Published in final edited form as:

Addict Behav. 2019 June ; 93: 129–134. doi:10.1016/j.addbeh.2019.01.030.

Do current smokers use more cigarettes and become more dependent on nicotine because of psychological distress after a natural disaster?

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Abstract

Natural disasters increase nicotine dependence and cigarette consumption, but the exact mechanisms and conditions responsible for this increase are relatively unclear. This study explored whether posttraumatic stress and depressive symptoms were pathways to increased nicotine dependence and cigarette consumption after disaster exposure using a representative sample of current smokers who were living in New Orleans at the time Hurricane Katrina struck ($n=175$), and a comparison sample of smokers from Memphis ($n=222$) who were not directly impacted by Hurricane Katrina. We assessed whether nicotine dependence and daily cigarette consumption differed by city and evaluated potential mediators and moderators of this association using conditional process analysis. Results showed that though nicotine dependence ($B = 0.46$, $SE = 0.20$, $p = .02$) and average daily cigarette consumption ($B = 2.19$, $SE = 0.80$, $p = .01$) were higher among New Orleans than Memphis smokers 27 months after Hurricane Katrina, hurricane exposure did not indirectly affect nicotine dependence and average daily cigarette consumption through increases in posttraumatic stress and depressive symptoms. Smokers who are exposed to disasters may not be increasing their cigarette use and their dependency on nicotine because of post-disaster psychological distress. Future studies should investigate other mechanisms and conditions to explain post-disaster changes in smoking behavior.

INTRODUCTION

Strong evidence shows that disaster exposure is associated with significant increases in smoking. For instance, DiMaggio et al. (2009) revealed that disaster exposure increased the prevalence of smoking by 6.8% (95% CI = 2.6, 16.5%) for the first two years following exposure. Nicotine dependence also increases after disaster exposure. Fergusson et al. (2014) analyzed data from a 35-year longitudinal study of a birth cohort of New Zealand children (635 males and 630 females), which had data on earthquake exposure and mental health outcomes, and found that each one-step increase in earthquake exposure increased the odds of nicotine dependence by 23% (95% CI = 1.05, 1.44). Another cohort study by Breslau et al. (2003), which examined both individual and collective trauma, found that reporting a traumatic event at baseline increased the risk of developing nicotine dependence at follow-up by 95% (95% CI = 1.22, 3.12).

Posttraumatic stress disorder (PTSD) and depression are often cited as mechanisms for an increase in tobacco consumption and nicotine dependence after disasters (Flory, Hankin, Kloos, Cheely, & Turecki, 2009; Nandi, Galea, Ahern, & Vlahov, 2005; Pfefferbaum et al., 2008; Pollice, Bianchini, Roncone, & Casacchia, 2011). These conclusions are often drawn from cross-sectional studies using convenience samples or census data (Norris & Elrod, 2006), and typically rely on internal rather than external comparison groups. Also, previous studies often lack information on pre-disaster psychosocial functioning. Our previous study addressed these limitations and found that hurricane exposure indirectly increased the probability of smoking relapse through increases in post-disaster posttraumatic stress and depressive symptoms, and the indirect effect was most pronounced among survivors who reported disaster-related stressors (Alexander, Ward, Forde, & Stockton, 2018). However, smoking relapse and smoking escalation (e.g., changes in cigarette use and nicotine dependence) are two related but distinct phenomena involving different populations (former smokers vs. current smokers) and may be influenced by different risk and protective factors.

Thus, this study examines prospectively the direct and indirect effects of disaster exposure on smoking escalation using a representative sample of adult smokers recruited from New Orleans, Louisiana and Memphis, Tennessee who reported smoking before and after Hurricane Katrina. Based on prior literature, we hypothesized that cigarette use and nicotine dependence would be higher among smokers from New Orleans than Memphis after Hurricane Katrina, and this effect would at least be partially mediated by increases in posttraumatic stress and depressive symptoms. We also explored how psychosocial factors, such as pre-disaster mental health status and perceived social support, influenced these outcomes.

METHODS

Refer to Alexander et al. (2018) for a full description of the recruitment procedures and methodology of the prospective study. Briefly, 2004 participants, 1001 from Memphis and 1003 from New Orleans, were recruited using random digit dialing to participate in a study that examined smoking relapse after Hurricane Katrina. Participants from Memphis

were recruited as a comparison group to isolate the effect of disaster exposure on smoking behavior. Baseline surveys were completed between October 2006 and January 2007, which was about 14 months after Hurricane Katrina (August 23, 2005 – August 31, 2005), and follow-up surveys were completed between November 2007 and March 2008, which was about 27 months after Hurricane Katrina.

Measures

Independent variables.—The primary independent variable was disaster exposure, which was measured by the city of residence (Memphis or New Orleans).

Mediators.—PTSD and depressive symptomatology were measured using Breslau's Short Screening Scale for PTSD and Center for Epidemiologic Studies Depression Scale (CES-D), respectively (Breslau, Peterson, Kessler, & Schultz, 1999; Radloff, 1977). The PTSD scale has high test-retest reliability ($r = .84$; Kimerling et al., 2006) and is associated with PTSD diagnosis based on the structured clinical interview for PTSD (Kimerling et al., 2006). PTSD scale scores within our sample were reliable at both time points ($\alpha = .80$ and $\alpha = .80$, respectively), and moderately correlated across time ($r = .47$).

The CES-D has excellent sensitivity and specificity to identify individuals at risk for clinical depression (Lewinsohn, Seeley, Roberts, & Allen, 1997). The inter-item reliability for the sample was high at the baseline interview ($\alpha = .91$) and the follow-up interview ($\alpha = .77$). Last, CES-D scores were moderately correlated across time ($r = .48$).

Effect modifiers.—Pre-hurricane perceived social support and mental health status, which were both assessed retrospectively, were included as effect modifiers. Perceived social support was measured using four items from the Medical Outcomes Study Social Support scale (Sherbourne & Stewart, 1991). The inter-item reliability of this modified scale was high ($\alpha = .80$), and the total score was averaged, with higher scores indicating more perceived social support (min = 0 and max = 4). Mental health status was measured by asking participants to report the number of days spent with poor mental health (min = 0 and max = 30).

Dependent variables.—Nicotine dependence was measured using the Fagerstrom Test for Nicotine Dependence (FTND; Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991). The inter-item reliability was moderate at the baseline interview ($\alpha = .59$) and follow-up ($\alpha = .57$), which is consistent with other studies that reported the limited inter-item reliability of this measure (Haddock, Lando, Klesges, Talcott, & Renaud, 1999; Radzius et al., 2003), and the scores were moderately correlated across time ($r = .65$).

Daily cigarette intake was measured by asking participants about how many cigarettes they smoked per day in the past 30 days. This question was asked for three distinct times: (1) past month cigarette use before Hurricane Katrina (assessed retrospectively at the baseline interview); (2) past month cigarette use at the baseline interview; and (3) past month cigarette use at the follow-up interview. These questions were used to create difference scores, which represented the change in the daily number of cigarettes smoked since Hurricane Katrina.

Confounders.—Age, gender, race, household income, and education were self-reported, and all considered potential confounders.

Statistical Analyses

The sample was weighted for race, sex, and age in each analysis to better match the area population distribution for Memphis and New Orleans according to the 2000 U.S. census (Kalton & Flores-Cervantes, 2003), and the analytical sample was restricted to participants who smoked before Hurricane Katrina and throughout the entire study ($N=397$). Including smokers who quit or relapsed after Hurricane Katrina would bias estimates of smoking escalation and nicotine dependence. Bivariate analyses compared Memphis and New Orleans participants on numerous sociodemographic and psychosocial characteristics. These analyses, which were used to determine which confounders were to be included in the primary analysis, were completed in SAS 9.4 (SAS Institute, 2005).

The primary analysis was completed using conditional process analysis in Mplus software (version 7.4; Muthén & Muthén, 2010), and unstandardized parameter estimates were derived using MLR to account for missing data and minor violations of normality. Parameter estimates for indirect effects and standard errors were estimated using the “Model Indirect” command in MPlus (Muthén & Muthén, 2010). Multiplicative interactions, which were mean centered, were manually removed by comparing nested models according to information criterion (IC) scores. Significant interactions were decomposed using simple slopes or spotlight analyses (Bauer & Curran, 2005). Covariances and direct effects were used to control for the shared variance between the two outcome variables, cigarette use and nicotine dependence. The final model was evaluated for model fit according to the (1) model chi-square, (2) Steiger-Lind root mean square error of approximation (RMSEA), (3) Bentler comparative fit index (CFI), and (4) standardized root mean square residual (SRMR). The published rules for interpreting these indices were strictly adhered to (Maronna, Martin, & Yohai, 2006; Muthén & Muthén, 2010; Steiger, 1990).

RESULTS

Sample Characteristics

All participants completed the baseline and follow-up phone survey. Participants from Memphis and New Orleans were very similar in sex, race age, and household income (see Table 1 for details). Most of the sample had either a high school degree (29.89%) or some post-high school education (36.46%), but participants from New Orleans were slightly less educated than participants from Memphis ($p < .01$). Therefore, education was chosen as a covariate for the primary analysis.

Primary Analysis

Numerous nested models were compared, and only one interaction model had lower Akaike and Bayesian IC scores than the model without interactions, which was the model that included perceived social support as a moderator of the association between hurricane exposure and nicotine dependence at follow-up. This model also performed well on all fit

indices (refer to supplementary materials for additional information), and therefore, was subsequently interpreted.

Hurricane exposure was not associated with post-disaster nicotine dependence at baseline ($B = 0.14$, $SE = 0.20$, $p = .48$). Likewise, depressive symptoms ($B = 0.01$, $SE = 0.01$, $p = .27$) and posttraumatic stress ($B = 0.04$, $SE = 0.05$, $p = .39$) were not associated with post-disaster nicotine dependence. Moreover, the depression ($B = 0.05$, $SE = 0.05$, $p = .35$) and posttraumatic stress ($B = 0.01$, $SE = 0.02$, $p = .58$) pathways to nicotine dependence were also not significant. Last, neither the number of days spent with poor mental health ($B = < -0.01$, $SE = 0.01$, $p = .74$) or perceived social support before Hurricane Katrina ($B = -0.05$, $SE = 0.12$, $p = .71$) was associated with nicotine dependence.

Similarly, hurricane exposure was not associated with the change in the number of cigarettes smoked daily since Hurricane Katrina at baseline ($B = 0.99$, $SE = 0.95$, $p = .30$). Likewise, depressive symptoms ($B = -0.02$, $SE = 0.07$, $p = .75$) and posttraumatic stress ($B = 0.05$, $SE = 0.30$, $p = .87$) were not associated with this outcome. Further, the depression ($B = -0.08$, $SE = 0.26$, $p = .75$) and posttraumatic stress ($B = 0.01$, $SE = 0.07$, $p = .87$) pathways to the change in daily smoking since Hurricane Katrina were also not significant. Last, neither the number of days spent with poor mental health ($B = -0.01$, $SE = 0.05$, $p = .88$) or perceived social support before Hurricane Katrina ($B = 0.30$, $SE = 0.64$, $p = .63$) was associated with the change in the number of cigarettes smoked daily since Hurricane Katrina.

At the follow-up interview, perceived social support before Hurricane Katrina moderated the association between hurricane exposure and post-disaster nicotine dependence ($B = -0.53$, $SE = 0.18$, $p < .01$). There was almost a one point difference in nicotine dependence scores between participants from New Orleans and Memphis when perceived social support before Hurricane Katrina was one standard deviation below the average value ($B = 0.92$, $SE = 0.29$, $p < .01$), and there was no difference in post-disaster nicotine dependence scores when perceived social support before Hurricane Katrina was one standard deviation above the average value ($B = 0.01$, $SE = 0.20$, $p = .98$; also see Figure 1). Even after adjusting for the moderated effect, post-disaster nicotine dependence scores was 0.48 points higher among New Orleans than Memphis participants ($B = 0.46$, $SE = 0.20$, $p = .02$).

Though depressive symptoms measured at baseline was not associated with post-disaster nicotine dependence at follow-up ($B = 0.01$, $SE = 0.01$, $p = .71$), higher depressive symptoms at follow-up were associated with higher nicotine dependence scores ($B = 0.02$, $SE = 0.01$, $p = .02$). Posttraumatic stress both measured at baseline ($B = -0.04$, $SE = 0.05$, $p = .41$) and follow-up ($B = < 0.01$, $SE = 0.05$, $p = .99$) were not associated with post-disaster nicotine dependence at follow-up. Also, the pathways linking hurricane exposure and post-disaster nicotine dependence through depressive symptoms and posttraumatic stress measured at baseline ($B = 0.02$, $SE = 0.04$, $p = .71$ and $B = -0.01$, $SE = 0.02$, $p = .53$, respectively) and follow-up ($B = 0.08$, $SE = 0.04$, $p = .09$ and $B = 0.00$, $SE = 0.02$, $p = .99$, respectively) were also not significant. Last, neither the number of days spent with poor mental health ($B = < -0.01$, $SE = 0.01$, $p = .92$) nor perceived social support before Hurricane Katrina ($B = 0.23$, $SE = 0.16$, $p = .14$) was associated with post-disaster nicotine dependence.

Hurricane exposure was also associated with the change in the number of cigarettes smoked daily since Hurricane Katrina at the follow-up interview; smokers from New Orleans smoked two more cigarettes a day on average since Hurricane Katrina than smokers from Memphis ($B = 2.19$, $SE = 0.80$, $p = .01$). Depressive symptoms and posttraumatic stress both measured at baseline ($B = -0.02$, $SE = 0.04$, $p = .69$ and $B = -0.04$, $SE = 0.18$, $p = .83$, respectively) and follow-up ($B = -0.01$, $SE = 0.04$, $p = .71$ and $B = 0.03$, $SE = 0.19$, $p = .86$, respectively) were still not associated with the change in the number of cigarettes smoked daily since Hurricane Katrina, nor were the pathways linking hurricane exposure and change in the number of cigarettes smoked daily since Hurricane Katrina through depressive symptoms and posttraumatic stress measured at baseline ($B = -0.05$, $SE = 0.14$, $p = .70$ and $B = -0.01$, $SE = 0.04$, $p = .83$, respectively) and follow-up ($B = 0.05$, $SE = 0.12$, $p = .71$ and $B = -0.01$, $SE = 0.07$, $p = .86$, respectively) significant. Last, neither the number of days spent with poor mental health ($B = -0.03$, $SE = 0.04$, $p = .51$) or perceived social support ($B = 0.30$, $SE = 0.46$, $p = .51$) before Hurricane Katrina was associated with the change in the number of cigarettes smoked daily since Hurricane Katrina at follow-up.

DISCUSSION

This study investigated the effect of disaster exposure on nicotine dependence and daily cigarette use after Hurricane Katrina and determined whether posttraumatic stress and depressive symptoms were pathways to post-disaster nicotine dependence and cigarette use. Our hypotheses were partially supported, nicotine dependence and cigarette use were higher among smokers from New Orleans than Memphis 27 months after Hurricane Katrina, but posttraumatic stress and depressive symptoms were not pathways to post-disaster nicotine dependence or cigarette use.

Findings from this study extend the results from previous studies by Breslau et al. (2003) and Fergusson et al. (2014) by demonstrating that perceived social support moderated the effect of hurricane exposure on nicotine dependence (See Figure 1). Importantly, this moderated effect was not observed 14 months after Hurricane Katrina, which suggests that perceived social support may increase in importance as public assistance and resources return to pre-disaster levels. Interestingly, as perceived social support increased, nicotine dependence increased and decreased in Memphis and New Orleans, respectively (see Figure 1), which suggested that participants from Memphis and New Orleans were utilizing their support systems differently. Perhaps participants from Memphis used social support to acquire and smoke cigarettes, sometimes even with friends and family, whereas participants from New Orleans used social support to cope with stress after being exposed to a Hurricane Katrina.

Previous research has shown that high levels of social support reduce the likelihood of smoking after a quit attempt by lowering overall stress levels and withdrawal symptoms (Bandiera, Atem, Ma, Businelle, & Kendzor, 2016; Creswell, Cheng, & Levine, 2015). Further, findings by Osman et al. (2017) have shown that social support moderates the association between ethnic discrimination and nicotine dependence; among those with low social support, higher discrimination was associated with more nicotine dependence, whereas among those with the moderate and high levels of social support, higher ethnic

discrimination slightly decreased nicotine dependence (Osman et al., 2017). Though there are significant differences between disasters, quit attempts, and discrimination experiences, all are considered stressors, and social support seems to safeguard against the damaging effects of stressors by providing individuals with a sense of security and belonging thereby improving their ability to cope with stressors (Cohen & Wills, 1985). Overall, researchers should consider developing post-disaster smoking cessation interventions that repair, improve, and utilize existing sources of social support, which may help individuals smoke less or quit smoking after disaster exposure.

Though not significant, individuals from New Orleans smoked almost one more cigarette a day 14 months after Hurricane Katrina ($B = 0.99$, $SE = 0.95$, $p = .30$) than individuals from Memphis, which seemed to escalate significantly 13 months later. In fact, individuals from New Orleans smoked two more cigarettes a day 27 months after Hurricane Katrina ($B = 2.19$, $SE = 0.80$, $p = .01$) compared to individuals from Memphis, which is a 14% increase in the average daily cigarette (Jamal et al., 2016). However, this escalation in cigarette use does not appear to be due to posttraumatic stress symptoms because posttraumatic stress not associated with daily cigarette use or nicotine dependence after Hurricane Katrina. These results contradicted other studies that showed that smokers with PTSD and posttraumatic stress were more likely to be heavy smokers (20 cigarettes daily) than light smokers (Joseph et al., 2012; Welch, Jasek, Caramanica, Chiles, & Johns, 2015), and were more likely to be dependent on nicotine than non-PTSD smokers (Goodwin, Pagura, Spiwak, Lemeshow, & Sareen, 2011; Thorndike, Wernicke, Pearlman, & Haaga, 2006). However, some studies showed no association between posttraumatic stress and cigarette use and nicotine dependence (Parslow & Jorm, 2006; Thorndike et al., 2006). In this study, pre-Hurricane Katrina cigarette use and mental health were assessed retrospectively and controlled for in the analysis, and post-disaster depression was also included in the model, which shares some components with posttraumatic stress and PTSD, including common genetic influences (Koenen et al., 2008). It is likely after controlling for these factors that posttraumatic stress did not contribute to additional cigarette use or nicotine dependence.

Relatedly, findings also indicated that depressive symptoms were not associated with cigarette use after Hurricane Katrina, though other studies do show that depression is associated with higher cigarette use (Nandi et al., 2005; Vlahov et al., 2002). Depressive symptoms at follow-up were, however, associated with nicotine dependence at follow-up, but depressive symptoms at baseline after Hurricane Katrina failed to predict nicotine dependence at follow-up. Residual confounding, due to unmeasured factors at follow-up, may be responsible for this cross-sectional association.

This study has some significant limitations. First, some associations observed in this study may be due to chance. For instance, if the p -value was adjusted to reflect the number of hypotheses made in the study ($m = 4$), then the association observed between disaster exposure and nicotine dependence could be due to chance. Therefore, more attention should be focused on interpreting effect sizes, and the effect of hurricane exposure on nicotine dependence, as measured by the FTND, was small ($B = 0.46$, $SE = 0.20$) despite significance ($p = .02$). Second, the exposure variable (New Orleans vs. Memphis) is a broad measure of disaster exposure and does not provide information about the extent to which the individual

was exposed to the disaster. Though cigarette use and nicotine dependence vary according to the degree of disaster exposure (Fergusson et al., 2014; Vlahov et al., 2002), knowing that individuals from disaster exposed areas are more prone to cigarette use and developing nicotine dependence helps allocate public resources for smoking cessation efficiently.

Third, retrospective assessments of perceived social support and poor mental health are slightly biased compared to contemporaneous reports (Smith, Leffingwell, & Ptacek, 1999; Takayanagi et al., 2014). This study used numerous strategies to address and minimize these related biases (Means, Habina, Swan, & Jack, 1992; Prohaska, Norman, & Belli, 1998), but future studies should use contemporaneous assessments of these factors. Fourth, the reliability scores for FTND were lower than the recommended value for measures in the social sciences, which may have lowered the power to detect effects for nicotine withdrawal symptoms. In general, the FTND does not have high reliability (Haddock et al., 1999; Radzius et al., 2003), but does predict smoking behavior (Courvoisier & Etter, 2010; Sledjeski et al., 2007). Future studies should use more reliable measures of nicotine dependence, such as the Nicotine Dependence Syndrome Scale (Shiffman, Waters, & Hickcox, 2004), which would also increase the power to detect and improve the estimation of direct and indirect effects. Last, the original study excluded persons who never returned to New Orleans after Hurricane Katrina, did not own a telephone or only used a mobile phone for communication, or spoke languages other than English; therefore, potentially vulnerable individuals were not included in the study.

Conclusion

Current smokers who are exposed to a disaster are more dependent on nicotine, and on average, smoke more cigarettes a day compared to unexposed smokers. Long-term post-disaster monitoring of nicotine dependence and daily cigarette consumption is warranted because this increase in smoking behavior emerges over long periods. However, there was no evidence that higher nicotine dependence or daily cigarette consumption was attributable to increased depressive symptoms or posttraumatic stress, which suggests that smoking cessation interventions that target psychological distress after disasters may not be particularly useful for current smokers.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1.

Adjusted effect of predisaster perceived social support on nicotine dependence 27 months after Hurricane Katrina, stratified by the city of residence.

Note: Values for perceived social support are presented as standard deviation (SD) units with zero as the mean, and higher values indicate more nicotine dependence.

Table 1

Characteristics of participants from Memphis and New Orleans at baseline and follow-up (weighted estimates)^a

	Baseline interview		Follow-up interview	
	Memphis (N=222)	New Orleans (N=175)	Memphis (N=222)	New Orleans (N=175)
	<i>b</i>	<i>p</i>	<i>b</i>	<i>p</i>
Sex				
Males	101 (25.46%)	75 (18.87%)	.64	-
Females	120 (30.36%)	100 (25.31%)	-	-
Race ^c				
Non-Hispanic Whites	126 (32.07%)	89 (22.51%)	.32	-
Non-Hispanic Blacks	88 (22.46%)	71 (18.01%)	-	-
Other minorities	7 (1.70%)	13 (3.25%)	-	-
Age	42.46 (12.90)	44.85 (12.47)	.28	-
Education				
No high school degree	22 (5.48%)	52 (13.14%)	<.01	-
High school graduate or equivalent	77 (19.38%)	42 (10.51%)	-	-
Some post-high school education.	92 (23.16%)	53 (13.30%)	-	-
College graduate	31 (7.89%)	28 (7.13%)	-	-
Household income				
> \$20,000	40 (10.08%)	52 (13.6%)	.16	-
\$20,000–\$40,000	65 (16.33%)	37 (9.38%)	-	-
\$40,000–\$80,000	45 (11.34%)	34 (8.57%)	-	-
> \$80,000	47 (11.75%)	37 (9.29%)	-	-
Refused to answer	25 (6.33%)	15 (3.8%)	-	-
Perceived social support before Hurricane Katrina ^e	2.29 (0.82)	2.30 (0.82)	.96	-
Days spent with poor mental health before Hurricane Katrina ^f	5.31 (9.26)	5.27 (9.74)	.97	-
Depressive symptoms ^g	13.32 (10.34)	16.99 (12.89)	<.01	11.86 (9.62)
Depressive symptoms ^g				17.87 (13.75)
Posttraumatic stress ^h	1.80 (2.33)	2.10 (2.40)	.21	1.34 (1.99)
Daily cigarette intake before Hurricane Katrina	15.30 (9.92)	16.97 (11.39)	.13	-
Daily cigarette intake after Hurricane Katrina	14.70 (9.86)	17.46 (11.40)	.01	12.04 (7.85)
				15.98 (9.84)
				.01

	Baseline interview		Follow-up interview		<i>b</i> <i>p</i>
	Memphis (N=222)	New Orleans (N=175)	Memphis (N=222)	New Orleans (N=175)	
Nicotine dependence ^{<i>i</i>}	3.59 (1.94)	4.08 (2.11)	3.14 (1.71)	4.08 (2.08)	<.01

^{*a*}Memphis and New Orleans samples were weighted to match the demographics from the 2000 U.S. Census. Weighted frequencies were rounded to the nearest whole number. Means, standard deviations, and percentages were rounded to the nearest hundredth. Missing data was less than 5% for all characteristics and accounted for some group totals and percentages not matching the expected value.

^{*b*}P-values were derived from Rao-Scott Chi-Squared tests for frequencies and independent-t-tests for means and standard deviations. All p-values were rounded to the nearest hundredth.

^{*c*}Hispanics or Latinos, Asians, and participants of other racial backgrounds were designated as “Other minorities.”

^{*d*}The hurricane exposure checklist was only given to participants who live in New Orleans.

^{*e*}Higher scores indicated more perceived social support; minimum and maximum scores are 0 and 3, respectively.

^{*f*}Higher scores indicated more days spent with poor mental health; minimum and maximum scores are 0 and 30, respectively.

^{*g*}Higher scores indicated more depressive symptoms; minimum and maximum scores are 0 and 60, respectively.

^{*h*}Higher scores indicated more posttraumatic stress symptoms; minimum and maximum scores are 0 and 7, respectively.

^{*i*}Higher scores indicated more dependence on nicotine; minimum and maximum scores are 0 and 10, respectively.