Published in final edited form as:

Psychol Addict Behav. 2013 December ; 27(4): . doi:10.1037/a0032014.

Associations between Smoking and Psychiatric Comorbidity in U.S. Iraq- and Afghanistan-Era Veterans

F. Joseph McClernon, Ph.D.^{1,2,3}, Patrick S. Calhoun, Ph.D.^{1,2,3,4}, Jeffrey S. Hertzberg, B.S.^{1,2,3}, Eric Dedert, Ph.D.^{1,2}, the VA Mid-Atlantic Mental Illness Research, Education, and Clinical Center Registry Workgroup³, and Jean C. Beckham, Ph.D.^{1,2,3}

¹Department of Psychiatry and Behavioral Sciences, Duke University Medical Center; Box 3527, Durham, NC 27710

²Durham Veterans Affairs Medical Center, Durham, NC; Durham VAMC, 116B, 508 Fulton Street, Durham, NC 27705

³The VA Mid-Atlantic Mental Illness Research, Education, and Clinical Center; Durham VAMC, 116B, 508 Fulton Street, Durham, NC 27705

⁴VA Center for Health Services Research in Primary Care; Durham VAMC (152), 508 Fulton Street, Durham, NC 27705

Abstract

Introduction—The risk of smoking increases with specific psychiatric diagnoses (e.g. posttraumatic stress disorder [PTSD]); but the risk has also been shown to increase as a function of the number of psychiatric illnesses with which a person is diagnosed. The current study examined this association and other correlates of smoking-psychiatric comorbidity in a sample of U.S. Iraq/Afghanistan era Veterans who have served since September 11, 2001.

Methods—The sample consisted of 1691 Veterans (mean age = 37.5 years, 20.2% women, 53.2% minority). Veterans completed measures of smoking history, nicotine dependence and smoking expectancies; they also underwent a structured diagnostic interview to establish any current and/or lifetime psychiatric diagnoses.

Results—Consistent with previous studies, the number of comorbid diagnoses was significantly associated with both heavy (>20 cigarettes/day) and light/moderate (≤ 20 cigarette/day) smoking. Moreover, among current smokers, significant correlations between self-reported dependence and number of diagnoses were observed. Examination of self-reported smoking expectancies revealed that a greater number of diagnoses was associated with greater expectancies of negative affect reduction, stimulation/state enhancement, taste/sensorimotor manipulation, social facilitation, craving/addiction, and boredom reduction.

Conclusions—The present findings confirm the association between the number of comorbid diagnoses reported in previous studies, and extends those findings by identifying smoking expectancies differences among smokers with comorbid diagnoses.

*Address correspondence to: F. Joseph McClernon, Ph.D., Duke University Medical Center, Box 3527, Durham, NC 27710; Telephone: (919) 668-3987; Fax: (919) 681-0016; mccler011@mc.duke.edu.

Declaration of Interests

Dr. McClernon has research funding from a PI-initiated grant from Pfizer Inc (PI: Marcus Munafo). Drs. Beckham, Dr. Calhoun, and Mr. Hertzberg report no conflicts of interest.

Introduction

Individuals with one or more psychiatric illness are disproportionately burdened with the morbidity and mortality associated with cigarette smoking (Aubin, Rollema, Svensson, & Winterer, 2012). Smokers with at least one Axis I psychiatric disorder, as defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM), have been estimated to smoke 50% of all cigarettes sold in the U.S. while representing only 25% of the population (Lasser, et al., 2000). Moreover, smoking is associated with a spectrum of specific, chronic psychiatric disorders (Ziedonis, et al., 2008) including schizophrenia (Diaz, de Leon, Josiassen, Cooper, & Simpson, 2005), major depressive disorder (Swedberg, et al., 2009), bipolar disorder (Heffner, Strawn, DelBello, Strakowski, & Anthenelli, 2011), posttraumatic stress disorder (Fu, et al., 2007), attention deficit/hyperactivity disorder (McClernon & Kollins, 2008) and alcohol and substance use/abuse (Falk, Yi, & Hiller-Sturmhofel, 2006). Whereas the prevalence of smoking in specific diagnoses have been the focus of much research in recent decades, less work has focused specifically on the prevalence of smoking as a function of total number of comorbid psychiatric disorders (i.e., psychiatric disease burden; PDB), or upon the smoking expectancies of those with greater PDB.

In the present analysis, we focused on PDB, rather than specific diagnoses, as a potential predictor of smoking behavior for several reasons. First, psychiatric comorbidity is common among individuals with any psychiatric illness. In a sample of 3199 respondents from the National Comorbidity Survey (Kessler, Chiu, Demler, Merikangas, & Walters, 2005), individuals with 3 or more disorders accounted for greater than half of all diagnoses. Second, PDB has been associated with a number of health related behaviors including obesity and inactivity (Chwastiak, Rosenheck, & Kazis, 2011), as well as earlier mortality (Chwastiak, Rosenheck, Desai, & Kazis, 2010). Finally, PDB has been shown in previous studies to be specifically related to smoking risk and severity of nicotine dependence (Ulrich, Meyer, Rumpf, & Hapke, 2004).

In a population-based study of 4411 individuals (Lasser, et al., 2000), a linear relation between smoking rates and lifetime PDB was observed with the rates of current heavy smoking (> 24 cigs/day) greater than 20% among individuals with 3 or more lifetime psychiatric diagnoses compared to less than 10% among individuals with 0 diagnoses. In a more recent study (John, Meyer, Rumpf, & Hapke, 2004) of a population-based German sample, current daily smoking was associated with one or more psychiatric diagnosis, and increasing numbers of psychiatric diagnoses were associated with increased nicotine dependence.

The purpose of the current study was to further examine the association between smoking and psychiatric illness comorbidity in a sample of U.S. Iraq/Afghanistan era veterans. The influence of PDB on smoking in this group is an important health care topic, as there are over 1.4 million veterans from these wars, and an estimated 32% of them smoke (Kirby, et al., 2008). In addition psychiatric comorbidity is a problem facing this group of veterans, as one large study reported that of Iraq and Afghanistan veterans with a psychiatric diagnosis, 29% had a second diagnosis and another 33% had three or more diagnoses (Seal, et al., 2009). It is important to conduct research specific to Iraq/Afghanistan era veterans to guide development of interventions tailored to their needs. The extent to which PDB alters smoking outcomes is an important consideration in determining whether significant research and clinical resources need to be devoted to tailoring smoking interventions to groups with psychiatric comorbidities.

We sought to replicate previous findings regarding PDB-smoking risk associations and extend these findings by examining relations between PDB and the perceived outcome

expectancies of smoking as measured by the Smoking Consequences Questionnaire-Adult (Copeland, Brandon, & Quinn, 1995). Smoking expectancies have been previously evaluated in smokers with psychiatric comorbidity (Buckley, et al., 2005; Calhoun, Levin, Dedert, Johnson, & Beckham, 2011; Carmody, et al., 2012) and these data suggest that compared to those without psychiatric illness, smokers with PTSD were more likely to expect smoking to reduce negative affect and boredom, and enhance stimulation and social interactions.

Methods

Participants

Participants were 1691 U.S. Iraq/Afghanistan era veterans who had participated from November 2005 to September 2011 in the ongoing Mid-Atlantic Mental Illness Research, Education and Clinical Center (MIRECC) Registry Database for the Study of Post-Deployment Mental Health. Procedures and recruitment methods for the Registry are detailed elsewhere (Calhoun, et al., 2010). Inclusion criteria for the current study included all individuals who had completed measures described below. The sample included 20.2% women, 53.2% racial minorities, and had an average age of 37.5 years ($SE = .24$). The sample was comprised of 925 (54.7%) individuals who had never been smokers, 338 (20%) former smokers, 373 (22%) light to moderate smokers and 55 (3.3%) heavy smokers.

Measures

Psychiatric diagnosis—Psychiatric diagnoses were determined using the SCID-I semi-structured clinical interview developed to diagnose Axis I psychiatric disorders (First, Spitzer, Gibbon, & Williams, 1994). The SCID-I was administered by research personnel, who received extensive training and supervision. Reliability of interviewers scoring a series of seven SCID-I training videos was excellent (Fleiss' kappa = 0.95). The variable 'number of comorbid psychiatric disorders' was coded into a 4-level factor as in (Kessler, et al., 2005): 0, 1, 2, 3+ by adding the number of current Axis I DSM disorders excluding nicotine dependence.

Smoking status, nicotine dependence and other smoking-related measures—

Individuals were classified as never, former or current smokers based on self-report. Individuals were classified as never being regular smokers if they were not current smokers and reported not smoking more than 100 cigarettes in their lifetime. Former smokers endorsed a history of regular smoking (i.e., reported smoking at least one cigarette every day for at least a month) but not current smoking. Current smokers endorsed current smoking and were further classified as either light/moderate or heavy smokers. Light/moderate smokers were current smokers who endorsed smoking 20 cigarettes/day whereas heavy smokers were individuals who endorsed smoking > 20.

All smokers completed a smoking history questionnaire that included age of onset. Time to first cigarette of the day, in minutes, was rated on a 4 point scale (within 5, 6–30, 31–60, after 60) and dichotomized for analysis purposes into groups of more or less than 30 minutes. In addition, participants completed the Fagerström Test of Nicotine Dependence (FTND; (Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991))—a widely used and reliable ($\alpha = .64$ in this sample) 6-item measure of nicotine dependence. Scores range from 0 to 10. The Smoking Consequences Questionnaire-Adult (SCQ-A; (Copeland, et al., 1995)) was administered to a subsample of current smoker participants who were current smokers ($n = 428$) as it was added later in the questionnaire set. The SCQ-A is a 55-item measure of smoking outcome expectancies. The SCQ-A is comprised of the following scales: negative affect reduction, stimulation/state enhancement, health risk, taste/

sensorimotor manipulation, social facilitation, weight control, craving/addiction, negative physical feelings, boredom reduction, and negative social impressions. It is a reliable measure ($\alpha = .97$ in this sample) and has been used in previous studies of smoking among individuals with psychiatric comorbidities (Buckley, et al., 2005).

Results

Demographic characteristics by smoking status

Sample characteristics by smoking categories are displayed in Table 1. Former smokers, compared to never smokers, were more likely to be older, male, Caucasian, and married. Current smokers, regardless of the amount smoked, and compared to never smokers, were more likely to be younger, male, Caucasian, unmarried, and have fewer years of education. Current light/moderate smokers compared to never smokers were more likely to be younger, African-American, less educated, and unmarried. Similarly, individuals who were current heavy smokers compared to never smokers, were more likely to be male, Caucasian, and have fewer years of education. Combat exposure was not related to any category of smoking status relative to never smoking.

Specific or class of psychiatric illness and smoking status

For descriptive purposes, bivariate relations between specific psychiatric illnesses or classes of illness and smoking status were examined (see Table 1). In general, of disorders with sufficient samples, a current diagnosis of any but 'other anxiety disorder' was related to increased current smoking risk (versus never smoking).

Psychiatric disease burden by smoking status

The proportion of former and current smoking compared to never smoking was examined as a function of the number of comorbid psychiatric disorders (see Table 2). Individuals with no disorders made up 68.0% of the Never Smoker group and a comparatively smaller proportion of the smoking groups. In contrast, relative to the relatively small proportion of the Never Smoker group accounted for by each of the groups with at least one disorder, each of these groups accounted for a larger proportion of the Light-Moderate Smoker and Heavy Smoker groups. The groups with one or two disorders accounted for a larger proportion of the Former Smokers. Relative to their proportions in the Never Smokers category, the group with 3+ comorbid disorders accounted for a smaller proportion of Former Smokers. Finally, the proportion of current smokers (regardless of heaviness) was greater among individuals with 1 disorder, but the 2 and 3+ disorders failed to be significant.

Smoking variables by number of comorbid psychiatric disorders

Among current smokers, mean FTND score was higher among individuals with 2 ($M = 4.07$ [$SE = 0.35$]) or 3+ ($M = 4.45$ [$SE = 0.49$]) comorbid symptoms compared to those with 0 comorbid disorders ($M = 3.14$ [$SE = 0.16$]) (Table 3). Mean age of onset of smoking was younger, but not significantly younger among those with 2 ($M = 17.38$ [$SE = 0.65$]) or 3+ ($M = 17.72$ [$SE = 1.07$]) comorbid disorders versus 0 ($M = 18.11$ [$SE = 0.39$]) or 1 disorder ($M = 18.31$ [$SE = 0.51$]). Finally, compared to no psychiatric disorder (50.5%) a greater proportion of smokers with 2 (66%) or 3+ (68.8%) reported smoking 30 minutes or less after waking up.

Multivariate adjusted odds of smoking and smoking outcomes

Table 3 presents the odds ratio (OR) and 95% CIs from the logistic regression analyses. More advanced age was related to increased odds of being a Former Smoker ($OR: 1.019$; 95% $CI: 1.006-1.032$) and decreased odds of being a Heavy Smoker ($OR: .961$; 95% $CI: .$

948–.974) or Current Smoker (*OR*: .964; 95% *CI*: .952–.977). Women were less likely to be classified as positive for on each of the smoking outcomes (Former Smoker: *OR*: .657, 95% *CI*: .464–.929; Light/Moderate: *OR*: .718, 95% *CI*: .523–.984; Heavy: *OR*: .238, 95% *CI*: .077–.737; Current: *OR*: .665, 95% *CI*: .487–.906). Minority race/ethnicity was also consistently less likely to be classified positively on smoking outcomes (Former Smoker: *OR*: .474, 95% *CI*: .365–.615; Light/Moderate: *OR*: .739, 95% *CI*: .573–.954; Heavy: *OR*: .131, 95% *CI*: .061–.283; Current: *OR*: .623, 95% *CI*: .488–.795). Compared to those with 0 comorbid disorders, those with 3+ disorders had the highest odds of light/moderate smoking (*OR*: 3.95; 95% *CI*: 2.1–7.5) though having 1 or 2 disorders also significantly increased the odds of being a light/moderate smoker. (for 1: [*OR*: 1.64; 95% *CI*: 1.2–2.2] for 2: [*OR*: 1.96; 95% *CI*: 1.3–3.0]). Having 3+ disorders compared to 0 was even more strongly associated with the odds of heavy smoking (*OR*: 21.55; 95% *CI*: 7.5–62.2). Having 2 disorders was also associated with increased odds of heavy smoking (*OR*: 3.11; 95% *CI*: 1.3–7.6).

After adjusting for age, gender and minority status, associations between number of comorbid disorders and smoking outcomes among smokers were also examined. A significant, positive association between FTND and psychiatric comorbidity was observed ($p = .001$). Age of onset of smoking and time to first cigarette of the day failed to be significantly associated with PDB.

Smoking Expectancy

Table 4 provides means of SCQ-A subscales as well as the results of ANCOVAs assessing differences in smoking expectancies as a function of PDB. After controlling for age, gender and minority status, significant group differences were observed for negative affect reduction, stimulation/state enhancement, taste/sensorimotor manipulation, social facilitation, craving/addiction, and boredom reduction. In general, smoking expectancy scores were higher for each scale for individuals with a psychiatric disorder compared to those with none. The same analyses were conducted controlling for FTND scores to rule out the possibility that relations between expectancies and PDB were due only to increasing dependence among individuals with greater numbers of comorbid disorders. However, all results remained significant when controlling for nicotine dependence.

Discussion

In this study we found significant associations between the number of diagnosed comorbid psychiatric disorders and risk for smoking among Iraq/Afghanistan era Veterans. After controlling for demographic variables, these associations were observed for current light/moderate and heavy smoking and for a measure of nicotine dependence. Odds of heavy smoking were especially large, as those with 3+ psychiatric disorders were 20 times more likely to be heavy smokers than to be never smokers (compared to individuals with no disorders). The present findings are the first to document an association between the number of comorbid psychiatric disorders and smoking risk to a sample of Iraq/Afghanistan era veterans and are consistent with previous reports linking these factors in the general population (Lasser, et al., 2000).

A large literature has focused on the links between smoking and a wide range of specific psychiatric disorders (Ziedonis, et al., 2008). However, far fewer studies have specifically examined the effects of number of current or lifetime diagnoses as a risk factor for smoking or altered smoking expectancies. Previous studies investigating the association between number of psychiatric diagnoses and smoking risk have observed significantly increased odds of smoking among individuals with three or more diagnoses. The link between PDB and smoking has several potential explanations, including positive expectancy of smoking outcomes in those with higher PDB reported in this paper. In addition, the link could be due

to vulnerability between psychiatric morbidity and smoking due to genetic and/or sociodemographic factors. Finally, there is evidence that smoking could increase the risk of developing psychiatric disorders.

Relative to smokers without psychiatric disorders, high PDB smokers reported greater expectations of negative affect reduction, stimulation, taste and sensory effects, craving/addiction, social facilitation and boredom reduction. These findings suggest that veterans with psychiatric disorders are likely to require smoking cessation interventions that address factors including replacement of both the nicotine and sensory aspects of smoking, as well as coping with the expected loss of social facilitation and difficulty managing negative affect, boredom and withdrawal symptoms. Treatments designed to extinguish reinforcing effects of non-nicotine aspects of smoking (e.g. taste, sensory effects) and increase motivation to quit smoking are underway by our group.

Strengths of this study include the use of standardized diagnostic interviews to establish psychiatric diagnoses and smoking expectancies, and analyses that controlled for level of nicotine dependence. As the data are cross-sectional, the direction of these associations cannot be determined. Due to database limitations, data were not available on worthy topics of tobacco research, including the use of non-cigarette forms of tobacco and the class of smokers who smoke intermittently without ever progressing to daily smoking. In addition, the overrepresentation of racial/ethnic minorities in this sample suggests the generalizability of results to all Iraq/Afghanistan veterans is limited, as a survey of all Veterans served by VA in 2011 found that only 19% were racial/ethnic minorities overall, and only 23% of those under age 30 were minorities (Veterans Health Administration, 2012).

Despite these limitations, results of this study add to the growing evidence that individuals with psychiatric disorders not only smoke more, but that their expectations about the positive features of smoking are significantly higher and likely need to be addressed in smoking cessation interventions. In addition, interventions in Iraq/Afghanistan era veterans could be tailored by addressing psychiatric problems and treatment barriers that are unique to this group and increasing access to care by integrating smoking into other efforts to transition back to civilian life. McFall and colleagues demonstrated that intensive, repeated smoking cessation interventions significantly increased quit rates among veterans with PTSD (McFall, et al., 2010). Future efforts in this area should build on the intervention knowledge reported in the McFall study by providing tailored smoking cessation interventions that are more intensive and provide longer follow-up than those used in the general population.

Acknowledgments

Funding

This work was supported by VA Mid-Atlantic Research, Education and Clinical Center, Department of Veterans Affairs, and by K24DA016388, 2R01CA081595, R21DA019704 and 1R21CA128965. The views expressed in this presentation are those of the authors and do not necessarily represent the views of the Department of Veterans Affairs or the National Institutes of Health.

The VA Mid-Atlantic MIRECC workgroup for this publication includes Kimberly T. Green, Angela Kirby, H. Ryan Wagner, Kristy Straits-Troster, Christine E. Marx, Scott D. Moore, Raj A. Morey, Larry A. Tupler, Richard D. Weiner, John A. Fairbank from the Durham VA Medical Center; Marinell Miller-Mumford from the Hampton VA Medical Center; Antony Fernandez, Scott D. McDonald from the Richmond VA Medical Center; and Katherine H. Taber, Ruth E. Yoash-Gantz, from the Salisbury VA.

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Table 1

Sample Characteristics (Percentages or Means and Standard Errors)

	Smoking Status						Test Statistics		
	Non-Current			Current					
	Total Sample	Never smoker	Former smoker	Lt-Mod Smoker	Heavy Smoker	All Cur Smokers	Never v Former	Never v Lt-Mod	Never v Heavy
	<i>n</i> = 1691	<i>n</i> = 925	<i>n</i> = 338	<i>n</i> = 373	<i>n</i> = 55	<i>n</i> = 428			
Age (SD)	37.5 (0.2)	38.2 (0.3)	39.6 (0.6)	34.3 (0.5)	35.5 (1.4)	34.5 (9.5)	<i>t</i> = -2.24*	<i>t</i> = 6.68***	<i>t</i> = 1.93
Edu (SD)	13.4 (0.1)	13.6 (0.1)	13.5 (0.2)	13.0 (0.2)	12.2 (0.5)	12.9 (2.9)	<i>t</i> = 0.57	<i>t</i> = 3.06**	<i>t</i> = 2.87***
Gender							<i>x</i> ² = 11.2***	<i>x</i> ² = 3.4	<i>x</i> ² = 7.8**
Male	79.8%	76.5%	85.2%	81.2%	92.7%	82.7%			
Female	20.2%	23.5%	14.8%	18.8%	7.3%	17.3%			
Race/Ethnic							<i>x</i> ² = 33.9***	<i>x</i> ² = 15.4***	<i>x</i> ² = 49.1***
Hispanic	4.8%	4.7%	5.6%	4.8%	1.8%	4.4%			
Black	48.4%	56.0%	37.9%	44.2%	12.7%	40.2%			
Other	4.6%	4.2%	4.7%	5.4%	3.6%	5.1%			
White	42.3%	35.1%	51.8%	45.6%	81.8%	50.2%			
Marital status %							<i>x</i> ² = 7.8*	<i>x</i> ² = 9.5**	<i>x</i> ² = 3.6
Married	55.2%	56.2%	63.0%	46.8%	47.3%	46.8%			
Div/sep	23.2%	21.8%	21.9%	26.6%	32.7%	29.9%			
Never married	21.6%	22.0%	15.1%	26.6%	20.0%	25.8%			
Combat Exposure	76.1%	75.1%	76.6%	77.5%	80.0%	77.8%	<i>x</i> ² = 0.3	<i>x</i> ² = 0.8	<i>x</i> ² = 0.7
Axis I Disorders							<i>x</i> ² = 8.0	<i>x</i> ² = 45.5***	<i>x</i> ² = 51.4***

	Smoking Status						Test Statistics			
	Non-Current			Current						
	Total Sample	Never smoker	Former smoker	Lt-Mod smoker	Heavy Smoker	All Cur Smokers	Never v Former	Never v Lt-Mod	Never v Heavy	Never v All Cur
	<i>n</i> = 1691	<i>n</i> = 925	<i>n</i> = 338	<i>n</i> = 373	<i>n</i> = 55	<i>n</i> = 428				
PTSD	32.0%	27.2%	29.0%	43.7%	50.9%	44.6%	$\chi^2 = 0.4$	$\chi^2 = 33.3^{***}$	$\chi^2 = 14.3^{***}$	$\chi^2 = 40.4^{***}$
MDD	19.3%	17.4%	17.5%	23.9%	32.7%	25.0%	$\chi^2 = 0.0$	$\chi^2 = 7.1^{**}$	$\chi^2 = 8.2^{**}$	$\chi^2 = 10.6^{**}$
Other Anx	14.2%	13.1%	14.5%	15.6%	21.8%	16.4%	$\chi^2 = 0.4$	$\chi^2 = 1.4$	$\chi^2 = 3.4$	$\chi^2 = 2.6$
Bipolar/Schizophrenia	1.7%	0.2%	1.5%	4.6%	7.3%	4.9%	<i>a</i>	$\chi^2 = 34.8^{***}$	<i>a</i>	$\chi^2 = 38.6^{***}$
Substance Abuse	7.0%	4.2%	3.0%	15.3%	23.6%	16.4%	$\chi^2 = 1.0$	$\chi^2 = 47.5^{***}$	$\chi^2 = 39.0^{***}$	$\chi^2 = 58.2^{***}$

* p < .05;
** p < .01;
*** p < .001;
a cell size too small

Table 2

Smoking Status and Psychiatric Disease Burden

# of Comorbid Disorders	Smoking Status <i>n</i> (%)			
	Never Smoker <i>n</i> = 925	Former Smoker <i>n</i> = 338	Lt-Mod Smoker <i>n</i> = 373	Heavy Smoker <i>n</i> = 55
0	629 (68.0%)	225 (66.6%)	193 (51.7%)	23 (41.8%)
1	209 (22.6%)	78 (23.1%)	112 (30.0%)	15 (27.3%)
2	67 (7.2%)	29 (8.6%)	45 (12.1%)*	8 (14.6%)
3+	20 (2.2%)	6 (1.8%)*	23 (6.2%)	9 (16.4%)*
				All Smokers <i>n</i> = 428
				216 (50.5%)
				127 (29.7%)
				53 (12.4%)
				32 (7.5%)

* *p* < .05;

** *p* < .01;

*** *p* < .001; never smoker as the referent category.

Table 3

Adjusted OR and 95% Confidence Intervals for Multivariate Models

# of Disorders	Smoking Status (%)							
	Former Smoker		Lt-Mod Smoker		Heavy Smoker		All Current	
	OR	CI	OR	CI	OR	CI	OR	CI
0	--	--	--	--	--	--	--	--
1	1.09	[0.8–1.5]	1.64	[1.2–2.2]***	1.93	[1.0–3.8]	1.67	[1.3–2.2]***
2	1.32	[0.8–2.1]	1.96	[1.3–3.0]**	3.11	[1.3–7.6]**	2.05	[1.4–3.0]***
3+	1.07	[0.4–2.7]	3.95	[2.1–7.5]***	21.55	[7.5–62.2]***	4.85	[2.8–8.4]***

* p < .05;
** p < .01;
*** p < .001; for the dependent variable, the category title was compared to Never Smokers as the referent group; for the # of psychiatric disorders as predictors, each was compared to 0 psychiatric disorders as the referent category.

Table 4

Smoking Expectancies and Psychiatric Disease Burden

	Number of Disorders				Statistics		
	0	1	2	3+	FTND Not controlled	FTND Controlled	Age, Gender, and Race Controlled
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>F</i>	<i>F</i>	<i>F</i>
Negative affect reduction	38.7 (25.2)	48.8 (23.6)	50.1 (24.4)	51.1 (21.3)	7.05***	4.97**	5.92***
Stimulation/state enhancement	15.4 (15.0)	16.7 (16.3)	22.6 (17.3)	24.4 (17.5)	5.25**	3.19*	4.65**
Health risk	28.9 (9.4)	30.8 (8.6)	31.0 (9.8)	30.3 (8.6)	1.46	1.37	1.08
Taste/sensorimotor manipulation	23.8 (19.3)	29.7 (21.2)	32.7 (22.5)	40.4 (23.3)	8.11***	5.15**	7.62***
Social facilitation	11.7 (11.7)	16.4 (12.1)	18.7 (13.5)	18.5 (14.7)	8.11***	5.87***	7.03***
Weight control	11.4 (13.1)	11.3 (13.3)	14.0 (15.2)	14.8 (15.9)	1.09	0.53	1.07
Craving/addiction	28.5 (15.7)	33.6 (14.1)	37.8 (14.7)	34.5 (15.2)	7.07***	5.21**	6.26***
Negative physical feelings	8.1 (7.6)	9.3 (8.1)	10.2 (8.2)	10.0 (8.6)	1.58	0.83	1.36
Boredom reduction	15.7 (11.8)	20.1 (12.0)	22.9 (13.0)	21.8 (12.0)	7.93***	5.5**	7.06***
Negative social impressions	11.0 (8.8)	13.0 (9.3)	13.1 (8.7)	14.0 (9.1)	2.17	1.58	1.67

*
p < .05;**
p < .01;***
p < .001.