

Hurricane Katrina: Addictive Behavior Trends and Predictors

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ABSTRACT

Objectives. Post-disaster trends in alcohol consumption and cigarette smoking, as well as their predictors, were identified.

Methods. Data from cross-sectional and panel surveys of African American adults in New Orleans, Louisiana, were used from before (2004: $n=1,867$; 2005: $n=879$) and after (2006a: $n=500$; 2006b: $n=500$) Hurricane Katrina.

Results. Alcohol consumption increased significantly from pre- to post-Hurricane Katrina, while cigarette smoking remained constant. In 2006, posttraumatic stress disorder (PTSD) was associated with cigarette smoking, whereas "news attention" and "provided social support" were inversely associated with cigarette smoking. "News attention" was also inversely associated with cigarette smoking frequency, while "neighborliness" was associated with alcohol consumption. In addition, the effects of PTSD on alcohol consumption were moderated by "neighborliness."

Conclusions. In the wake of Hurricane Katrina, there were complex predictive processes of addictive behaviors involving PTSD, news information, and social capital-related measures.

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As forms of self-medication,¹ cigarette smoking and alcohol consumption tend to increase following traumatic events.²⁻⁸ In such contexts, a common risk factor for these two addictive behaviors is posttraumatic stress disorder (PTSD).^{3,7,8} In the broader scope of traumatic events, PTSD has also been linked with cigarette smoking⁹⁻¹² and alcohol consumption.^{13,14} In disasters and other stressful situations, people tend to turn to cigarettes and alcohol to escape from or diminish strain and anxiety. The processes by which stressful events influence cigarette smoking and alcohol consumption are complex, with research indicating the effects of PTSD on increased alcohol consumption, but not increased cigarette smoking and other forms of tobacco consumption.^{1,15}

This study explored such processes in the context of Hurricane Katrina, considering the effects of PTSD on addictive behaviors, as well as the effects of people's access to social resources and news information. Hurricane Katrina provides a novel and compelling environment for the study of the predictive factors of addictive behaviors. By many standards the worst natural disaster in U.S. history, Hurricane Katrina breached levees in the New Orleans area, submerged 80% of the city, triggered the largest ever displacement of a U.S. population, and caused an estimated \$100 billion in damages and more than 1,000 human deaths.^{16,17} Additional effects of the hurricane on mental health have been demonstrated. For instance, 31% of adults in affected regions,¹⁸ as well as 44% of adult caregivers in trailers and hotel rooms,¹⁹ reported psychological distress, and 46% of hurricane shelter residents reported depression.²⁰ Finally, 19% of employees from the largest employer in New Orleans met the criteria for PTSD.²¹

Despite the magnitude of the hurricane and its effects, no published studies have assessed the related roles of PTSD, social capital, and communication patterns in predicting addictive behaviors, such as cigarette smoking and alcohol consumption. To fill this gap in the literature, this study had three specific aims. First, it examined trends in cigarette smoking and alcohol consumption from pre- to post-Hurricane Katrina. Second, it tested the roles of PTSD, social capital-related measures, and communication patterns in predicting cigarette smoking and alcohol consumption in the aftermath of Hurricane Katrina. Third, in building upon the previous aim, it assessed whether social capital-related measures and communication patterns moderate the influence of PTSD on cigarette smoking and alcohol consumption.

In disaster contexts, social capital and communication patterns may serve as preventive factors of addic-

tive behaviors. Specifically, people who have access to information and social resources may be less likely to smoke cigarettes and drink alcohol. Social capital can be defined as intangible social resources that result from social relationships that can, in turn, be accessed and mobilized to achieve beneficial outcomes.^{22,23} There is growing empirical evidence for how people's social capital helps them achieve improvements in health status²⁴ and preventive behaviors, while avoiding health-risk behaviors.²⁵⁻²⁷

Particular to cigarette smoking and alcohol consumption in a disaster context, it can be theorized that (1) people with higher levels of social capital have lower levels of cigarette smoking and alcohol consumption; and (2) social capital may moderate the effects of a disaster, including PTSD, on cigarette smoking and alcohol consumption. Such beneficial effects of social capital can function in terms of the diffusion of knowledge, maintenance of norms pertinent to health behaviors, promotion of access to services and amenities, and development of social support and mutual respect.²⁸ Pertinent empirical research has demonstrated that social capital is inversely associated with cigarette smoking²⁹⁻³¹ and, in using panel data, that smokers are more likely to cease cigarette smoking if they participate socially.³² Additionally, in terms of alcohol consumption, research has demonstrated inverse associations between social capital and various alcohol consumption measures, including binge drinking, frequent drunkenness, and alcohol abuse.³³⁻³⁵

The second potential preventive factor, communication patterns, involves how people use news media health and safety information. Research has found that the diffusion of news information is associated with improved health behaviors.³⁶ The related benefits of using news information have been demonstrated in disaster settings,³⁷ including Hurricane Katrina.^{20,38} Communication patterns, in this regard, can help people turn back or mitigate health threats. Specifically, news use can help people develop knowledge, as well as attitudes and behaviors. Particular to cigarette smoking and alcohol consumption in a disaster context, it can be theorized that (1) people with higher levels of health and safety news attention have lower levels of cigarette smoking and alcohol consumption; and (2) health and safety news attention may moderate the effects of a disaster, including PTSD, on cigarette smoking and alcohol consumption.

To assess levels of cigarette smoking and alcohol consumption before Hurricane Katrina, data from cross-sectional survey interviews of African Americans in New Orleans from 2004 ($n=1,867$) and 2005 ($n=879$) were used. To assess levels of cigarette smoking and

alcohol consumption after Hurricane Katrina, as well as their predictors, panel survey data from interviews of African Americans in New Orleans at two points in time in 2006 ($n=500$) were used. Two aspects of this study are noteworthy. First, while most previous research in this area has relied on cross-sectional data, this study employed a mix of cross-sectional and panel data, the latter of which help strengthen inferences of causation.³⁹ Second, this study focused on a poor and underserved population—African Americans in New Orleans—who bore the brunt of Hurricane Katrina⁴⁰ and have only limited access to traditional resources, such as income and education.⁴¹

METHODS

Participants

Pre-Hurricane Katrina levels of cigarette smoking and alcohol consumption were assessed with data from the 2004 and 2005 versions of the New Orleans Behavioral Risk Factor Surveillance System (NOBRFSS). Secondary data analysis was conducted. A professional survey center at a southern university conducted the surveys using random-digit dialing. The 2004 interviews were conducted from April 21 to November 24 (total $n=3,137$; number of African Americans = 1,867). The 2005 interviews were conducted prior to Hurricane Katrina, from February 25 to July 22 (total $n=1,500$; number of African Americans = 879). As reported by previous research,⁴² the response rate was 26.6% in 2004 and 20.4% in 2005.⁴³ Interviews were of adults aged ≥ 18 years in the New Orleans metropolitan area.

The New Orleans Panel Survey (NOPS) involved interviews with 500 African American adults aged ≥ 18 years in the New Orleans metropolitan area at two points in time. Primary data analysis was conducted. In NOPS, respondents were interviewed at two different points in time in 2006 by a professional survey center at a large U.S. university using random-digit dialing and random respondent selection within households. The first 2006 interviews (hereafter, 2006a) were conducted in June and July, with the second 2006 interviews (hereafter, 2006b) conducted in September. The response rate 3 and cooperation rate 1 were 44.8% and 50.1%, respectively, for the 2006a panel interviews and 72.2% and 86.4%, respectively, for the 2006b panel interviews.⁴⁴

Measurement

For trend analysis, the 2004 and 2005 NOBRFSS and 2006a and 2006b NOPS were used to measure cigarette smoking (current smoker = 1, non-current

smoker = 0) and the number of alcoholic beverages that respondents reported consuming per day in the past month. Responses for alcohol consumption were on a continuous scale from none (0) to ≥ 8 (8) beverages per day. The 2006a and 2006b NOPS data were used to analyze the predictors of cigarette smoking and alcohol consumption. There were three dependent variables—the aforementioned measures of alcohol consumption and cigarette smoking, as well as cigarette smoking frequency. Cigarette smoking frequency was measured on a continuous scale from none (0) to ≥ 20 (20) cigarettes per day.

Measured on the 2004 and 2005 NOBRFSS and 2006a NOPS, demographics included age, gender, education, and household income. Education was measured on a six-point scale with the following categories: never attended school, grades 1–8, grades 9–11, grade 12 or general equivalency diploma, 1–3 years of college, and college graduate. Household income was measured on a four-point scale with the following categories: $< \$25,000$, $\$25,000$ to $< \$50,000$, $\$50,000$ to $< \$75,000$, and $\geq \$75,000$. In addition, the 2006a NOPS permitted the creation of an additive index of disaster exposure specific to Hurricane Katrina. On a scale from 0 to 5, this index had items on being in New Orleans when the hurricane hit, losing a job, having a home or apartment severely damaged, having a friend or relative die, and having experienced physical injury or having a friend or relative experience physical injury.⁴⁵ Finally, a dummy variable was created for pre/post-hurricane.

On the 2006a NOPS, PTSD was assessed with seven items⁴⁶ from the National Institute of Mental Health Diagnostic Interview Schedule⁴⁷ and the World Health Organization Composite International Diagnostic Interview.⁴⁸ This screening instrument has been validated by research, finding it to be highly correlated with independent clinical re-interviews.⁴⁹ A PTSD scale, which was specific to Hurricane Katrina, was constructed for the first panel interviews (Kuder-Richardson 20 = 0.83). For this 0 to 7 index, respondents with scores ≥ 4 met the criteria for having PTSD.⁴⁶

The 2006a NOPS had survey items specific to social capital (as measured in terms of neighborliness)⁵⁰ and an outcome of social capital (as measured in terms of provided social support).⁵¹ The following three questions measured neighborliness: (1) “After Hurricane Katrina, about how often have you borrowed from or lent things to your neighbors in New Orleans?” (2) “After Hurricane Katrina, about how often have you and your neighbors in New Orleans helped one another with tasks, such as house repairs and house cleanup?” and (3) “After Hurricane Katrina, about

how often have you worked on a community project in New Orleans?" The following three questions measured provided social support: (1) "After Hurricane Katrina, about how often have you given advice to people in New Orleans who are not members of your immediate family?" (2) "After Hurricane Katrina, about how often have you offered emotional support to people in New Orleans who are not members of your immediate family?" and (3) "After Hurricane Katrina, about how often have you tried to comfort people in New Orleans who are not members of your immediate family?" Responses to these questions ranged from 1 = never to 5 = very often. Factor analysis (principal components with orthogonal rotation) demonstrated two dimensions: provided social support (eigenvalue = 1.81; variance explained = 30.10%, $\alpha=0.72$) and neighborliness (eigenvalue = 2.32; variance explained = 38.59%, $\alpha=0.85$).

On the 2006a NOPS, communication patterns involved how much attention people paid to health and safety news related to New Orleans following Hurricane Katrina. There were four medium-specific questions, one each for radio, television, newspaper, and Internet.⁵² For example, the TV news question was, "About how much attention do you pay to TV news stories about health and safety issues related to New Orleans following Hurricane Katrina?" Responses were on a 7-point scale from 1 = no attention at all to 7 = very close attention. Factor analysis (principal components) demonstrated one dimension (eigenvalue = 1.94; variance explained = 48.46%, $\alpha=0.64$).

Statistical analysis

Stata[®] 11 was used for statistical analysis.⁵³ Cases with missing values, which were present in fewer than 5% of the instances, were not included in analyses.⁵⁴ In subsequent analyses, probability weights were implemented to bring the samples closely in line with the population of African American adults in New Orleans and to help address any inconsistencies in the demographic composition of the different survey samples.

There were three main steps in the analysis. The first and second steps involved the 2004 and 2005 NOBRFSS and 2006a and 2006b NOPS, while the third step involved only the 2006a and 2006b NOPS. First, cigarette smoking and alcohol consumption rates were calculated in unadjusted and adjusted forms for demographics. Second, overtime changes in cigarette smoking and alcohol consumption were tested with logistic regression and ordinary least squares (OLS) regression, when controlling for demographics.

Third, the predictors of the addictive behaviors

were tested using the conditional-change approach to "causal analysis,"³⁹ which can strengthen inferences of causation by accounting for the prior (2006a) value of an outcome variable in testing the predictors of the subsequent (2006b) outcome variable. Other predictors in the models were measured in 2006a, with posited lagged effects on the 2006b outcome variables. OLS regression was used in the models for alcohol consumption and cigarette smoking frequency, while logistic regression was used in the model for cigarette smoking. The hierarchical regression models have four blocks of variables. For example, the model predicting 2006b alcohol consumption had the following four blocks: (1) disaster exposure, demographics, and 2006a alcohol consumption; (2) PTSD; (3) provided social support, neighborliness, and news attention; and (4) PTSD * provided social support, PTSD * neighborliness, and PTSD * news attention. Analogous blocks were constructed to predict 2006b cigarette smoking and 2006b frequency of cigarette smoking. Constituting the product terms of two variables,⁵⁵ the interaction terms tested for moderation.⁵⁶ Significant interactions were plotted at three points: one standard deviation (SD) below the mean, the mean, and one SD above the mean.⁵⁷

RESULTS

Cigarette smoking and alcohol consumption rates

Cigarette smoking was consistent across the first three time periods but rose slightly in 2006b (Table 1 and Figure 1). Across the four time periods, 20%–21% of the respondents reported cigarette smoking. From 2006a to 2006b, the mean daily number of cigarettes smoked rose from 2.45 to 2.55. When adjusted for demographics (Figure 1), the increase in cigarette smoking was somewhat more apparent, rising steadily from about 0.20 in 2004 to 0.24 in 2006b. Along with other descriptive statistics, Table 1 shows that 55% of the sample met the criteria for PTSD.

As shown in Table 1 and Figure 1, alcohol consumption increased dramatically from the first two time periods (0.19 alcoholic beverages per day in 2004 and 2005) to the second two time periods (0.54 alcoholic beverages per day in 2006a and 2006b). Thus, alcohol consumption increased by about 185% from pre- to post-Hurricane Katrina. When adjusted for demographics, the trend was similar (Figure 1), with respondents reporting daily means of 0.19 and 0.18 alcoholic beverages in 2004 and 2005, respectively, as compared with a mean of 0.57 alcoholic beverages per day in 2006a and 2006b.

Table 1. Descriptive statistics of independent and dependent variables pre- and post-Hurricane Katrina, 2004–2006

Characteristics	2004 ^a	2005 ^a	2006a ^b	2006b ^b
	n=1,867 Mean (SD)	n=879 Mean (SD)	n=500 Mean (SD)	n=500 Mean (SD)
Age	48.35 (17.17)	48.64 (16.91)	50.64 (14.60)	X
Gender (M=1) ^c	27.00	26.77	28.60	X
Education	4.45 (1.11)	4.51 (1.09)	4.66 (1.18)	X
Household income	1.61 (0.85)	1.72 (0.95)	2.09 (1.00)	X
Disaster exposure	NA	NA	1.81 (1.24)	X
Cigarette smoking ^c	19.54	19.91	19.48	21.24
Cigarette smoking frequency	NM	NM	2.45 (5.66)	2.55 (5.83)
Alcohol consumption	0.19 (0.62)	0.19 (0.68)	0.54 (1.34)	0.54 (1.32)
PTSD	NA	NA	55.00	NA
News attention	NM	NM	5.00 (1.41)	NA
Provided social support	NM	NM	3.65 (1.15)	NA
Neighborliness	NM	NM	2.20 (1.03)	NA

^aUses data from the New Orleans Behavioral Risk Factor Surveillance System

^bUses data from the New Orleans Panel Survey, with 2006a and 2006b panel interviews

^cPercent indicated for a dichotomous variable

SD = standard deviation

X = measured per 2006a panel interviews, not 2006b second panel interviews

NA = not applicable

NM = not measured

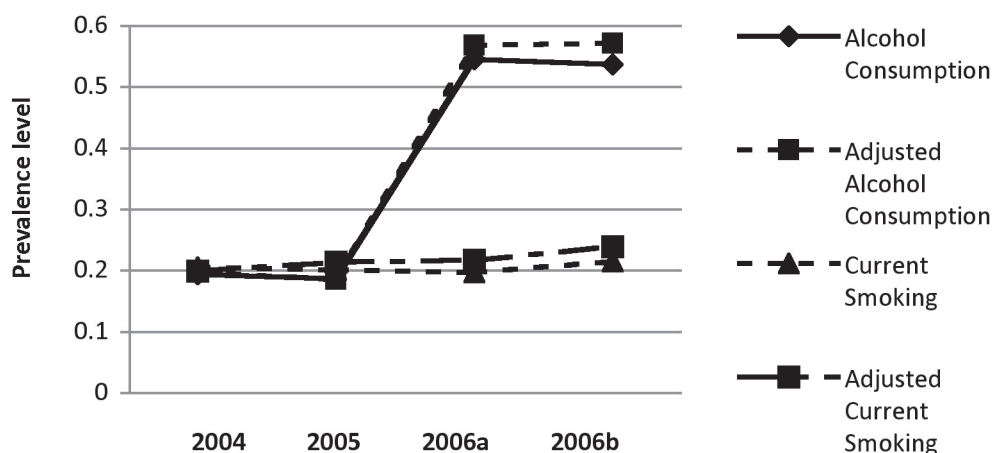
PTSD = posttraumatic stress disorder

Changes in cigarette smoking and alcohol consumption

Table 2 depicts the regression findings for alcohol consumption and cigarette smoking. Cigarette smoking did not change significantly from pre- to post-Hurricane Katrina (Model 1). Conversely, alcohol consumption increased significantly ($\beta=0.10$) during this time frame (Model 2).

Predictors of cigarette smoking and alcohol consumption

As shown in Table 3, Models 1–3, respectively, indicated stability over time in the three addictive behaviors: cigarette smoking (odds ratio [OR] = 100.47, 95% confidence interval [CI] 21.96, 459.58); cigarette smoking frequency ($\beta=0.76$); and alcohol consumption ($\beta=0.40$). Demographics had significant effects in two

Figure 1. Trends in alcohol consumption and cigarette smoking from pre- to post-Hurricane Katrina^a

^aUses data from the 2004–2005 New Orleans Behavioral Risk Factor Surveillance System and 2006 New Orleans Panel Survey

Table 2. Regression of trends in cigarette smoking and alcohol consumption from pre- to post-Hurricane Katrina^a

Characteristic	Model 1 ^b	Model 2 ^c
	Cigarette smoking OR (95% CI)	Alcohol consumption β
Age	1.00 (0.99, 1.00)	-0.04
Gender (M=1)	1.40 (1.08, 1.80) ^d	0.12 ^e
Household income	0.74 (0.60, 0.92)	-0.03
Education	0.72 (0.63, 0.84) ^e	-0.04
Pre/post-Hurricane Katrina	1.00 (1.00, 1.00)	0.10 ^e

^aUses data from 2004–2005 New Orleans Behavioral Risk Factor Surveillance System and from the 2006 New Orleans Panel Survey

^bModel 1 ($n=3,261$) involves logistic regression.

^cModel 2 ($n=3,247$) involves ordinary least squares regression, with $R^2=0.04$.

^d $p<0.01$

^e $p<0.001$

OR = odds ratio

CI = confidence interval

β = standardized coefficient

of the models. As shown in Model 1, household income predicted cigarette smoking (OR=0.48, 95% CI 0.71, 0.87). As depicted in Model 3, education was inversely associated with alcohol consumption ($\beta=-0.10$).

PTSD had significant effects on cigarette smoking (OR=1.78, 95% CI 1.05, 3.44) (Table 3, Model 1). Regarding news attention, provided social support, and neighborliness, there were significant effects in each model. In Model 1, cigarette smoking was predicted by news attention (OR=0.59, 95% CI 0.47, 0.96) and social support (OR=0.61, 95% CI 0.48, 0.97). Additionally, news attention predicted cigarette smoking frequency ($\beta=-0.07$) (Model 2), and neighborliness was associated with alcohol consumption ($\beta=0.08$) (Model 3). Also in Model 3, there was one significant interaction term—PTSD * neighborliness ($\beta=0.09$). As shown in Figure 2, neighborliness moderated the association between PTSD and alcohol consumption in that it brought about a dramatic decrease in the likelihood of alcohol consumption among people with high PTSD, but not among people with low or moderate PTSD levels.

DISCUSSION

More than half of the current sample was estimated to have PTSD. While this rate was higher than that indicated in another study specific to Hurricane Katrina,²¹

it was closer to levels documented for psychological distress¹⁹ and depression²⁰ in terms of segments of the population that, like the current study's population of African Americans, would be expected to be much more prone to the threats of a disaster and the psychological problems that ensue.

Cigarette smoking remained stable during the course of the study, with about 20% of respondents having reported current cigarette smoking in 2004, 2005, and 2006a, while the rate was 21% in 2006b. The increase in alcohol consumption was significant, with the mean daily number of alcoholic beverages consumed increasing from 0.19 before the hurricane to 0.54 after the hurricane. While Hurricane Katrina appears to have spurred a dramatic increase in alcohol consumption, perhaps as a form of self-medication,¹ this consumption was not a function of the degree to which respondents were exposed to the hurricane, as indicated by the non-significant effect of disaster exposure.

PTSD did not influence a change over time in the number of cigarettes people smoked or the number of alcoholic drinks they consumed, but it did influence whether or not people smoked. These findings are inconsistent with previous findings on cigarette smoking⁷ and alcohol consumption.⁸ Such divergence in findings may result from differences in context (9/11 vs. Hurricane Katrina) or data type (cross-sectional vs. panel survey). It should be noted that not all research has found evidence of associations between PTSD and both cigarette smoking and alcohol consumption. For instance, one study demonstrated that traumatic events can encourage tobacco consumption, but that PTSD does not independently spur such consumption.⁵⁸ The subtlety of that finding is similar to the current study's discovery that Hurricane Katrina spurred alcohol consumption independent of the influence of PTSD.

The panel data analysis indicated that respondents with higher level of news attention were subsequently likely to smoke cigarettes less frequently and to discontinue cigarette smoking or never initiate smoking. These beneficial effects of such news use provide general support for research on news coverage and health behaviors³⁶ and research on news and health outcomes in the context of Hurricane Katrina.³⁸ This finding may suggest that news coverage provided people with examples of and trends in health behaviors, which, in turn, brought about changes in knowledge, attitudes, and behaviors. The finding that news attention was inversely associated with the two smoking measures, but not alcohol consumption, may indicate a difference in people's perception of the threat of cigarette smoking as being graver than that of alcohol consumption.

In terms of the other preventive factor, neighborliness did not influence significant changes in either cigarette smoking measure. Conversely, respondents with higher levels of neighborliness in 2006a were likely to increase their alcohol consumption over time. It may be, in particular, that neighbors consume alcohol together or, more broadly, that people who are neighborly and perhaps more outgoing are most likely to consume alcohol. The complexity of the effects of neighborliness is borne out by how this social capital measure moderates the relationship between PTSD and alcohol consumption.

Also relevant are the findings on provided social support, which is an outcome of social capital. The analysis indicated that people active in this social capital outcome in 2006a tended to discontinue cigarette smok-

ing or never initiate smoking. Thus, respondents who provided support were less likely over time to smoke. The difference in associations between this measure and the measure of neighborliness may result from the direction of benefit or from the type of benefit. The social support measure involved providing advice, emotional support, and comfort, whereas the measure of neighborliness involved sharing more tangible things, such as help with repairs and clean-up. These findings on the provision of social support share common ground with findings on the reception of social support in regard to cigarette smoking.²⁹⁻³¹

Limitations

This study had several limitations. First, because of the unique nature of Hurricane Katrina, findings should

Table 3. Regression predictors of cigarette smoking and alcohol consumption after Hurricane Katrina^a

Characteristic	Model 1 ^b 2006b	Model 2 ^c 2006b	Model 3 ^d 2006b
	Cigarette smoking OR (95% CI)	Cigarette smoking frequency β	Alcohol consumption β
Block 1			
Age	1.02 (0.98, 1.05)	-0.00	-0.06
Gender (M=1)	0.69 (0.17, 2.89)	-0.03	-0.00
Household income	0.48 (0.71, 0.87) ^e	-0.02	-0.10 ^e
Education	1.12 (0.71, 1.76)	-0.02	-0.05
Disaster exposure	1.00 (0.74, 1.36)	0.02	0.03
2006a cigarette smoking	100.47 (21.96, 459.58) ^f		
2006a cigarette smoking frequency		0.76 ^f	
2006a alcohol consumption			0.40 ^e
Block 2			
PTSD	1.78 (1.05, 3.44) ^e	0.03	-0.02
Block 3			
News attention	0.59 (0.47, 0.96) ^e	-0.07 ^e	0.01
Provided social support	0.61 (0.48, 0.97) ^e	-0.02	-0.03
Neighborliness	0.77 (0.46, 1.28)	-0.02	0.08 ^e
Block 4			
PTSD * news attention	0.94 (0.68, 1.30)	0.02	0.05
PTSD * provided social support	0.85 (0.53, 1.36)	0.02	-0.01
PTSD * neighborliness	0.87 (0.60, 1.27)	-0.01	0.09 ^e

^aUses data from the 2006 New Orleans Panel Survey

^bModel 1 involves logistic regression.

^cModel 2 involves OLS regression, with R² values as follows: Block 1 = 0.57; Block 2 = 0.57; Block 3 = 0.58; and Block 4 = 0.59.

^dModel 3 involves OLS regression, with R² values as follows: Block 1 = 0.18; Block 2 = 0.18; Block 3 = 0.20; and Block 4 = 0.21.

^ep<0.05

^fp<0.001

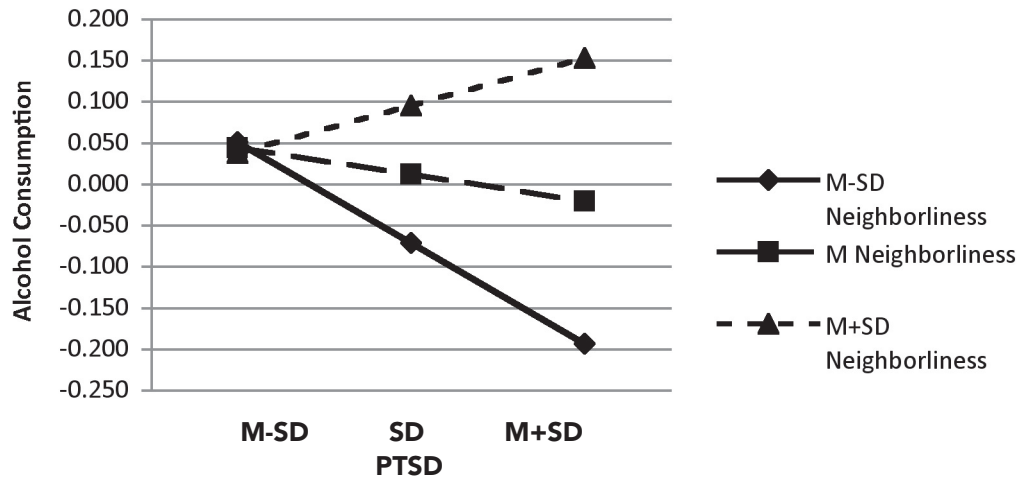
OR = odds ratio

CI = confidence interval

β = standardized coefficient

PTSD = posttraumatic stress disorder

OLS = ordinary least squares

Figure 2. Interaction between PTSD and neighborliness in predicting alcohol consumption after Hurricane Katrina^a

^aUses data from the 2006 New Orleans Panel Survey. Variables were standardized before creating interaction term.

PTSD = posttraumatic stress disorder

M = mean

SD = standard deviation

be generalized to other settings only with caution. Second, because this study measured cigarette smoking frequency on a scale from 0 to 20 cigarettes per day and alcohol consumption on a scale from 0 to 8 beverages per day, these scales were limited in that they imposed upper-end limits to addictive behaviors. Third, in terms of alternate explanations, influence in the focal processes could extend past that of the main dependent variables. It is possible that African Americans who did not return to New Orleans after the hurricane were least likely to consume alcohol before the hurricane, but NOPS did not have a variable that would allow for making such an assessment. Helping address this concern, the current study weighted the pre- and post-hurricane samples and controlled for demographics and disaster exposure in all regression models.

Fourth, reliance on secondary data has common limitations, including those pertinent to measurement and sampling. For example, when using a most stringent response rate calculation, the rates for 2004 and 2005 NOBRFSS were somewhat low. These low rates may have resulted from the use of different formulas (i.e., the general formula of the Council of American Survey Research Organizations vs. the response rate 3 formula of the American Association for Public Opinion Research, which signified the actual eligibility of the cases of unknown eligibility). Helping mitigate related concerns, however, were the household refusal

rates—8.2% in 2004 and 8.6% in 2005—which were similar to those of other telephone surveys in Louisiana that employed similar methodologies.⁴² In addition, it should be noted that the response rates for the 2006 NOPS, which were this study's primary dataset, were higher. Finally, the use of secondary data precluded presenting trends in some study variables from pre- to post-Hurricane Katrina.

CONCLUSIONS

It is important that future research continue to examine addictive behaviors in disaster contexts, including how addictive behaviors function among different segments of the population. While the current study highlights such processes among African Americans in New Orleans, who bore the brunt of the disaster⁴⁰ and have limited access to traditional resources such as income and education,⁴¹ the development of addictive behaviors may vary among less burdened segments of the population. Finally, it is important that future research implement different measures of social capital, such as organization membership and interpersonal trust, and different measures of communication patterns, including those specific to health media campaigns and interpersonal communication.

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