-2 PTSS, indicating that females might reported higher PTSS scores in both waves. In addition, Gender was positively associated with Race, PTSS scores in Wave-1, hurricane-related stressors, and Wave-2 perceived social support. Moreover, Wave-1 PTSS was also positively associated with hurricane-related stressors and Wave-2 perceived social support. Further, hurricane-related stressors is positively correlated with Wave-2 perceived social support.

Table 2 Correlation Analysis (N = 521).

Factors	1	2	3	4	5	6	7	8
1.PTSD Wave-2	1.000							
2.Race	0.094	1.000						
3.Age	-0.111	-0.043	1.000					

4.Gender	-0.042	0.067	-0.177**	1.000				
5.PTSS Wave-1	0.497**	0.134**	-0.044	0.060	1.000			
6.PSSS-S2	-0.023	-0.363**	-0.038	-0.103*	-0.068	1.000		
7.H-Stress	0.315**	-0.025	-0.005	0.072	0.361**	-0.122**	1.000	
8.Social Support	-0.184**	-0.042	-0.167**	0.138	0.015	-0.042	0.147	1.000

Note. H-KR refers to Hurricane Katrina; PTSS refers to Posttraumatic Stress Symptoms; PSSS-S2 refers to Perceiver Spiritual Support Scale-Short form 2.

* p < 0.05. ** p < 0.01.

3.3 Multiple Regression Analyses

Table 3 illustrated the result of the hierarchical regression analysis following preplanned steps. Among all models, the second and third steps were significant, while F-changes were also significant (second step: 25.893, and third step: 6.238). In Step 1, none of the demographics predicted Wave-2 PTSS. In Step 2, among the newly entered variables, Wave-1 PTSS (β = 0.518, *p* < 0.001) and H-KR stressors (β = 0.157, *p* < 0.05) were positively associated with Wave-2 PTSS. In the final step, age (β = -0.155, *p* < 0.05), remained to be negatively related with Wave-2 PTSS. Additionally, H-KR victims who experienced PTSS (β = 0.524, *p* < 0.001) and more hurricane-related stressors (β = 0.173, *p* < 0.01) in Wave-1 were more likely to report higher levels of PTSS in Wave-2. However, H-KR victims who perceived more social support (β = -0.171, *p* < 0.01) in Wave-2 were more likely to experience reduced levels of PTSS in Wave-2.

Table 3 Hierarchical Regression Step 1, 2, and 3 models on PTSD Wave-2 (N = 152).

	Step1		Step2		Step3	
Factors	B	β	B	β	B	β
Gender (Male = 0, female = 1)	-0.038	-0.023	-0.130	-0.080	-0.111	-0.069
Race (White = 0, African America = 1)	0.122	0.130	0.107	0.114	0.078	0.083
Age	-0.005	-0.103	-0.006	-0.120	-0.008	-0.155**
Wave-1 PTSS			0.479	0.518****	0.484	0.524****
PSSS-S2			0.015	0.022	0.004	0.006
H-KR stressors			0.022	0.157**	0.025	0.173***
Perceive Social Support					-0.075	-0.171***
R^2	2.50		36.60		39.20	
$F - Change^a$	1.319		25.893****		6.238***	

Note. H-KR refers to Hurricane Katrina; PTSS refers to Posttraumatic Stress Symptoms; PSSS-S2 refers to Perceiver Spiritual Support Scale-Short form 2.

[a] F-Change Step 1 df = (3, 148); Step 2 df = (3, 145); Step 3 df = (1, 144).

** p < 0.05. *** p < 0.01. **** p < 0.001.

4. Discussion

The findings generated from the current study are partly consistent with expectations. First, as hypothesized, the PSSS-S2 has the adequate one-dimensional structure in this H-KR sample, supported by confirmative factor analysis and model fit indices. Further, despite the reduced symptom levels, PSSS persisted among some volunteers, which is consistent with the literature. A systematic review examining health outcomes amongst disaster relief responders supported that some adverse medical outcomes experienced by volunteers include environmental, infectious, dermatologic, gastrointestinal, and respiratory diseases, and burns, fractures, falls [11, 56]. These can be clearly attributed to structural disrepair (i.e. debris, weak infrastructure) and location-specific environmental conditions (i.e. clean water availability, extreme weather conditions) [57]. Paired with the aforementioned mental health effects, these can prolong the effects of disaster trauma experiences. The current findings add new evidence for the lasting damage of disasters and should get attention from health and mental health providers for future crisis intervention.

However, findings did not support the hypothesized protection against post-traumatic stress symptoms. Contrary to our second hypothesis, PSSS-S2 was not a significant predictor for PTSS in the follow-up, after controlling for symptom levels in the first survey. In other words, it is not consistent with the 9/11 follow-up study [39], nor a similar study on H-KR Wave-1 depressive disorders [58]. Numerous previous studies also support that spirituality has served as a protective factor for survivors of disaster experiences [33, 59-61]. Further, spirituality has also been supported to be a moderator between volunteers' experience of burnout and intent to quit their organizations [62]. The literature suggests that there is a relationship between spirituality and resilience [59] and Post-Traumatic Growth [63]. Future studies with volunteer samples should examine the role of perceived spiritual support on predicting longitudinally observed remnants of trauma experiences controlling for the volunteers' active participation in the rebuilding process. It would be especially valuable to the field to examine the extent to which perceived spiritual support impacts the length of stay at a disaster-stricken community.

The inconsistent results might be due to a market loss of participants because only two universities joined the follow-up with only 1/3 of the original sample. It could also be due to the even more loss of African American participants from the first wave (1/4) survey when over half of volunteers had African American race identity. As noted earlier, African Americans were more rely on spirituality and religion to cope with adversities [58]. Still another reason lies in the potential less traumatization among volunteers than actual victims at the center of H-KR in New Orleans. In any case, more longitudinal research is warranted [31].

Lastly, we had hypothesized that Wave-2 perceived social support would be inversely related to Wave-2 PTSS. Studies have previously identified social support as a protective factor in trauma reactions of survivors. Our findings are consistent with previous findings on the role of perceived social support [39, 43-46]. The bivariate analyses indicate that perceived social support is inversely related to age, which is consistent with literature on non-volunteering older adults (for a review, see [64]). This suggests that older volunteers perceive less social support than younger volunteers. These findings underscore the importance of creating a community for volunteers in disaster situations, with an emphasis on older volunteers who might be at a relatively higher risk for physical and emotional correlates of aid relief. Nevertheless, this link should be considered preliminary and there remains a need for prospective studies to replicate this finding.

The current study has limitations. Our current sample is a convenience sample of student volunteers; therefore, the findings of this study might not be generalizable across populations. Further longitudinal research is necessary to assess the impact of perceived spirituality on trauma experiences. In addition, due to the lack of capacity to join the follow-up by three universities, our Wave-2 participants are less than our Wave-1 participants, which may be due to individuals not wanting to relive their traumatic experiences. Lastly, collecting data for this kind of major disaster may not be realistic, since occurrence is rare. Technology and disaster preparedness methods change constantly, the same way survivors process trauma and the level of exposure are expected to change as well. The findings of the current study hence might not be reproducible, which the authors of this paper think might indicate progress.

Our findings imply the importance of deep interconnectedness among victims and volunteers, both before and after a disaster experience. Humans have collective experiences which can be bettered or worsened by human interaction. Disaster experiences are a way for us to remember that we must take an active stance in bettering our universal experience. Support and progress are connected. Medical and mental health practitioners might assess perceived social support of individuals who have been impacted by trauma. Further, encouraging pre-existing religious coping methods in clients with limited mobility might be useful in trauma symptom mitigation.

Author Contributions

We greatly acknowledge the contribution of five universities that contributed to the data collection for this follow-up secondary analysis.

Competing Interests

Authors have no known conflicts of interest.

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