



Published in final edited form as:

Subst Use Misuse. 2009 ; 44(12): 1711–1724.

Alcohol and Cigarette Use and Misuse among Hurricane Katrina Survivors: Psychosocial Risk and Protective Factors

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Abstract

The present study examined survivors' use and misuse of cigarettes and alcohol following Hurricane Katrina. We also examined several psychosocial factors that we expected would be associated with higher or lower rates of substance use following the Hurricane. Participants were 209 adult survivors of Hurricane Katrina interviewed in Columbia, SC or New Orleans, LA between October 31, 2005 and May 13, 2006. Results revealed that survivors were smoking cigarettes, consuming alcohol, and experiencing alcohol-related problems at a substantially higher rate than expected based on pre-Hurricane prevalence data. Results also suggested that certain psychosocial factors were associated with participants' substance use and misuse following the Hurricane.

Keywords

Hurricane Katrina; Alcohol; Cigarette; Use; Misuse; Abuse; Risk Factors; Protective Factors

In late August 2005, Category 3 Hurricane Katrina struck the gulf coast of the United States. On record as the one of the most deadly and costly storms to ever hit the U.S., Hurricane Katrina has been blamed for thousands of deaths and billions of dollars in wind and water damage. Some of the most devastating consequences of the storm include the personal traumas experienced by residents of the gulf coast, such as loss of employment and personal property, forceful evacuation from homes and communities, separation from loved ones, and uncertainty about what the future holds. Not surprisingly given these circumstances, news reports suggest that survivors of Hurricane Katrina are uniformly under a great degree of psychological distress. In fact, the New York Times (Saulny, 2006) reported that New Orleans is experiencing a “near epidemic” of depression and post traumatic stress disorder (PTSD), which has resulted in a suicide rate close to triple what it was before the Hurricane struck.

In addition to higher rates of depression and PTSD, conditions of psychological and physical uncertainty and trauma, like those resulting from Hurricane Katrina, are often also associated with higher rates of substance use and misuse. For example, several studies (Vlahov et al., 2004; Vlahov, Galea, Ahern, Resnick, & Kilpatrick, 2004; Vlahov et al., 2002) found that up to 30% of surveyed New York City residents significantly increased their consumption of cigarettes, alcohol, or marijuana in the months following the September 11th terrorist attacks. Further, at least one study (Boscarino, Adams, & Galea, 2006) showed that greater exposure to the World Trade Center disaster was significantly positively associated with binge drinking

and alcohol dependence. Likewise, results from a survey of survivors of the September 11th attack on the Pentagon (Grieger, Fullerton, & Ursano, 2003) indicated that approximately 13% of those interviewed reported increased alcohol consumption after the attack. Increased substance use and misuse have also been found among other populations who have experienced traumatic events, such as adult female survivors of childhood rape (Epstein, Saunders, Kilpatrick, & Resnick, 1998), volunteers who responded to the 1998 Swissair flight 111 crash (Stewart, Mitchell, Wright, & Loba, 2004), and US combat veterans (Ursano & Norwood, 1996).

As one of the first empirical research studies of adult survivors of Hurricane Katrina, the present study is poised to provide unique and informative results. Specifically, we examined survivors' use and misuse of cigarettes and alcohol over the two to eight months following the Hurricane. Moreover, because levels of substance use and misuse following a traumatic event often differ among those who experienced the trauma (e.g., Boscarino et al., 2006), we also examined a number of psychosocial factors that we expected would be associated with higher or lower rates of substance use following the Hurricane.

We examined three psychosocial risk factors that we expected would be associated with higher rates of substance use and misuse among the survivors: PTSD symptoms, psychosocial stressors, and negative affect. Numerous studies (e.g., Grieger et al., 2003; Epstein et al., 1998; Stewart et al., 2004) have shown PTSD symptoms to be directly related to substance use among survivors of traumatic events. Previous research has also demonstrated that psychosocial stressors and losses are associated with greater impact of the traumatic event itself (e.g., Bland, O'Leary, Farinero, Jossa, & Trevisan, 1996; Caldera, Palma, Penayo, & Kullgren, 2001), and thus likely also with greater trauma-related substance use. Finally, a wide literature (Clark, 2005; Tackett & Krueger, 2005) suggests that certain personality characteristics (e.g., trait negative affect) may contribute to increased vulnerability to psychopathology, including substance use/misuse (Kassel, Weinstein, Skitch, Veilleux, & Mermelstein, 2005).

We also examined three psychosocial protective factors that we expected would be associated with lower rates of substance use and misuse among the survivors: social support, level of hope, and positive affect. Research (e.g., Boscarino, 1995; Ursano, Grieger, & McCarroll, 1996) has consistently identified social support as a factor that may help protect individuals from the psychological consequences of traumatic events. Likewise, hopefulness has been suggested to be a significant protective factor following exposure to a traumatic event, including the September 11th terrorist attacks (Ai, Cascio, Santangelo, & Evans-Campbell, 2005) and a severe earthquake (Nunn, Lewin, Walton, & Carr, 1996). Finally, just as trait negative affect may be associated with increased vulnerability to psychopathology following a traumatic event, trait positive affect may be associated with decreased vulnerability to psychopathology (Clark, 2005; Tackett & Krueger, 2005).

Method

Participants

Participants were 209 adult survivors of Hurricane Katrina, interviewed between October 31, 2005 and May 13, 2006. Roughly one-half of participants ($N = 110$) were interviewed in Columbia, SC, where they had been relocated following the Hurricane. It should be noted that most of these individuals did not choose to leave Louisiana and did not initially know they were headed to SC. Over 95% of these individuals had resided in the New Orleans area prior to the Hurricane, with the remainder coming from the gulf coast of Mississippi (e.g., Biloxi). The other 99 participants were interviewed in New Orleans, LA or surrounding areas (e.g., Slidell, Mandeville) during a one-week data collection trip in May 2006. In SC, participants were recruited at their hotels initially and later from housing lists obtained from various public

service agencies. In LA, participants were recruited from community locations, primarily Laundromats.

Of the 209 total participants, 52% were male. With regards to race, 57% were African American, 37% were Caucasian, and the remaining 6% were from another racial group (e.g., Alaskan Native/Native American, Asian). Two percent of participants indicated that they considered themselves to be Hispanic or Latino. The age range of participants was 18 to 79, with an average age of 45.10 ($SD = 13.18$). Participants' highest level of educational attainment was varied, ranging from 8th grade or less to an advanced degree. Specifically, 23% of participants reported not having a high school degree or the equivalent, 29% reported having graduated from high school or obtained their GED, 28% reported attending vocational, business, or trade school, or at least some college, and the remaining 20% reported completing a 4-year college degree, Master's degree, or an equivalent advanced degree. In terms of marital status, 41% of participants indicated that they were currently married or living with someone in a marital-like relationship, 24% were separated or divorced, and 6% were widowed. The remaining 29% indicated that they had never been married or lived with someone in a marital-like relationship. Seventy percent of participants reported having at least one child ($M = 2.82$, $SD = 2.12$).

Participants were asked about income received from various sources during the past 30 days. Thirty-four percent reported receiving employment income ($M = \$2600.49$, $SD = \$2145.40$), 7% received Supplemental Security Income (SSI) ($M = \$632.13$, $SD = \$300.64$), 10% received Social Security Disability Income (SSDI) ($M = \$526.55$, $SD = \$191.21$), 1% received veteran's benefits ($M = \$303.33$, $SD = \$245.37$), 11% received unemployment benefits ($M = \$486.13$, $SD = \$313.85$), and 20% received other income (e.g., child support, retirement) ($M = \$1366.10$, $SD = \$1680.25$). Only 19% of participants reported receiving Federal Emergency Management Agency (FEMA) monies ($M = \$1377.49$, $SD = \$1895.96$) during the past 30 days. Participants were also asked whether they had received additional assistance or benefits (non-monetary) during the past 30 days. Twenty percent reported receiving Medicare or Medicaid benefits, 11% received assistance from private health insurance, 41% received food stamps, and 17% received assistance from other sources (e.g., Red Cross, Salvation Army).

Not unexpectedly, participants recruited in Columbia, SC differed from those recruited in New Orleans, LA in terms of sex, race, and educational level (all $ps < .05$). Survivors recruited in Columbia were more likely to be male, African American, and reported a lower education level. It is important to note, however, that the demographics of our whole sample are comparable to pre-Hurricane New Orleans census data in terms of sex, race, ethnicity, and educational level (U.S. Census Bureau, 2006), suggesting that the sample is representative of the area in which participants resided prior to the Hurricane.

Procedure

Participants were interviewed by trained graduate and undergraduate psychology research assistants (most were Caucasian or African American females) either at their place of residence, in the lobby of their hotel, or in a community location (e.g., Laundromats, fire stations, churches). Participants were told that the purpose of this study was to better understand the emotional and other experiences (i.e., substance use) of Hurricane Katrina survivors. Interviews lasted approximately one hour and consisted of a packet of self-report questionnaires and a semi-structured interview, which was audio-recorded for later coding. Participants were also asked to provide a DNA sample (i.e., saliva) and over 95% of participants complied with this request.¹ Questionnaire items were read aloud to participants and interviewers recorded their answers, either directly on the written questionnaires or using a laptop computer programmed for data collection. Participants were reimbursed \$25 for

completing the interview. All study procedures were approved by the University of South Carolina Institutional Review Board.

Measures

Questionnaire data assessing the following constructs were utilized in the present study:

Cigarette use and dependence—Participants were asked whether they currently smoke cigarettes. If they endorsed this item, current nicotine dependence was assessed using the 6-item Fagerström Test for Nicotine Dependence (FTND; Heatherton, Kozlowski, Frecker, & Fagerström, 1991), which has been shown to have adequate psychometric properties among non-referred (e.g., Heatherton et al., 1991) and psychiatric (e.g., Buckley, Mozley, Holohan, Walsh, Beckham, & Kassel, 2005) samples of adults. For the present study, we examined three cigarette use variables: (1) whether participants were current smokers, (2) quantity of daily smoking, and (3) total score on the FTND which can range from 0 to 10. Standard FTND cutoffs for low (score of < 5), medium (5), and high (> 5) nicotine dependence were also used in describing the sample.

Alcohol use and abuse—Participants' current alcohol use and abuse was assessed using the 10-item Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, De La Fuente, & Grant, 1993), which contains questions on alcohol consumption, drinking behavior, and alcohol-related problems. The AUDIT has been shown to have strong psychometric properties (e.g., Dybek et al., 2006; Saunders et al., 1993) and is especially adept at detecting problem drinkers at the less severe end of the spectrum. For the present study, we examined three alcohol use variables: (1) frequency of drinking, (2) typical quantity consumed, and (3) total score on the AUDIT. The standard AUDIT cutoff (score of > 7) for hazardous or harmful drinking was also used in characterizing the sample.

Psychosocial stressors—Using a checklist based on the Life Events Inventory (Cochrane & Robertson, 1973), participants were asked whether they had experienced a number of stressful events during the past three months. The 51 events (39 for those who had never been married) ranged from relatively minor (e.g., change in work hours) to major (e.g., death of an immediate family member) life events. For the present study, we utilized a total count of stressful events experienced during the past three months (range 0–28, $M = 6.07$, $SD = 3.98$).

Post traumatic stress disorder (PTSD) symptoms—The Impact of Event Scale-Revised (IES-R; Weiss & Marmar, 1997), developed to parallel the *DSM-IV* (American Psychiatric Association, 1994) criteria for PTSD, was used to measure participants' PTSD symptoms attributable to Hurricane Katrina. For each of 22 items (e.g., had trouble staying asleep, stayed away from reminders about it), participants were asked to indicate how distressing each item had been for them during the past week, with choices ranging from 0 ("not at all") to 4 ("extremely"). For the present study, participants' mean IES-R score was used ($\alpha = .94$, range 0–3.64, $M = 1.30$, $SD = .93$).

Trait negative and positive affect—The 20-item Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was used to assess participants' general emotional distress (i.e., trait negative affect) and well-being (i.e., trait positive affect). This instrument asks individuals to rate their degree of various feelings and emotions (e.g., interested, excited, irritable, distressed) experienced during the past week, using a scale ranging from 1 ("not at all") to 5 ("extremely"). For the present study, participants' mean scores for the 10 negative

¹DNA data will be used in a forthcoming paper to examine the genetic contributions to emotional experiences following Hurricane Katrina.

emotions ($\alpha = .88$, range 1.00–4.60, $M = 1.95$, $SD = .77$) and for the 10 positive emotions ($\alpha = .87$, range 1.20–5.00, $M = 3.33$, $SD = .83$) were utilized.

Hope—The Hope Scale (Snyder, Sympson, Ybasco, Borders, Babyak, & Higgins, 1996) was used to assess participants' current level of hope. This 6-item measure asks participants about their belief in themselves to engage in actions and generate pathways to reach goals (e.g., "When I have a problem, I can come up with lots of ways to solve it"), using a scale from 1 ("none of the time") to 6 ("all of the time"). For the present study, participants' mean Hope Scale score was used ($\alpha = .76$, range 1.00–6.00, $M = 4.19$, $SD = .96$).

Social support—A 2-question measure based on the Network of Relationships Inventory (NRI; Furman, 1998) was used to assess participants' social support. For each of six people (e.g., spouse, children, mother), participants were asked to rate how satisfied they were with the relationship and how much that person provided support during the Hurricane Katrina experience, using a scale from 1 ("little or none") to 5 ("extremely much"). For the present study, participants' mean ratings across the 12 NRI items was used to represent social support (range 1.00–5.00, $M = 3.34$, $SD = 1.08$).

Results

First, we present descriptive findings regarding participants' use and misuse of cigarettes and alcohol. Second, we provide bivariate correlations (using Pearson's r) between the substance use variables and the psychosocial risk and protective factors. Next, we present results from a series of multiple regression analyses in which we examine the independent contribution of each psychosocial risk and protective factor in predicting cigarette and alcohol use and abuse among the participants. Finally, to understand whether the risk and protective factors might interact with one another to predict substance use, we conduct a series of hierarchical multiple regression analyses. The F test has been shown to give accurate results for dichotomous variables (Rosenthal & Rosnow, 1991), thus was used for all substance categories for simplicity of presentation.

Cigarette Use and Dependence

Fifty-three percent ($N = 110$) of participants reported that they currently smoke cigarettes. Of current smokers, 35% reported smoking less than 10 cigarettes per day, 32% smoke 11–20 cigarettes (i.e., up to a pack) per day, 17% smoke 21–30 cigarettes per day, and the remaining 15% smoke 31 or more cigarettes per day. One percent of smokers did not respond to the quantity question. On the FTND ($\alpha = .58$), the average score for current smokers was 4.46 ($SD = 2.62$), with scores ranging from 0 to 10. Using standard FTND cutoff scores, 46% of smokers met criteria for a low level of nicotine dependence, 13% met criteria for a medium level of dependence, and 36% met criteria for a high level of dependence. Five percent of smokers had missing data on all of the FTND items.

Alcohol Use and Abuse

Seventy-two percent ($N = 150$) of participants reported currently drinking any beverage containing alcohol. Of current drinkers, 28% reported drinking monthly or less, 20% drink 2–4 times per month, 27% drink 2–3 times per week, and the remaining 25% drink 4 or more times per week. With regards to quantity of alcohol consumed, 35% of current drinkers reported having 1–2 drinks on a typical day of drinking, 39% reported having 3–4 drinks, 16% reported having 5–6 drinks, 5% reported having 7–9 drinks, and the remaining 5% reported having 10 or more drinks on a typical day of drinking. Moreover, 15% of drinkers reported having six or more drinks on one occasion at least monthly, 13% weekly, and 10% daily or almost daily. On the AUDIT ($\alpha = .84$), the average score for current drinkers was 7.67 ($SD = 6.88$). Using the

standard AUDIT cutoff score, 36% of current drinkers met criteria for hazardous or harmful drinking.

Correlations between Substance Use Variables and Psychosocial Factors

Bivariate correlations are presented in Table 1. Of note, all correlations were in the predicted directions. In general and as predicted, cigarette and alcohol use and misuse were associated with greater psychosocial risk factors (i.e., stressors, PTSD symptoms, negative affect) and fewer psychosocial protective factors (i.e., positive affect, hope, social support). Interestingly, whether participants were current smokers and participants' total scores on the AUDIT were the substance use variables most strongly associated with the psychosocial risk and protective factors.

Independent Contributions of each Psychosocial Factor

Multiple regression analyses were conducted to examine the independent contribution of each psychosocial factor in predicting cigarette and alcohol use and abuse. In these analyses, we estimated separate models for the risk and protective factors (Table 2) because we believe that a clear understanding of how the factors in both categories are independently related to the substance use outcomes has important implications for intervention and prevention. Results (using R^2) revealed that as a group, the psychosocial risk factors explained a significant portion of the variance in most of the substance use and misuse categories. However, as a group, the psychosocial protective factors explained a significant portion of the variance for only one of the substance use categories (i.e., whether participants were current smokers).

An examination of the regression beta-weights further revealed that psychosocial stressors, hope, and social support all made independent contributions to predicting whether participants were current smokers.² Results also revealed that PTSD symptoms made an independent contribution to the prediction of participants' FTND scores, whereas negative affect made an independent contribution to the prediction of participants' AUDIT scores.

Interactions between Psychosocial Risk and Protective Factors

To explore whether the risk and protective factors interact with one another to predict substance use, we conducted two hierarchical multiple regression analyses examining the interactions between (1) psychosocial stressors and hope and (2) psychosocial stressors and social support in predicting whether participants were current smokers. We selected this outcome to examine because it was the only one found to be predicted by both the psychosocial risk and protective factors. We chose to examine psychosocial stressors, hope, and social support because each of these factors was found to be independently related to whether participants were current smokers. All variables were centered prior to the analyses. Results are presented in Table 3. In step 2 of both models, psychosocial stressors and hope/social support both made independent contributions to predicting whether participants were current smokers. However, there were no significant interactions between the risk and protective factors.

Discussion

As one of the first empirical research studies of adult survivors of Hurricane Katrina, the present study provides unique information regarding survivors' substance use in the months following the Hurricane. Not unexpectedly given prior research showing increased substance use following traumatic events (e.g., Boscarino et al., 2006; Stewart et al., 2004; Vlahov et al., 2004), the Hurricane Katrina survivors interviewed for the present study reported extremely

²Since this outcome variable was dichotomous, results were verified using logistic regression.

high rates of cigarette smoking, alcohol consumption, and hazardous or harmful alcohol use when compared to pre-Hurricane national and local prevalence rates.

Specifically, 53% of survivors were current cigarette smokers, which is substantially higher than the estimated U.S. adult prevalence rate of 20.9% (CDC, 2005) and the estimated adult prevalence rate in Louisiana of 23.5% (CDC, 2006). In the present study, 49% of current smokers met criteria for a medium or high level of nicotine dependence, which is comparable to the estimated rate of 50% to 80% of U.S. smokers (APA, 1994). With regards to alcohol consumption, 37% of Hurricane Katrina survivors reported having 6 or more drinks on one occasion at least monthly, which is much higher than the LA adult prevalence rate of 14.2% for monthly binge drinking (CDC, 2006).³ Using survivors' alcohol frequency and quantity data, we estimated that approximately 27% of survivors engaged in current "heavy drinking", defined by the CDC as an average of two or more drinks per day. This rate is also much higher than the LA adult prevalence rate of 4.6% for heavy drinking (CDC, 2006). Finally, using the AUDIT, we found that 36% of Hurricane Katrina survivors met criteria for hazardous or harmful drinking. This is higher than the 25% of drinkers in a general population sample who screened positive for alcohol use problems using a lower AUDIT cutoff score (>5) (Dybek et al., 2006). Moreover, although AUDIT scores are not synonymous with a *DSM* diagnosis of alcohol-related disorders, which are estimated to occur at lifetime prevalence rates of between 5% and 14% (APA, 1994), the high AUDIT scores for survivors do suggest an elevated risk for alcohol abuse or dependence.

Although these comparisons of survivors' substance use with national and local prevalence rates are quite striking, one very important caveat should be noted—the cross-sectional nature of the data presented in this study. For obvious reasons, we were unable to collect substance use information from participants prior to the Hurricane and, in our post-Hurricane interviews, we did not directly ask survivors whether their rates of cigarette smoking or alcohol consumption had changed since the disaster. Thus, we cannot make causal inferences regarding increased substance use as a result of or in response to the traumas associated with Hurricane Katrina. There is the possibility that participants in our study were already using cigarettes and alcohol at an elevated rate prior to the Hurricane. If this was the case, it may have resulted in an increased vulnerability to the traumatic event and may have even contributed to difficulties in evacuating the Gulf Coast before or after the Hurricane made landfall. These are very important considerations in evaluating our findings. Nonetheless, our results are consistent with prior studies that have demonstrated high rates of substance use following exposure to traumatic events. We are currently collecting follow-up data from participants in which we do ask directly about increased substance use since the Hurricane. We hope that this additional information will allow us to make more definitive conclusions about the relation between survivors' substance use and their experiences during Hurricane Katrina.

In the present study, we also examined several psychosocial risk and protective factors that we expected would be associated with higher or lower rates of substance use among the survivors. Based on prior research, we expected that PTSD symptoms, psychosocial stressors, and negative affect would be associated with higher rates of substance use. Results were generally consistent with our predictions. We also expected that the protective factors of social support, hope, and positive affect would be associated with lower rates of substance use following the Hurricane. Although bivariate correlations were consistent with these predictions, results from regression analyses revealed that the psychosocial protective factors as a group explained less

³We defined binge drinking as having 6 or more drinks on one occasion because that is the criteria used in the AUDIT. However, we recognize that 5 or more drinks on one occasion is the standard definition for binge drinking; this was the criteria used in the CDC (2006) report. This suggests that we may have underestimated the number of Hurricane Katrina survivors reporting monthly binge drinking.

of the variance in substance use among survivors than did the risk factors as a group. However, results suggested that hope and social support may be particularly important in protecting individuals against the negative psychological effects of traumatic events.

Our results, particularly those concerning the psychosocial risk and protective factors, may have important implications for substance use treatment and prevention programs following traumatic events. Undoubtedly, uncontrollable natural disasters, such as hurricanes and earthquakes, are going to occur in the future. It is also quite likely that many individuals exposed to these disasters will experience extreme psychological distress, including heightened substance use. However, if we can identify factors that are associated with higher or lower rates of substance use after the experience of a traumatic event, these might be areas in which to intervene with prevention and treatment efforts. For example, this and previous studies suggest that PTSD symptoms are strongly associated with higher rates of substance use following a traumatic event. This might suggest that substance use treatment and prevention programs that deal directly with ameliorating PTSD symptoms should be widely utilized following all natural disasters. Likewise, social support appears to be a factor that often decreases the likelihood of substance use following a traumatic experience. This suggests that substance use treatment and prevention programs that aim to increase social support should be a priority following traumatic events. For example, in Columbia, SC, each Hurricane Katrina evacuee who arrived in town was paired with a “shepherd” or sponsor who provided social support and helped guide the survivor through the various public assistance programs that were available.

In addition to the caveat mentioned previously, there is another potential limitation of the present study that should be noted. Since at least half of our sample was evacuated involuntarily from the Gulf Coast following Hurricane Katrina, it is possible that participants were not representative of that area as a whole. However, we did make an effort to use a different recruitment strategy for the other half of our sample by traveling to New Orleans to collect the data. As mentioned previously, perhaps as a result of this effort, the demographics of our whole sample are comparable to pre-Hurricane New Orleans census data in terms of sex, race, ethnicity, and educational level (U.S. Census Bureau, 2006). This suggests that our sample is representative of the population of the city in which the majority of participants resided prior to the Hurricane.

In sum, the present study offers one of the first empirical examinations of the substance use patterns of survivors of Hurricane Katrina. Results suggest increased cigarette and alcohol use in response to this traumatic event, yet further research is needed to verify the causal direction of effects. By also examining the risk and protective factors associated with higher or lower rates of substance use following the Hurricane, the present study may prove to be informative to trauma-related substance use treatment or prevention programs.

Acknowledgments

This research was supported by the National Science Foundation – 0554924 and the National Institute of Mental Health – K23MH65439.

Biographies

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Table 1

Bivariate correlations between substance use variables and psychosocial factors.

	Psychosocial Risk Factors			Psychosocial Protective Factors		
	Psychosocial stressors	PTSD symptoms	Negative affect	Positive affect	Hope	Social support
Current smoker? (0=no, 1=yes)	.22**	.19**		-.07	-.16*	-.20*
Quantity of daily smoking	.03	-.01		-.20*	-.07*	-.12
FTND score	-.03	.00		-.24*	-.10	-.17
Frequency of drinking	.00	.18**		-.03	-.14*	-.13
Typical quantity of alcohol consumed	.06	.21*		-.12	-.15	-.13
AUDIT score	.17*	.32**		-.12	-.19*	-.10

* Note: $p < .05$;

** $p < .01$

Table 2

Independent contributions of each psychosocial factor¹.

	Psychosocial Risk Factors			Psychosocial Protective Factors				R ²
	Psychosocial stressors	PTSD symptoms	Negative affect	Positive affect	Hope	Social support		
Current smoker? (0=no, 1=yes)	.16*	.14	.05	.11	-.17*	-.20**	.06**	
Quantity of daily smoking	.01	-.14	.18	-.16	.00	-.06	.04	
FTND score	-.07	.38**	-.25	-.16	-.02	-.10	.06	
Frequency of drinking	-.08	.09	.15	.08	-.15	-.12	.03	
Typical quantity of alcohol consumed	-.03	.06	.18	-.01	-.13	-.09	.03	
AUDIT score	.06	.08	.25*	-.02	-.16	-.05	.04	

¹Note: Results include betas and R²s presented from multiple regression analyses conducted separately for the psychosocial risk and protective factors.

* p <.05;

** p <.01

Interactions between psychosocial risk and protective factors¹ in predicting current smoking.

Table 3

		B	R ²	ΔR ²	F for ΔR ²	p
Model 1	1	Psychosocial stressors				
		Hope	.03 ^{**4}			
		Total Step 1:	-.07			
		Psychosocial stressors	.03 ^{**}	.07	7.30	.00
		Hope	-.07 [*]			
Model 2	1	Stressors x hope				
		Total Step 2:	-.01	.01	1.02	.31
	1	Psychosocial stressors	.02 ^{**}			
		Social support	-.07 [*]			
	2	Total Step 1:	.03 ^{**}	.07	7.96	.00
	Psychosocial stressors	-.07 [*]				
	Social support	.01	.08	2.21	.14	
	Total Step 2:					

¹Note: All variables were centered prior to analysis.

* p < .05;

** p < .01