Personality Disorders and Cigarette Smoking among Adults in the United States

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Abstract

Introduction—There is a paucity of empirical information pertaining to the association between personality disorders and cigarette smoking. The present study examined whether, and to what degree, personality disorders are associated with cigarette smoking; investigated the specificity of any observed smoking-personality disorder association; and the role of mood/anxiety disorders, substance use, and nicotine dependence in those relations.

Methods—Data were drawn from the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC), a nationally representative sample of 43,083 adults in the United States.

Results—Results indicated a substantial percentage of those with personality disorders are nicotine dependent. Interestingly, the association between dependent, avoidant, histrionic, schizoid and paranoid personality disorders as well as former dependent smoking was partially explained by co-occurring mood/anxiety disorders, and adjusting for such clinical conditions appeared to generally attenuate the strength of many other associations. Finally, the association between personality disorders and smoking appears to differ by specific personality disorder, with some of the strongest relations being evident for antisocial personality disorder.

Discussion—These novel empirical findings are discussed in relation to the relevance of cigarette smoking among those with personality disorders.

Keywords

Personality Disorder; Smoking; Tobacco; Nicotine Dependence; Comorbidity (Co-occcurrence)

There has been growing interest in the co-occurrence of mental disorders and substance use disorders. For example, the United States (U.S.) Epidemiological Catchment Area (ECA)

study found that, among those respondents with a lifetime alcohol use disorder (alcohol abuse or dependence), 37% had at least one other axis I mental disorder and 22% had another drug disorder (Regier et al., 1990). For persons with any lifetime axis I mental disorder, 29% had some type of substance use disorder (Regier et al., 1990). Similar types of findings have been reported in other representative surveys (e.g. Kessler et al, 1996; Henderson et al., 2000).

Empirical work also indicates that personality disorders often are associated with substance use disorders. For example, Nace and colleagues found that 57% of psychiatric inpatients in a community-based addiction treatment center had at least one personality disorder (Nace et al., 1991). Other work indicates that borderline personality disorder and antisocial personality disorder, in particular, tend to demonstrate robust and consistent associations with substance use disorders compared to other personality disorders (e.g. De Jong et al., 1993; Oldham et al., 1995; Sher & Trull, 2002). Although such scientific work highlights an association between personality disorders and substance use disorders, including alcohol use disorder, markedly less information has been focused on tobacco use and its disorders. Such oversight is unfortunate, as cigarette smoking remains a leading cause of morbidity and mortality in industrialized countries despite systematic efforts to prevent and control its use (Centers for Disease Control [CDC], 2008).

Specific personality traits, such as neuroticism and alienation, are associated with cigarette smoking (Goodwin & Hamilton, 2002; Welch & Poulton, 2009). For example, Kahler and colleagues found that daily cigarette smokers reported being more reactive to stress, more aggressive and alienated, as well as less harm avoidant than former smokers and never-smokers (Kahler et al., 2009). In this same study, former smokers and never-smokers showed similar types of personality profiles (Kahler et al., 2009). There also is evidence that specific personality traits, particularly negative affectivity (neuroticism), are strong and reliable predictors of failure during smoking cessation attempts (e.g. Piasecki et al., 1997; Ziedonis et al., 2008). Overall, this corpus of scientific work suggests that important linkages exist between certain personality characteristics and cigarette smoking.

Despite observed associations between personality traits and smoking, there is limited work on personality disorders and smoking and nicotine dependence. In perhaps the most direct exploration of this issue, Black and colleagues found that adult cigarette smokers had increased rates of personality disorders, along with other mood, anxiety, and substance use disorders among a non-representative sample from the community (Black et al., 1999). There also is evidence that specific personality disorder traits or symptoms are associated with nicotine dependence among adults (Williams et al., 1996). For example, Kolliakou and Joseph (2000) found that schiztypal and borderline personality traits were associated with greater tobacco use among a community-based adult sample (*n* = 192). In another study, Trull and colleagues found Cluster A symptoms (i.e., levels of oddness, eccentricity, and introversion symptoms) were significantly related to tobacco dependence among young adults (Trull et al., 2004).

Although intriguing, extant work addressing personality disorders and cigarette smoking is limited in at least three notable ways. First, it remains unclear the extent to which personality disorders are associated with cigarette smoking in a representative sample of adults. Thus, there is an abscence of generalizable data pertaning to the degree of co-occurrence between personality disorders and cigarette use among adults. Second, although some work has found certain personality disorders are associated with greater rates of cigarette use (Kalliakou & Joseph, 2000), it is unclear whether nicotine dependence might explain, in part, the relation between personality disorders and cigarette smoking. This limitation is regrettable, as empirical work has found that specific personality disorder traits

or symptoms are associated with nicotine dependence (Williams et al., 1996). It is possible that nicotine dependence may be particularly elevated among cigarette smokers with personality disorders. Third, to the extent there is indeed a relation between personality disorders and cigarette smoking, it is presently unknown whether observed associations are, in fact, evident after adjusting for socio-demographic variables and co-occurring anxiety/ mood disorders as well as alcohol and illicit drug use. Thus, the extent to which personality disorders are uniquely associated with cigarette use, or perhaps nicotine dependence, among adults while simultaneously adjusting for commonly co-occuring factors related to both these sets of factors remains unclear (Ziedonis et al., 2008).

The overarching goal of the current study is to begin to fill some central gaps in the personality disorder-smoking literature. First, it was hypothesized that there would be a significant association between personality disorders and cigarette smoking, particularly Cluster A disorders, as this relation has been evident in some past work focused on personality disorder symptoms among young adults (Trull et al., 2004). Additionally, it was hypothesized that a signifcant relation between antisocial personality disorder and cigarette smoking would be evident due to strong linkages between this disorder and substance use behavior in general (Nace et al., 1991). In contrast, we predicted that cluster C (i.e., anxious or avoidant) personality disorders would be inversely associated with cigarette use, again, consistent with some previous work focused on other types of substance use disorders (i.e, non-tobacco; Nace et al., 1991). Second, it was hypothesized that relations between personality disorders and smoking, when evident, would be largely accounted for by nicotine dependence. This hypothesis was guided by previous work suggesting that those with, compared to those without, personality disorders (Kalliakou & Joseph, 2000), tend to exhibit greater rates of cigarette use, thereby, possibly representing greater a degree of nicotine addiction (Williams et al., 1990). Finally, it was hypothesized that adjusting for anxiety/mood disorders and alcohol and illicit substance use would attenuate, but not fully eliminate, the hypothesized personality disorder-smoking associations. This hypothesis was broadly formulated, in part, on the robust nature of some past observations between certain personality disorders and cigarette smoking (Kalliakou & Joseph, 2000).

Method

Participants

The sample was drawn from participants in the 2001–2002 National Epidemiologic Survey of Alcohol and Related Conditions (NESARC), a nationally representative United States survey of 43,093 civilian, non-institutionalized, participants ages 18 and older (sampled cross-sectionally). Details of the sampling frame are described elsewhere (please see Grant, Moore et al., 2003; Grant, Stinson et al., 2004; Compton et al., 2004). The National Institute on Alcohol Abuse and Alcoholism (NIAAA) sponsored the study and supervised the fieldwork, conducted by the U.S. Bureau of the Census. Young adults, Hispanics, and African-Americans were oversampled, and the study achieved an overall response rate of 81%. To adjust for non-response and selection probability, the sample was weighted and adjusted to reflect the U.S. population from the 2000 Decennial Census in terms of age, race, sex, and ethnicity. The research protocol, including informed consent procedures, received full ethical review and approval from the U.S. Census Bureau and U.S. Office of Management and Budget.

Interviewers, Training, and Field Quality Control

Interviewing was conducted by 1,800 professional interviewers from the Census Bureau using computer-assisted software with built-in skip, logic, and consistency checks. All interviewers had experience with other national health-related surveys with an average of

five years of experience, and were further trained for 10 days under the direction of NIAAA. Verification of the interviewer was conducted by regional supervisors who re-contacted a random 10% of all respondents for quality control purposes. In addition, a randomly selected subset of respondents was re-interviewed with 1 to 3 complete sections of the AUDADIS-IV. This evaluation served as a test-retest reliability study of NESARC measures (Grant, Dawson et al., 2003). In the few cases when accuracy was uncertain, the data were discarded and a supervising interviewer repeated the interview.

Measures

Diagnoses were assessed with the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV (AUDADIS-IV; Grant et al., 2001). This instrument was specifically designed for experienced, yet lay (i.e., non-professional) interviewers and was developed to advance measurement of substance use and mental disorders in large-scale surveys. Nicotine dependence was assessed in a unique module separate from the assessment of other substance use. Respondents were considered to have ever used cigarettes if they have smoked 100 or more cigarettes during their lifetime. Four other modes of nicotine use were assessed as well: pipe, cigar, snuff, and chewing tobacco use. The test-retest reliability of the nicotine use variables as well as other AUDADIS-IV nicotine use measures (e.g. frequency and duration of use), were excellent, with interclass correlation coefficients of 0.83 to 0.84 (Grant, Moore et al., 2003).

Assessment of cigarette use and nicotine dependence was based on the unique characteristics of nicotine dependence as distinct from other substances. To that end, the AUDADIS-IV used an extensive list of over 40 questions to assess nicotine dependence, and obtains extensive information on time frames of nicotine use and dependence. Diagnoses were made according to the DSM-IV criteria (Grant et al., 2001). Criteria for nicotine dependence include the endorsement of at least 3 of the following 7 symptoms: (1) the need for more nicotine to achieve desired effect; (2) the subject meets the criteria for nicotine withdrawal syndromes; (3) the use of tobacco by the subject more than the subject intended; (4) the persistent desire or unsuccessful efforts to cut down on nicotine use; (5) the great deal of time spent using tobacco (e.g. chain smoking); (6) the necessity to give up activities in favor of nicotine use; (7) and the continued use despite recurrent physical or psychological problems likely to have been caused by nicotine use. Nicotine withdrawal was assessed as a syndrome as described by the DSM-IV based on four symptoms: (1) the use of nicotine upon waking; (2) the use of nicotine after being in a situation in which nicotine was restricted; (3) the use of nicotine to relieve or avoid withdrawal symptoms; (4) the need to wake up in the middle of the night to use nicotine. Time frames for diagnosis included the previous 12-month period and prior to the previous 12-month period.

The reliability and validity of the nicotine dependence diagnosis was assessed via random subsample of 347 respondents who were re-interviewed with the nicotine dependence module up to 10-weeks after the initial interview (American Psychological Association [APA], 1994). The reliability of the previous 12-month (i.e. current) diagnosis was good ($k = 0.63$). Further, a series of linear regression analyses were used to validate the diagnoses by examining the association between nicotine dependence and Short-Form-12v2 (an often used measure of generic quality of life which generates 10 component and profile scores assessing various dimensions of physical and mental disability; Ware et al., 2002) physical disability scores. Analyses were controlled for age, personality disorders, current comorbid alcohol and drug use, and mood and anxiety disorders.

Mood and anxiety disorders assessed by the AUDADIS-IV included primary major depression, dysthymia, bipolar, generalized anxiety disorder, panic disorder with or without agoraphobia, social phobia, and specific phobia. Diagnoses included a requirement of

distress and/or social or occupational dysfunction (as per DSM-IV requirement). Rule outs included substance-induced disorders or those due to bereavement. The reliability and validity of mood and anxiety disorder diagnoses and symptom items were fair to good (kappas .42–.64), including test-retest and clinical re-appraisal studies. Each mood and anxiety disorder has been further validated by showing highly significant associations with disability (Raiha et al., 1998; Grant, Stinson et al., 2004; Grant, Hasin et al., 2005). Details of the depression, generalized anxiety (Grant, Hasin et al., 2005), bipolar (Grant, Stinson et al., 2005), social anxiety (Grant, Stinson et al., 2005) and panic (Grant et al., 2006) diagnoses have been described in detail elsewhere (please see Grant, Hasin et al., 2004; Grant, Stinson et al., 2005; Grant et al., 2006).

Personality disorders (PDs), assessed on a lifetime basis, included DSM-IV avoidant, dependent, obsessive-compulsive, paranoid, schizoid, and antisocial personality disorders (APD). DSM-IV PD diagnoses require long-term patterns of social/occupational impairment and exclusion of substance-induced cases; AUDADIS-IV PD diagnoses were made accordingly (Grant, Hasin, Stinson et al., 2004; Grant, Hasin et al., 2005; Compton et al., 2005)

Statistical Analyses

Analyses were conducted using STATA to derive standard errors that account for the complex sampling scheme of the dataset. Weighted percentages were obtained to describe the subpopulations of cigarette users with specific personality disorders, including those who have never used cigarettes, non-dependent cigarette users, and nicotine dependent cigarette users (current and remitted). Odds ratios (ORs) were then derived to establish the association between personality disorders (lifetime) and levels of cigarette smoking. Next, adjusted odds ratios were calculated first adjusting for age (18–29, 30–44, 45–64, 65+), gender (Male, Female), marital status (never married, separated/divorced, married, widowed), and personal income ($0–19,999, $20,000–34,999, $35,000–69,999, $70,000+). Analyses were subsequently additionally adjusted for any mood or anxiety disorders, and for alcohol and illicit drug dependence in order to estimate the unique explanatory power offered by a personality disorder in the context of the modeled smoking variables.

Results

Association between Current Cigarette Smoking and Personality Disorders

Current smoking, without nicotine dependence, was associated with significantly lower odds of having avoidant personality disorder or obsessive-compulsive personality disorder, compared with those who never smoked a cigarette (see Table 1). This association persisted after adjusting for demographic differences. In contrast, current smoking was associated with increased odds of antisocial personality disorder (see Table 2). There was no statistically significant relation between current smoking (no nicotine dependence) and dependent, paranoid, schizoid or histrionic personality disorder (see Tables 1–3).

Current smoking, with nicotine dependence, was associated with significantly increased odds of all personality disorders, with dependent and antisocial personality disorders having the strongest associations (see Table 2).

Association between History of Cigarette Smoking (Former Non-dependent Smoking) and Personality Disorders

History of non-dependent smoking was associated with significantly lower odds of having schizoid,dependent, paranoid, histrionic and antisocial personality disorder although the associations with paranoid, histrionic and antisocial personality disorder were no longer

statistically significant after adjustment for alcohol and illicit drug dependence. There was no significant association between history of non-dependent smoking and avoidant or obsessive-compulsive personality disorder.

History of Dependent Cigarette Smoking (Former Dependent Smoking) and Personality Disorders

History of dependent smoking was associated with significantly increased odds of antisocial and obsessive-compulsive personality disorder and these associations remained significant after adjustment. History of dependent smoking was also associated with significantly increased odds of paranoid, schizoid, histrionic, avoidant and dependent personality disorders though these associations were no longer statistically significant after adjusting for moor and anxiety disorders.

Discussion

The purpose of the present investigation was to examine the relation between cigarette smoking and personality disorders employing a representative sample of adults from the U.S. Results indicated that current smoking, without nicotine dependence, was significantly associated with increased odds of antisocial personality disorder. No such current smoking without nicotine dependence-personality disorder association was evident for dependent, paranoid, schizoid, or histrionic personality disorder. Additionally, current smoking, without nicotine dependence, was associated with signifcantly decreased odds of avoidant personality disorder and obsessive-compulsive personality disorder compared with those who never smoked. These findings suggest a generally modest association between non-nicotine dependent smoking and personality disorders with the exception of antisocial personality disorder. Interestingly, when current smoking, with nicotine dependence, was evaluated, there were significant increased odds for all personality disorders, with dependent and antisocial personality disorders having the strongest associations (see Table 2). Thus, nicotine dependent smoking appears to maintain the strongest and most consistent linkages with the studied personality disorders. The current smoking-antisocial personality disorder association was striking and highly clinically significant, as (1) approximately 38% of those with antisocial personality disorder were a current smoker (non-nicotine dependent) compared to approximately 18% of persons without this personality disorder; and (2) approximately 63% of those with antisocial personality disorder were currently nicotine dependent ompared to approximately 17% of those without the disorder. These findings are broadly consistent with previous research documenting strong linkages between antisocial personality disorder and substance use behavior and disorders (e.g., Nace et al., 1991), and uniquely extend such work to current smoking, both with and without nicotine dependence, in a representative sample of adults.

A second set of analyses sought to explicate the association between history of smoking, nicotine dependence, and personality disorders. In terms of Cluster A personality disorders, an overarching patten of consistency was evident. Specifically, both paranoid personality disorder and schizoid personality disorder were associated with a significantly increased likelihood of current and past dependent smoking. In both instances, the strength of the observed association was attenuated after adjusting for mood/anxiety disorders. In terms of non-dependent smoking, there was no notable association between paraonoid or schizoid personality disorder and non-dependent smoking. In contrast, both paranoid and schizoid personality disorders were significantly inversely associated with former non-dependent smoking, though the significance of the association disappeared for paranoid personality disorder after adjusting for alcohol and drug use disorders. Again, this pattern of findings suggests that the smoking-Cluster A disorders link is influenced by nicotine dependence and it appears uncommon for paranoid or schizoid personality disorder to be associated with

former non-dependent smoking, and is only associated with nicotine-dependent current smoking. Although speculative, this set of findings may mean that these persons are less likely to experiment with cigarettes but are more likely to become addicted to tobacco. A similar pattern was evident between histrionic personality disorder (representing Cluster B) and the Cluster C disorders and dependent and non-dependent current and former smoking. It appears that all personality disorders, with the exception of antisocial as discussed above, are not associated with non-nicotine dependent smoking—either current or former. All of these personality disorders are strongly associated with current and former nicotine dependent smoking, although the strength of the associations are reduced in some cases with adjustment for co-occurring mood and anxiety disorders and alcohol and illicit drug dependence.

There are a variety of limitations and directions for future investigations that should be noted. First, the cross-sectional design of this study does not permit causal conclusions regarding the direction of the observed associations. Future prospective work using longitudinal data could be useful next steps for work directed at isolating onset and patterning between certain personality disorders and smoking as well as nicotine dependence. Second, while these results are generalizable to the adult U. S. population, it is not clear whether they are applicable internationally. Future studies examining the cross-national consistency of the current findings are therefore important. Third, the present study was primarily focused on clarifying if a relation was evident between smoking, nicotine dependence, and personality disorders among adults. Future investigations could usefully build upon such work by attempting to explicate mediating and moderating processes involved in such linkages. Another direction of potential promise would be to explicate the explanatory value of the co-occurrence of personality disorders and smoking rate and nicotine dependence. It is possible that greater levels of personality co- or multi-morbidity may be related to more severe tobacco problems. Finally, the current study permitted an evaluation of many psychological disorders. However, borderline personality disorder was not assessed in the study. Moreover, the assessment of posttraumatic stress disorder was not carried out in the current investigation. Future work would therefore benefit by examining smoking and nicotine dependence among those with such conditions as borderline personality disorder and posttraumatic stress disorder.

Despite the noted limitations, the current findings have some direct clinical application. First, greater degrees of clinical attention could possibly be directed at assessing and addressing smoking and nicotine dependence in the context of (specific) personality disorder intervention (e.g., treatment for antisocial or dependent personality disorder). This work may include any programs offered in psychiatric treatment settings given the high rates of co-occurrence of personality disorders with Axis I disorders. The current findings similarly suggest that smoking cessation efforts that do not address nicotine dependence may be less successful with those with personality disorders. A second key implication is that the results have potential implications for both understanding the etiology and improving treatment for smoking/nicotine dependence. The reason that personality disorders are only associated with nicotine-dependent smoking, and not with non-dependent, could suggest that there may be: a) common biological underpinnings for both personality disorders and nicotine dependence; b) a common heritable component to both; and/or c) common environmental antecedents to both. Longitudinal studies might help to discern the sequence of these events and whether there may be potential causal relations between these two variables. Future studies that can investigate all of these possibilities are needed to better understand the mechanisms driving these observed associations.

Together, the findings of the present investigation suggest a substantial percentage of those with personality disorders are nicotine dependent. Additionally, the association between

personality disorders and smoking appears to differ by specific personality disorder, with some of the strongest relations being evident for antisocial personality disorder.

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Table 1

Personality Disorders, Smoking and Nicotine Dependence

	No paranoid personality disorder	Paranoid personality disorder	OR (95% CI)[•]	AOR[1] (95% CI)[•]	AOR[2] (95% CI)[•]	No Schizoid personality disorder	Schizoid personality disorder	OR (95% CI)	AOR[1] (95% CI)[•]	AOR[2] (95% CI)[•]
	41.73% (16921)	51.95% (1092)	1.76 (1.61,1.93)	1.39 (1.27,1.54)	1.57 (1.43,1.73)	41.94% (17289)	50.81% (724)	1.54 (1.38,1.71)	1.22 (1.09,1.37)	1.41 (1.26,1.58)
ing	25.01% (10250)	41.24% (868)	2.05 (1.86,2.26)	1.56 (1.41,1.73)	1.79 (1.61,1.98)	31.25% (10560)	45.66% (558)	1.81 (1.61,2.04)	1.38 (1.22,1.56)	1.64 (1.45,1.86)
g	90.20% (15221)	93.04% (1016)	1.61 (1.26,2.04)	1.35 (1.05,1.72)	1.62 (1.25,2.08)	90.24% (15560)	93.51% (677)	1.65 (1.22,2.24)	1.41 (1.04,1.91)	1.58 (1.16,2.16)
er,	18.76% (5295)	18.07% (213)	1.01 (.87,1.18)	1.00 (.85,1.17)	0.94 (.80,1.10)	18.76% (5367)	17.52% (141)	0.89 (.75,1.09)	0.89 (.73,1.08)	0.86 (.71,1.04)
er,	16.51% (6562)	9.16% (185)	**0.82 (.69,.96)**	**0.81 (.69,.95)**	0.86 (.73,1.01)	16.34% (6602)	10.61% (145)	**0.79 (.66,.95)**	**0.78 (.65,.94)**	**0.82 (.69,.99)**
er,	17.77% (4955)	40.41% (655)	**3.05 (2.74,3.39)**	**1.98 (1.76,2.22)**	**2.63 (2.34,2.95)**	18.72% (5193)	38.58% (417)	**2.65 (2.33,3.01)**	**1.71 (1.49,1.96)**	**2.41 (2.09,2.77)**
er,	3.60% (1241)	4.48% (86)	**1.67 (1.33,2.09)**	1.13 (.89,1.44)	**1.73 (1.38,2.18)**	3.62% (1269)	4.535 (58)	**1.49 (1.14,1.96)**	1.04 (.78,1.37)	**1.50 (1.14,1.98)**

e, sex, marital status, income

d for any mood or anxiety disorders

d for alcohol dependence and illicit drug dependence

Table 2

...sonality disorders, smoking, and nicotine dependence

	No histrionic personality disorder	Histrionic personality disorder	OR (95% CI)•	AOR[1] (95% CI)•	AOR[2] (95% CI)•	No antisocial personality disorder	Antisocial personality disorder	OR (95% CI)•	AOR[1] (95% CI)•	AOR[2] (95% CI)•
	42.01% (17578)	53.90% (435)	1.84 (.59,2.12)	1.46 (1.27,1.69)	1.39 (1.20,1.63)	41.19% (16983)	72.48% (1030)	3.96 (3.51,4.47)	3.48 (3.08,3.93)	3.31 (2.91,3.76)
	31.36% (10761)	50.28% (357)	2.09 (1.79,2.44)	1.59 (1.36,1.86)	1.50 (1.27,1.77)	30.39% (10282)	70.55% (836)	4.59 (4.03,5.22)	3.91 (3.43,4.45)	3.76 (3.27,4.33)
	90.30% (15831)	93.33% (406)	1.69 (1.16,2.49)	1.44 (.98,2.11)	1.62 (1.07,2.45)	90.11% (15262)	94.66% (975)	2.26 (1.71,2.99)	2.06 (1.56,2.73)	2.43 (1.78,3.33)
	18.78% (5445)	15.14% (63)	0.76 (.58,1.00)	0.75 (.57,.99)	0.60 (.45,.81)	18.34% (5291)	38.34% (217)	**2.17 (1.82,2.59)**	**2.17 (1.82,2.60)**	**1.96 (1.62,2.37)**
	16.31% (6687)	17.79% (60)	**0.72 (.55,.95)**	**0.71 (.54,.94)**	0.75 (.57,1.00)	16.38% (6626)	9.26% (121)	**0.78 (.64,.95)**	**0.78 (.64,.95)**	0.85 (.69,1.04)
	18.42% (5316)	15.44% (294)	**3.32 (2.83,3.90)**	**2.19 (1.85,2.59)**	**2.32 (1.93,2.78)**	17.49% (4991)	63.95% (619)	**7.00 (6.10,8.03)**	**5.45 (4.74,6.28)**	**5.71 (4.91,6.64)**
	3.62% (1289)	5.08% (38)	**1.97 (1.41,2.76)**	1.35 (.96,1.91)	**2.00 (1.41,2.83)**	3.46% (1211)	8.92% (116)	**3.48 (2.83,4.28)**	**2.83 (2.29,3.50)**	**3.67 (2.95,4.55)**

...sex, marital status, income

...or any mood or anxiety disorders

...or alcohol dependence and illicit drug dependence

OR² (95% CI)	No dependent personality disorder	Dependent personality disorder	OR (95% CI)	AOR¹ (95% CI)	AOR² (95% CI)	No obsessive compulsive personality disorder	Obsessive compulsive personality disorder	OR (95% CI)	AOR¹ (95% CI)	AOR² (95% CI)
.39 (1.22,1.59)	42.16% (17895)	57.00% (118)	2.13 (1.61,2.82)	1.47 (1.10,1.95)	1.54 (1.14,2.09)	41.75% (16447)	48.07% (1566)	1.35 (1.26,1.45)	1.16 (1.07,1.25)	1.27 (1.18,1.37)
.50 (1.29,1.75)	31.64% (11020)	52.69% (98)	2.60 (1.94,3.49)	1.65 (1.22,2.23)	1.80 (1.29,2.50)	31.12% (10088)	39.58% (1030)	1.44 (1.32,1.57)	1.18 (1.08,1.29)	1.32 (1.21,1.44)
.93 (1.28,2.91)	90.33% (16123)	96.61% (114)	3.44 (1.26,9.33)	2.56 (.94,7.00)	2.59 (.95,7.09)	90.22% (14798)	90.22% (14798)	1.27 (1.05,1.54)	1.13 (.93,1.37)	1.28 (1.05,1.56)
.62 (.47,.81)	18.?5% (5495)	12.87% (13)	0.72 (.40,1.31)	0.71 (.39,1.28)	0.64 (.34,1.18)	19.01% (5242)	14.47% (266)	0.72 (.63,.82)	0.71 (.62,.81)	0.68 (.59,.78)
.92 (.73,1.15)	16.?0% (6736)	5.58% (11)	0.41 (.22,.77)	0.41 (.22,.78)	0.46 (.25,.88)	16.26% (6293)	14.86% (454)	1.08 (.96,1.20)	1.07 (.96,1.20)	1.10 (.99,1.23)
.34 (1.99,2.76)	18.?3% (5525)	49.13% (85)	4.27 (3.15,5.79)	2.13 (1.54,2.94)	2.87 (2.02,4.08)	17.83% (4846)	32.71% (764)	2.18 (1.99,2.39)	1.61 (1.46,1.77)	2.01 (1.82,2.22)
.06 (1.52,2.78)	3.?% (1316)	5.58% (11)	1.98 (1.07,3.66)	1.19 (.63,2.22)	2.20 (1.18,4.10)	3.35% (1122)	7.30% (205)	2.51 (2.15,2.93)	2.02 (1.71,2.38)	2.53 (2.16,2.97)