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Disaster Impact Across Cultural Groups: Comparison of Whites, African Americans, and Latinos

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Abstract

The current study extends knowledge regarding the differential impact of natural disasters among White, African American, and Latino survivors of Hurricane Ike through its use of a large, regional sample recruited via representative sampling procedures to examine the associations between cultural identification and disaster impact, including loss, damage, and negative mental health outcomes. Consistent with previous research, results indicated disparities between cultural groups with regard to disaster exposure. Additionally, type of disaster impact was differentially associated with PTSD and depression status dependent on cultural group. Specifically, the extent of personal disaster exposure, property damage, and loss of services made significant contributions to PTSD status among White survivors. African-Americans were more likely than White and Latino Ike survivors to endorse post-disaster PTSD and depression and endorsement of depression was predicted by severity of property damage. With respect to Latino respondents, only the extent of personal disaster exposure significantly contributed to both PTSD and depression status. Implications of the current findings are discussed with regard to future disaster preparedness and response efforts and the implementation and evaluation of community-based disaster resources.

Keywords

Disaster impact; Cultural groups; PTSD; Depression

Introduction

A large body of research has examined the mental health impact of disasters (see Norris et al. 2002 for a review). However, little is known about differential effects of natural disasters on cultural minorities and other marginalized populations. Research suggests that cultural minority populations, specifically African Americans and Latinos, have higher risk of disaster exposure and are disproportionately affected by them (e.g., Fothergill et al. 1999; Hawkins et al. 2009; Perilla et al. 2002). Higher risk among minorities may be the result of lower levels of disaster education and preparedness (Eisenman et al. 2009), lower risk perception (Elliott and Pais 2006), lower likelihood of evacuation (Spence et al. 2007), lower socioeconomic status (Norris et al. 2002), and higher likelihood of residence in poorly constructed homes and hazardous areas (Fothergill et al. 1999). African Americans and Latinos also are more likely to experience physical hardships and trauma during and after a disaster, including personal loss, damage to property, and delay in restoration of utility services, such as electricity and water, and other basic resources including food, shelter, and income (Fothergill et al. 1999; Perilla et al. 2002). Moreover, African Americans and Latinos also may have increased risk of adverse mental health outcomes post-disaster, including posttraumatic stress, depression, and panic attacks (Norris et al. 2002; Perilla et al. 2002).

Among specific cultural minorities groups, sociocultural factors may heighten risk for exposure and vulnerability to disasters, including mistrust of government and authorities, concern for family and other members of their social networks (Eisenman et al. 2007, 2009), and adherence to cultural values. *Familismo* (emphasis on family interconnectedness) is an example of a cultural value that is prevalent in the Latino culture which could influence reliance on family to prepare for disaster (Morrow 1997) as well as reluctance to burden their families by seeking support from them (Kaniasty and Norris 2000).

Research examining post-disaster mental health among cultural minorities is limited for several reasons. First, many studies have inadequate statistical power to test differences across cultural minority groups due to relatively small sample sizes. Second, the use of convenience or purposive sampling is common in disaster mental health research, and this limits the generalizability of results (see Norris 2006). Third, studies often focus on one specific type of loss (i.e., only examining personal injury) or one mental health construct (e.g., posttraumatic stress only). This study of 1,249 adults living in counties devastated by Hurricane Ike in 2008 builds on existing research using a household probability sampling approach (i.e., random-digit dial) to improve generalizability of data regarding the immediate effects of Hurricane Ike (i.e., personal loss, property loss and loss of services). Because research has indicated that cultural minority groups are disproportionately affected by disasters, we hypothesized that cultural minorities in our sample (i.e., African American and Latinos) would report greater Hurricane exposure and negative mental health outcomes.

Methods

Data Collection and Sample

Data were collected from 1,249 adults aged 18 years or older residing in landline telephone households in Galveston and Chamber counties in Texas during Hurricane Ike. The broader purpose of this NIMH-funded study was to evaluate a post-disaster web-based mental health self-help intervention (Ruggiero et al. 2012). Galveston and Chambers counties were chosen on the basis of having extensive damage sustained from Hurricane Ike (Ruggiero et al. 2012). Eligible participants were at least 18 years of age, lived in either one of these counties at the time of the Hurricane, had landline telephones, had an Internet connection (for purposes of evaluating the intervention) and were English speaking. We did not have the capacity to conduct interviews in Spanish because the intervention being evaluated in the study has not been translated; it was therefore cost prohibitive under our NIH grant to recruit participants who were not English speaking. According to the US Census (2010), over 95 % of Hispanic adults in Galveston and Chambers counties reported speaking English “very well.” Our inability to conduct interviews in Spanish therefore resulted in exclusion of only a small proportion of Hispanic adults.

A random-digit-dial methodology was used to screen households for eligibility. These methods are discussed in greater detail elsewhere (see Ruggiero et al. 2012). Landline phone interviews were conducted between September 10th and October 12th, 2009, approximately 12 months following the landfall of Hurricane Ike. Informed consent was obtained verbally. The overall cooperation rate (#4), calculated according to American Association for Public Opinion Research industry standards [i.e., (completed interviews + screen outs) divided by (completed interviews + screen outs + refusals)], was 50.2 %.

Participants

This paper is restricted to participants who self-identified as White, African American, or Latino due to statistical power considerations. Participants were asked to self-identify based on ethnicity (i.e., Latino or non-Latino) and racial background (i.e., Asian, Black or African American, American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, White, Latino, or Other). Participants who identified their ethnic background as Latino were included in the analyses. Participants consisted of 1,182 of adults self-identified as White (80 %), African American (13.7 %) or Latino (6.3 %) (see Table 1). White participants averaged 47.9 years ($Mdn = 48$; $SD = 17.0$), African Americans 40.5 years ($Mdn = 37.6$; $SD = 17.7$), and Latinos 38.2 years of age ($Mdn = 33$; $SD = 14.9$). Among White participants, the sample was evenly distributed between men (51.3 %) and women (48.7 %), with the majority reporting at least some college or technical training (82.6 %) and had a yearly income above \$40,000 (79.4 %). African American participants were also evenly distributed between men (49 %) and women (51 %), with 61.7 % reporting at least some college, and approximately half of the sample reported an annual income above \$40,000 (43.8 %). Latino participants were comprised of 38 women (51.5 %) and 36 men (48.5 %), with 65.2 % reporting at least some college education and 75.9 % reporting an annual income above \$40,000.

Procedure

The computer-assisted telephone interview was conducted by Abt SRBI, a survey research organization with extensive experience conducting interviews with disaster-affected populations. A structured interview administered included the following sections: demographics, hurricane exposure characteristics (i.e., personal impact, property loss, loss of services), and post-hurricane mental health functioning (i.e., PTSD and depression). The telephone interview averaged 21 min in duration and respondents were paid \$10 for their participation. To ensure data entry accuracy and interviewer's adherence to the assessment procedure, supervisors conducted random checks of completed interviews. The institutional Review Board of the Medical University of South Carolina approved all study procedures.

Measures

Demographics—Participants answered question about age, gender, cultural identification, education, and yearly household income.

Hurricane Exposure—We assessed whether participants suffered personal impact, property damage and loss of services. *Personal impact* was measured by the following set of yes/no items: (a) present for Hurricane Ike; (b) fear of death or injury; (c) fear for safety of family; (d) fear of injury to self; (e) loss of pets; (f) loss of job. *Property loss* as result of Hurricane Ike was measured by the following yes/no items: (a) damage to home; (b) damage to personal items; (c) damage to sentimental objects; (d) damage to vehicles; (e) damage to property; and (f) damage to other. Finally, to measure *loss of services*, participants were asked to fill in the number of days without the following: (a) days without electric; (b) days without water; (c) days without food; (d) days without shelter; (e) days without clothing; (f) days without transportation; and (g) days without money.

PTSD Checklist-Civilian version—(PCL; Weathers et al. 1994) is a 17-item instrument that parallels *DSM-IV* criteria B, C, and D for PTSD. In the current study, this scale was used to measure the presence of PTSD symptoms post-disaster. Research has provided significant support for its internal consistency, test–retest reliability, convergent validity, and discriminant validity (Forbes et al. 2001; Ruggiero et al. 2003; Ruggiero et al. 2006). Cronbach's alpha for this sample was 0.94.

The Center for Epidemiologic Studies-Depressed Mood Scale-10—(CESD-10; Radloff 1977) is a 10-item measure used to identify persons at risk for clinical depression. In the current study, this scale was used to measure the presence of depressive symptoms post-disaster. It was developed from the original 20-item CES-D measure, which has been validated in various populations with high internal consistency, satisfactory test–retest correlations, and strong concurrent validity, discriminant validity, and sensitivity to change (Radloff 1987; Smarr 2003). Cronbach's alpha with this sample was 0.87.

Data Analysis Plan

Data were weighted by age for each county (Galveston and Chambers) to ensure the sample was consistent with 2008 US Census estimates. Preliminary analyses were conducted to obtain descriptive statistics and examine potential confounding demographic variables by

cultural group. Second, we used omnibus ANOVAs to compare cultural groups across the disaster exposure and mental health outcome variables. Following those analyses we conducted an initial set of regressions to determine the main effects of the type disaster exposure on PTSD and depression symptoms across all cultural groups controlling for demographic characteristics.

Third, an initial set of regressions was conducted to determine the main effects of the type disaster exposure on report of PTSD and depression symptoms across all cultural groups controlling for demographic characteristics. Interaction terms were then added to the models to determine the extent that disaster exposure differentially impacted depression and PTSD symptoms of Latinos, African Americans, and Whites. Given the number of disaster variables measured, we did not have sufficient power and ran the chance for high collinearity across the disaster variables if we were to run all variables concurrently. As a result, we decided to use the composite score for the various hurricane exposure variables. We aggregated the various hurricane exposure variables into three theoretically meaningful composite scores (personal impact, property loss and loss of services) describe above. Such an approach has been successfully used in the examination of hurricane exposure and mental health (Price et al. 2012). Moreover, we expect that the cumulative effect of loss would be more strongly associated with negative mental health outcomes given past work indicating that exposure to multiple traumatic events is associated with negative mental health outcomes (Clemmons et al. 2007). Bootstrapping procedures with 5,000 replications and bias correction were used to generate 95 % confidence intervals. This approach has been shown to provide less biased estimates in working with highly skewed data, which was the case for the psychiatric symptoms and loss of services (Delucchi and Bostrom 2004; Neal and Simons 2007; Pollack et al. 1994).

Results

Preliminary Analyses

One-way ANOVAs were conducted to examine differences among the demographic breakdown across the various racial/ethnic groups. White participants reported higher education levels than African Americans or Latinos $F(2, 1013) = 13.86, p < 0.0001$, reported higher income than African American $F(2, 1013) = 24.26, p < 0.0001$ participants, and were older than both African American and Latino participants $F(2, 1013) = 12.68, p < 0.0001$. No other significant differences were found.

Disaster Exposure Among Cultural Groups

Findings from omnibus ANOVAs indicated that there were significant differences among racial/ethnic categories on the personal impact of the disaster [$F(2, 1180) = 15.15, p < 0.0001$] and loss of essential services after the disaster [$F(2, 1180) = 10.70, p < 0.0001$]. However, the extent of impact of the disaster on property did not vary across the groups, $F(2, 1180) = 1.86, p = 0.16$. Bonferroni post hoc tests indicated that African Americans ($M = 1.62, SD = 1.25$) reported greater personal impact than Whites ($M = 1.13, SD = 1.01$) ($M_{Diff} = 0.48, p < 0.01$) and Latinos ($M = 1.26, SD = 1.02$) ($M_{Diff} = 0.36, p = 0.04$). Furthermore, African Americans ($M = 1.67, SD = 1.72$) ($M_{Diff} = 0.52, p < 0.01$) and Latinos

($M = 1.63$, $SD = 1.66$) ($M_{\text{Diff}} = 0.48$, $p < 0.01$, $p = 0.03$) reported a greater loss of services than Whites ($M = 1.16$, $SD = 1.44$).

With regard to mental health, there were significant differences amongst the groups for depression ($F(2, 1176) = 22.08$, $p < 0.01$). African American ($M = 7.05$, $SD = 6.55$) participants reported significantly higher depressive symptoms than Whites ($M = 4.10$, $SD = 5.36$; $M_{\text{Diff}} = 2.95$, $p < 0.01$) and Latinos ($M = 4.28$, $SD = 5.38$; $M_{\text{Diff}} = 2.77$, $p < 0.01$). There were significant differences in report of PTSD symptoms among the three cultural groups, $F(2, 1176) = 22.08$, $p < 0.01$. Similarly, African American ($M = 27.45$, $SD = 12.33$) participants reported significantly higher PTSD symptoms than Whites ($M = 21.91$, $SD = 9.40$; $M_{\text{Diff}} = 5.54$, $p < 0.01$) and Latinos ($M = 22.60$, $SD = 8.53$; $M_{\text{Diff}} = 4.85$, $p < 0.01$).

Disaster Exposure and Mental Health Outcomes

Omnibus Comparison—An initial set of regressions was conducted to determine the main effects of the type disaster exposure on PTSD and depression symptoms across all cultural groups controlling for demographic characteristics. The findings suggested that personal impact ($\beta = 0.30$, $t = 10.22$, $p < 0.001$, $R_{\Delta}^2 = 0.08$), property damage from the disaster ($\beta = 0.31$, $t = 11.01$, $p < 0.001$, $R_{\Delta}^2 = 0.10$), and loss of services ($\beta = 0.45$, $t = 15.85$, $p < 0.001$, $R_{\Delta}^2 = 0.18$) were related to PTSD symptoms. Personal impact ($\beta = 0.27$, $t = 8.86$, $p < 0.001$, $R_{\Delta}^2 = 0.07$), property damage from the disaster ($\beta = 0.23$, $t = 7.84$, $p < 0.001$, $R_{\Delta}^2 = 0.05$), and loss of services ($\beta = 0.34$, $t = 11.26$, $p < 0.001$, $R_{\Delta}^2 = 0.10$) were also related to depression symptoms.

Interaction terms were then added to the models to determine the extent that disaster exposure differentially impacted depression and PTSD symptoms of Latinos, African Americans, and Whites.

Depression Comparisons—There was a significant interaction between personal impact of the disaster and Latinos for depression symptoms ($\beta = 0.10$, $t = 1.91$, $p < 0.05$). However, there was not a significant interaction for African Americans ($\beta = -0.04$, $t = -0.70$, $p = 0.49$). These findings suggested that the association between personal impact and depression were greatest for Latinos ($\beta = 0.56$, $t = 4.50$, $p < 0.01$), and comparable across Whites ($\beta = 0.24$, $t = 7.25$, $p < 0.01$) and African Americans ($\beta = 0.17$, $t = 2.11$, $p = 0.04$) (Table 2). There was a significant interaction between property damage and African Americans ($\beta = 0.18$, $t = 3.03$, $p < 0.01$) but not between property damage and Latinos ($\beta = -0.03$, $t = -0.44$, $p = 0.66$). African Americans had the strongest relation between property damage and depression ($\beta = 0.38$, $t = 5.16$, $p < 0.01$). The relation was not as strong for Whites ($\beta = 0.73$, $t = 5.92$, $p < 0.01$) and nonsignificant for Latinos ($\beta = 0.16$, $t = 1.21$, $p = 0.23$). Finally, there was no significant interaction for African Americans and loss of service ($\beta = -0.03$, $t = -0.78$, $p = 0.44$) and Latinos and loss of services ($\beta = -0.04$, $t = -0.82$, $p = 0.41$) for depression. However, a greater loss of services was associated with greater depression for African Americans ($\beta = 0.19$, $t = 2.32$, $p < 0.05$), Latinos ($\beta = 0.33$, $t = 11.24$, $p < 0.01$), and Whites ($\beta = 0.36$, $t = 10.89$, $p < 0.01$).

PTSD Comparisons—There was a significant interaction for African Americans and property damage ($\beta = 0.18, t = 2.93, p < 0.01$). A significant interaction was not observed for Latinos ($\beta = -0.09, t = -1.62, p = 1.05$). This finding suggested that the association between property damage and PTSD symptoms was positive and strongest for African Americans ($\beta = 0.34, t = 4.76, p < 0.01$), followed by that for Whites ($\beta = 0.31, t = 9.56, p < 0.01$), and finally a non-significant association for Latinos ($\beta = 0.16, t = 1.22, p = 0.23$) (Table 3). There was a significant interaction for Latinos ($\beta = -0.09, t = -2.19, p = 0.03$) and loss of services. However, this interaction was not found for African Americans ($\beta = -0.04, t = -0.88, p = 0.38$). This finding suggested that the association between loss of services and PTSD symptoms were strongest among Whites ($\beta = 0.49, t = 15.90, p < 0.01$), followed by Latinos ($\beta = 0.38, t = 2.93, p < 0.01$), and finally African Americans ($\beta = 0.29, t = 3.84, p < 0.01$). There were no significant interactions between personal impact of the disaster and PTSD symptoms for African Americans ($\beta = -0.04, t = -0.78, p = 0.44$) or Latinos ($\beta = 0.06, t = 1.33, p = 0.18$).

Discussion

The current study extends knowledge regarding the differential impact of natural disasters among White, African American, and Latino survivors of Hurricane Ike through its use of a large, regional sample recruited via representative sampling procedures to examine the associations between cultural identification and disaster impact, including loss, damage, and negative mental health outcomes. No differences emerged among the cultural groups with regard to experience of property damage as a result of Hurricane Ike, potentially reflective of the large-scale and broadly reaching damage caused by Hurricane Ike (FEMA 2008; NOAA 2008; Office of the Governor 2008). However, consistent with research regarding previous disasters (Moore 2010; Perilla et al. 2002), African American and Latino participants reported a greater impact of loss of services than Whites. Further, African Americans reported greater personal impact than Whites and Latinos; that is, African Americans were significantly more likely to report a confluence of disaster exposure factors including direct exposure and concern for safety of their family. Several mechanisms have been posited and supported by prior research to explain disparities in personal impact, including differences in information seeking patterns, access to information, distrust of centralized or government information sources, and disruption of social networks (e.g., family) (Perilla et al. 2002; Quinn et al. 2005; Spence et al. 2011, 2007). Future research regarding factors proffering risk for disaster exposure, particularly among minority populations, would advance the state of the science and inform future evacuation efforts.

African Americans exhibited greater likelihood of meeting criteria for PTSD in the aftermath of the hurricane compared to Whites and Latinos. Prior research in this area has been mixed, with some studies findings higher rates of PTSD among African American and Latino disaster survivors (Davis et al. 2011; Perilla et al. 2002). Others, however, have failed to find significant differences in post-disaster PTSD prevalence (Bonanno et al. 2007; Galea et al. 2008; Kessler et al. 2008), and have suggested that factors such as income and education may confound the relation between race/ethnicity and post-disaster mental health. Of note, several inclusion criteria of the current study (e.g., English-speaking, home internet

access, having returned to pre-disaster residence by time of survey) may have served to limit variability on purported confounds of income and education.

Type of disaster impact was, however, differentially associated with PTSD and depression status among Latinos, African Americans, and Whites. For example, the extent of personal impact, property damage, and loss of services all made significant contributions to depression status among White survivors. A similar effect was observed with respect to PTSD status, as property damage and loss of services were significant contributors among Whites. Power to detect effects of disaster exposure categories may have contributed to this finding in that Whites constituted over 70 % of the sample and this large sample size may have made it possible to detect effects for all forms of disaster impact. Future research in this area should consider oversampling minority survivors to enhance power to detect effects of multiple domains of disaster exposure on mental health outcomes.

Of note, property damage was differentially associated with report of depression and PTSD among African-Americans compared to White and Latino survivors. It may be that the extent of property damage may have been particularly relevant among African American respondents given the financial burden of rebuilding or relocating. Unfortunately, due to the nature of our interview, we are unable to draw definite conclusions as to whether decreased financial resources were more prevalent among African Americans as compared to other racial/ethnic groups and whether decreased financial resources were associated with distress. This is clearly an important area of study and future research should comprehensively measure availability of financial resources post-disaster and examine potential associations with post-disaster mental health among various racial/ethnic populations. Interestingly, although African American respondents reported significantly higher levels of personal impact compared to Whites and Latinos, this factor was not significantly associated with post-disaster mental health outcomes for African American participants. Prior research has suggested resilience, or the ability to utilize available resources to adapt in the face of difficulties (Norris et al. 2008) may, at least in part, be promoted through high levels of social support, optimism, and sense of purpose promoted by a cultural priority among many African Americans in which close relationships, spirituality and religiousness are used as a means of coping with stressors to promote psychological well-being (Chan et al. 2012; Constantine et al. 2005, 2003; Schuster et al. 2001; Mitchell and Ronzio 2011; Utsey et al. 2008; Watlington and Murphy 2006). Future research should examine pathways of resilience in the face of natural disaster, particularly among African American survivors—information from such research would have natural implications for pre- and post-disaster efforts to foster resilience amongst survivors.

With respect to Latino respondents, the extent of personal impact uniquely contributed to depression status. This composite measure that included being present during the Hurricane, fear of death or physical injury, and concern for family safety, highlighting the importance of enhancing the effectiveness of evacuation efforts among Latino communities. Specifically, concern for the safety and welfare of family, both immediate and extended—or familismo—is a well-documented priority in Latino culture (e.g., Ayon et al. 2010; Cauce and Domenech-Rodriguez 2000).

These findings have notable limitations that should be discussed. First, although participants were recruited into the study via random-digit dial procedures, interviews were only conducted with people residing in homes with landline telephones and home Internet access. Although, approximately 3 in 4 households in the US has Internet access (Smith 2010a, b) and 3 in 4 households has a landline telephone (Blumberg and Luke 2010), participants in this study may have been more likely to have greater information access and less likely to represent those living below the national poverty level, factors that may have significant bearing on the current findings. Whereas internet use among African American and Latino Americans has nearly doubled in the past decade and English speaking Latinos do not significantly differ from white Americans in their use of the internet and home broadband access, disparities do remain with respect to internet use among African Americans (Smith 2010a, b). Second, interviews were conducted only in English and results may not generalize to non-English speaking affected by disaster. Although <4 % of Galveston and Chambers county population were non-English speaking at the time of the interview (US Census Bureau 2010), this factor likely had a disproportionate impact on data related to disaster impact and mental health among Latino participants. Third, the current study was unable to differentiate new-onset episodes of disorder from pre-disaster episodes and did not fully assess for prior history of trauma. Therefore, results can only speak to the presence or absence of PTSD and depression in the aftermath of Ike, not the new onset of PTSD and depression post-disaster.

Implications of the current findings are relevant to both future research in this area, as well as considerations for future disaster preparedness and response efforts. First, the current findings continue to support the important role of restoration of basic services—such as water, electric, food, shelter and clothing—post disaster as this was related to mental health outcomes, particularly among minority survivors. Despite heightened awareness of racial disparities brought to light in the wake of previous disasters, such as Hurricane Katrina, the current data from Hurricane Ike survivors suggest that disparities still exist, particularly with respect to extended loss of services and direct or personal exposure to the disaster. Second, the current findings suggest that African-Americans may be especially vulnerable to the lingering effects of disaster, such that the experience of property damage post-disaster. In addition to aforementioned avenues for future research, the current findings highlight the importance of grass-roots disaster preparedness efforts in ensuring the effective communication prior to and in the aftermath of natural disaster. Successful community-based efforts have been based on finding community leaders—such as *promotoras*, faith-based leaders, and community-based organizations, and partnering with them to promote disaster preparedness, crisis knowledge, and post-disaster service utilization (Eisenman et al. 2009; Lachlan and Spence 2011). Future preparedness outreach and research should be directed toward the implementation and evaluation of the effectiveness of these and other grass-roots and community-based disaster efforts in spearheading preparedness initiatives in advance of disaster.

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Table 1

Demographics and descriptive statistics

Category	White (n = 944)		African American (n = 162)		Latino (n = 74)	
	n	%	n	%	n	%
Gender						
Male	484	48.7	79	49.0	36	48.5
Female	460	51.3	82	51.0	38	51.5
Education						
K to 8th grade	6	0.6	0	0	0	0
Some high school	29	3.1	7	4.0	8	11.0
High school graduate/GED	129	13.7	56	34.3	18	23.8
Some college	344	36.5	52	31.9	30	40.6
College graduate	274	29.0	25	15.2	13	17.7
Graduate work	162	17.1	24	14.6	5	6.9
Yearly income						
<\$10,000	18	2.2	23	16.6	4	5.9
\$10,000 to <\$20,000	48	5.8	16	11.3	1	1.9
\$20,000 to <\$40,000	102	12.5	30	21.2	10	16.3
\$40,000 to <\$60,000	122	15.0	19	14.0	15	25.1
\$60,000 to <\$80,000	129	15.8	17	12.1	12	19.6
\$80,000 to <\$100,000	111	13.6	16	11.7	7	12.2
\$100,000 or more	285	35.0	18	13.1	12	19.0
<hr/>						
Mental health variables						
PTSD symptoms	21.91	9.40	27.45	12.32	22.60	8.53
Depression symptoms	4.10	5.36	7.05	6.55	4.28	5.38
Disaster variables						
Personal impact	1.13	1.00	1.62	1.25	1.26	1.02
Property damage	2.56	1.46	2.71	1.52	2.84	1.71
Loss of services	1.16	1.44	1.67	1.72	1.63	1.66
<hr/>						
	M	SD	M	SD	M	SD

Table 2
Hierarchical regression analysis for variables predicting depression across cultural groups

	R²	Predictors	B	SE	β	t	Lower bound	Upper bound
Whites (n = 944)								
Step 1	0.06**	Age	0.01	0.01	0.02	0.44	-0.02	0.03
		Income	-0.59	0.11	-0.19	-5.25**	-0.82	-0.37
		Gender	-1.16	0.37	-0.11	-3.13**	-1.89	-0.43
		Education	-0.30	0.17	-0.07	-1.8	-0.62	0.03
Step 2	0.06**	Personal impact	1.31	0.18	0.24	7.25**	0.96	1.66
	0.04**	Property damage	0.73	0.12	0.20	5.92**	0.49	0.98
	0.12**	Loss of services	1.37	0.13	0.36	10.89**	1.13	1.62
African American (n = 162)								
Step 1	0.24**	Age	0.14	0.03	0.34	4.30**	0.07	0.20
		Income	-0.63	0.28	-0.2	-2.21**	-1.19	-0.07
		Gender	-0.16	0.98	-0.01	-0.17	-2.10	1.77
		Education	-1.62	0.44	-0.34	-3.68**	-2.49	-0.75
Step 2	0.03*	Personal impact	0.86	0.41	0.17	2.11*	0.05	1.66
	0.13**	Property damage	1.63	0.32	0.38	5.16**	1.01	2.25
	0.03*	Loss of services	0.68	0.29	0.19	2.32*	0.10	1.25
Latino (n = 74)								
Step 1	0.05	Age	0.06	0.05	0.17	1.27	-0.04	0.16
		Income	-0.39	0.49	-0.12	-0.78	-1.38	0.60
		Gender	-0.77	1.54	-0.07	-0.5	-3.85	2.31
		Education	-0.02	0.64	-0.01	-0.04	-1.31	1.26
Step 2	0.25**	Personal impact	2.91	0.65	0.56	4.50**	1.61	4.21
	0.02	Property damage	0.56	0.46	0.16	1.21	-0.37	1.49
	0.11*	Loss of services	1.13	0.43	0.33	11.24*	0.27	2.00

Statistics from step 2 are reported from models that include only a single variable for disaster variable to reduce the suppression effects caused by the inclusion of multiple disaster variables. Selection of disaster variables was chosen based on significant interactions

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Table 3
Hierarchical regression analysis for variables predicting PTSD across cultural groups

	R ²	Predictors	B	SE	β	t	Lower bound	Upper bound
Whites (n = 944)								
Step 1	0.06**	Age	0.02	0.02	0.04	1.07	-0.02	0.06
		Income	-1.05	0.20	-0.19	-5.24**	-1.44	-0.65
		Gender	-3.34	0.66	-0.17	-5.10**	-4.63	-2.06
		Education	-0.12	0.29	-0.14	-0.40	-0.69	0.46
Step 2	0.08***	Personal impact	2.79	0.32	0.29	8.88**	2.17	3.41
	0.09***	Property damage	2.02	0.21	0.31	9.56***	1.61	2.44
	0.22***	Loss of services	3.31	0.21	0.49	15.90***	2.90	3.72
African American (n = 162)								
Step 1	0.24**	Age	0.26	0.06	0.32	4.15**	0.14	0.38
		Income	-2.22	0.56	-0.34	-3.97**	-3.33	-1.12
		Gender	1.70	1.93	0.07	0.88	-2.11	5.52
		Education	-2.27	0.87	-0.23	-2.62**	-3.98	-0.56
Step 2	0.02	Personal impact	1.42	0.81	0.14	1.77	-0.17	3.02
	0.11***	Property damage	2.99	0.63	0.34	4.76***	1.75	4.23
	0.07**	Loss of services	2.13	0.55	0.29	3.84	1.03	3.23
Latino (n = 74)								
Step 1	0.05	Age	0.06	0.08	0.11	0.82	-0.09	0.21
		Income	-1.01	0.75	-0.20	-1.35	-2.52	0.50
		Gender	-1.80	2.34	-0.11	-0.77	-6.50	2.89
		Education	0.04	0.98	0.01	0.04	-1.92	2.00
Step 2	0.35***	Personal impact	5.23	0.92	0.66	5.71***	3.39	7.06
	0.03	Property damage	0.86	0.71	0.16	1.22	-0.55	2.28
	0.13**	Loss of services	1.90	0.65	0.38	2.93**	0.60	3.20

Statistics from step 2 are reported from models that include only a single variable for disaster variable to reduce the suppression effects caused by the inclusion of multiple disaster variables. Selection of disaster variables was chosen based on significant interactions

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