

Prevalence, Correlates, and Disability of Personality Disorders in the United States: Results From the National Epidemiologic Survey on Alcohol and Related Conditions

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Objective: To present nationally representative data on the prevalence, sociodemographic correlates, and disability of 7 of the 10 DSM-IV personality disorders.

Method: The data were derived from the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (N = 43,093). Diagnoses were made using the Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV Version, and associations between personality disorders and sociodemographic correlates were determined. The relationship between personality disorders and 3 emotional disability scores (Short-Form 12, version 2) was also examined.

Results: Overall, 14.79% of adult Americans (95% CI = 14.08 to 15.50), or 30.8 million, had at least 1 personality disorder. The most prevalent personality disorder in the general population was obsessive-compulsive personality disorder, 7.88% (95% CI = 7.43 to 8.33), followed by paranoid personality disorder 4.41% (95% CI = 4.12 to 4.70), antisocial personality disorder 3.63% (95% CI = 3.34 to 3.92), schizoid personality disorder 3.13% (95% CI = 2.89 to 3.37), avoidant personality disorder 2.36% (95% CI = 2.14 to 2.58), histrionic personality disorder 1.84% (95% CI = 1.66 to 2.02), and dependent personality disorder 0.49% (95% CI = 0.40 to 0.58). The risk of avoidant, dependent, and paranoid personality disorders was significantly greater among women than men (p < .05); the risk of antisocial personality disorder was greater among men compared with women (p < .05); and no sex differences were observed in the risk of obsessive-compulsive, schizoid, or histrionic personality disorders. In general, risk factors for personality disorders included being Native American or black, being a young adult, having low socioeconomic status, and being divorced, separated, widowed, or never married. Avoidant, dependent, schizoid, paranoid, and antisocial personality disorders (p < .02 to p < .0001) were each statistically significant predictors of disability. Obsessive-compulsive personality disorder was inconsistently related to disability. In contrast, disability was not significantly different among individuals with histrionic personality disorder compared with those without the disorder.

Conclusion: Personality disorders are prevalent in the general population and are generally highly associated with disability. This study highlights the need to develop more effective and targeted prevention and intervention initiatives for personality disorders.

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Dersonality disorders are pervasive, inflexible, and enduring patterns of inner experiences and behavior that can lead to clinically significant distress or impairment in social, occupational, or other areas of functioning.¹ Personality disorders have been associated with several adverse consequences in the general population, including marital difficulties, occupational dysfunction, and criminal behaviors.²⁻⁴ While personality disorders are major mental health problems in their own right, they frequently co-occur with one another and with other psychiatric disorders.^{5,6} Clinical studies have shown that personality disorders complicate the course of some Axis I psychiatric disorders^{7,8} and are associated with increased likelihood of relapse and treatment dropout, greater global impairment, and decreased psychiatric functioning among substance abusers.9-15

Although large nationally representative surveys have been conducted on the prevalence and sociodemographic correlates of major classes of psychiatric disorders,¹⁶⁻¹⁸ including affective disorders, anxiety disorders, substance use disorders, and psychotic disorders, only a single personality disorder, antisocial personality disorder, was assessed in these studies. There has been only one attempt to determine the prevalence and correlates of all personality disorders in a large nationally representative sample.¹⁹ The 1997 National Survey of Mental Health and Wellbeing, conducted in Australia, assessed the 9 personality disorders defined in the *International Classification of Diseases*, Tenth Edition (ICD-10).²⁰ To date, no similar national survey has been conducted in the United States, and no prevalence information for personality disorders based on the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (DSM) is available at the national level.

National prevalence studies of personality disorders have important public health implications. Knowledge of the prevalence of personality disorders contributes to the assessment of the mental health of the nation and determines the scope of those disorders confronting the nation. For policy and prevention efforts, accurate information on prevalence and the identification of vulnerable subgroups of the population might highlight the need for focused planning at both the national and local levels. The fact that accurate data on the prevalence and sociodemographic correlates of personality disorders have not been available in the United States reflects a major gap in public health information. The present study was designed, in part, to address this gap.

Accordingly, this report presents nationally representative data on the prevalence and sociodemographic correlates of 7 of the 10 personality disorders defined in the DSM-IV¹ that were assessed in the National Institute on Alcohol Abuse and Alcoholism's (NIAAA) 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC).²¹ Because of the large sample size of the NESARC (N = 43,093), the associations between sociodemographic characteristics and specific personality disorders could be determined and are presented in this report for avoidant, dependent, obsessive-compulsive, paranoid, schizoid, histrionic, and antisocial personality disorders. In addition, associations between each of these personality disorders and disability are examined in order to demonstrate the criteria for clinical significance of mental disorders as defined in the DSM-IV. This report also compares text information on prevalence and sex differences of personality disorders appearing in the DSM-IV with the results of the present study. This comparison highlights the differences and similarities between the prevalences and sex differentials that are currently based on clinical studies of patients and local community surveys and the results of this nationally representative sample.

METHOD

NESARC Sample

The 2001–2002 NESARC is a representative sample of the United States sponsored by the NIAAA that has been

described in detail elsewhere.^{21,22} The target population of the NESARC was the civilian noninstitutionalized population, 18 years and older, residing in the United States and the District of Columbia, including Alaska and Hawaii. The sample included persons living in households, living off base in the military, and living in the following group quarters: boarding houses, rooming houses, nontransient hotels and motels, shelters, facilities for housing workers, college quarters, and group homes. Face-to-face personal interviews were conducted with 43,093 respondents. The fieldwork for the NESARC was conducted by the U.S. Census Bureau. The sampling frame response rate was 99%, the household response rate was 89%, and the person response rate was 93%, yielding an overall survey response rate of 81%.

Blacks, Hispanics, and young adults were oversampled in the NESARC. Oversampling increased the proportion of Hispanic and black households to approximately 20% each of the total sample. For each housing unit, 1 person was selected randomly from the household, and young adults (aged 18–24 years) were oversampled at a rate of 2.25:1.00.

The NESARC data were weighted to reflect the probabilities of selection of primary sampling units (PSUs) within stratum and for the selection of housing units within the sample PSUs. The data were also weighted to (1) account for the selection of one sample person from each household, (2) account for oversampling of young adults, (3) adjust for nonresponse at the household level and person level, and (4) reduce the variance arising from selecting PSUs to represent an entire stratum. The weighted data were then adjusted to be representative of the civilian noninstitutionalized population of the United States for a variety of socioeconomic variables including region, age, sex, and race-ethnicity using the 2000 Decennial Census of Population and Housing.

Interviewers and Interviewer Training

Experienced lay interviewers from the U.S. Census Bureau administered the NESARC interviews. On average, the more than 1800 NESARC interviewers had 5 years of experience working on census and other healthrelated surveys. The interviewers completed 10 days of training, which was standardized through centralized training sessions under the direction of NIAAA and Census Headquarters staff.

Regional supervisors recontacted a random 10% sample of NESARC respondents for quality control purposes. In addition, 2657 NESARC respondents were randomly selected to participate in a face-to-face reinterview study after completion of their NESARC interview. Each of these respondents was readministered 1 to 3 complete sections of the NESARC survey instrument. These interviews not only served as an additional rigorous check on survey data quality, but also formed the basis of the test-

retest reliability study of the new modules of the survey instrument, including personality disorders.²³

Diagnostic Assessment

The diagnoses presented in this report were made using the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV Version (AUDADIS-IV),²⁴ a state-of-the-art structured diagnostic interview designed for use by lay interviewers.

The diagnosis of personality disorders requires an evaluation of the individual's long-term patterns of functioning.^{1(p630)} Diagnoses of personality disorders in the AUDADIS-IV were made accordingly. Respondents were asked a series of personality symptom questions about how they felt or acted most of the time throughout their lives regardless of the situation or whom they were with. They were instructed not to include symptoms limited to times when they were depressed, manic, anxious, drinking heavily, using medicines or drugs, experiencing withdrawal symptoms (defined earlier in the interview), or physically ill.

To receive a DSM-IV personality disorder diagnosis, respondents had to endorse the requisite number of DSM-IV symptom items for the particular personality disorder, and at least 1 endorsed symptom must have caused social and/or occupational dysfunction. Multiple symptom items were used to operationalize the more complex criteria associated with certain personality disorders. The following numbers of symptom items were used to assess each personality disorder: avoidant, 7; dependent, 8; obsessive-compulsive, 10; paranoid, 9; schizoid, 10; histrionic, 11; and antisocial, 30. Because of time and space constraints, not all DSM-IV personality disorders were assessed in wave 1 of the NESARC. The decision to exclude borderline, schizotypal, and narcissistic personality disorders was based on the larger number of symptom items required to operationalize the disorders relative to those personality disorders assessed in wave 1 (i.e., borderline, 18 items; schizotypal, 16 items; and narcissistic, 19 items). However, in the follow-up wave 2 of the NESARC, borderline, schizotypal, and narcissistic personality disorders will be included.

The reliability of AUDADIS-IV categorical diagnoses and dimensional scales of each personality disorder was assessed in a test-retest study conducted as part of the NESARC survey proper.²³ A random subsample of 282 respondents was reinterviewed with the antisocial personality disorder module, and another subsample of 315 respondents was reinterviewed with the AUDADIS-IV modules containing the remaining personality disorder measures. All reinterviews were conducted by interviewers blind to the results of the original interview approximately 10 weeks after the NESARC interviews. The reliability of the personality disorder diagnoses in these community samples ranged from fair to good, from kappa = 0.40 for histrionic personality disorder to kappa = 0.67 for antisocial personality disorder. Reliability coefficients for each of the associated personality disorder scales were much greater (intraclass correlation coefficients = 0.50–0.79). Reliabilities of the AUDADIS-IV personality disorder diagnoses compare favorably with those found in short-term test-retest studies using semistructured personality interviews in treated samples of patients.²⁵

Disability

The validity of the AUDADIS-IV personality disorders was assessed by examining the relationship between each personality disorder and 3 Short-Form 12, version 2, (SF-12v2)²⁶ emotional disability scores, controlling for age, all other personality disorders, and DSM-IV Axis I disorders (i.e., major depression, dysthymia, mania, hypomania, panic disorder with and without agoraphobia, social phobia, specific phobia, generalized anxiety disorder, and substance use disorders) assessed in the NESARC. The SF-12v2 is a short version of the original SF-36 long form used to measure generic quality of life in large population surveys. The SF-12v2 yields 2 component summary scores and 8 profile scores that measure various dimensions of physical and mental disability. In the present study, disability assessment focused on 3 SF-12v2 disability scores: the mental component summary (MCS) score; the social functioning (SF) score, reflecting limitations in social functioning due to physical or emotional problems; and the role emotional (RE) function score, measuring role impairment due to emotional problems. Standard norm-based scoring techniques were used to transform each score to achieve a mean of 50 and a standard deviation of 10 in the general U.S. population. Alternate-form reliabilities of these scales are excellent in general population samples: MCS score, 0.86; SF score, 0.75; RE score, 0.74.²⁶

Statistical Analysis

Cross-tabulations were used to calculate prevalences of the DSM-IV personality disorders by sociodemographic correlates. Odds ratios were then used to examine associations between these sociodemographic correlates and each personality disorder. Associations between the MCS, SF, and RE disability scores of the SF-12v2 and personality disorders were examined in a series of linear regression analyses to determine if respondents with a specific personality disorder were more impaired than those who did not have that specific personality disorder. In each of these analyses, we controlled for age, all other personality disorders, and DSM-IV Axis I disorders assessed in the NESARC. Standard errors and 95% confidence intervals related to all of these analyses were estimated using SUDAAN,²⁷ a software package that uses Taylor series linearization to adjust for complex sample survey design characteristics.

RESULTS

Prevalence

Overall, 14.79% of adult Americans (95% CI = 14.08 to 15.50), or 30.8 million, had at least 1 personality disorder. The prevalences and population estimates for each personality disorder are presented in Table 1 for major sociodemographic subgroups of the population. The most prevalent personality disorder in the general population was obsessive-compulsive personality disorder (7.88% [95% CI = 7.43 to 8.33]), followed by paranoid personality disorder (4.41% [95% CI = 4.12 to 4.70]), antisocial personality disorder (3.63% [95% CI = 3.34 to 3.92]), schizoid personality disorder (3.13% [95% CI = 2.89 to 3.37]), avoidant personality disorder (2.36% [95% CI = 2.14 to 2.58]), histrionic personality disorder (1.84% [95% CI = 1.66 to 2.02]), and dependent personality disorder (0.49% [95% CI = 0.40 to 0.58]).

Sociodemographic Correlates

The associations between each personality disorder and sociodemographic correlates are shown in Table 2.

Avoidant personality disorder. The odds of avoidant personality disorder were significantly greater for women. The risk of avoidant personality disorder was about 1.6 times greater for Native Americans compared with whites. Respondents in the 30- to 44-year-old age group (OR = 1.77) were at greater risk and those in the 45- to 64-year-old (OR = 0.60) and 65 years and older (OR = 0.22) age groups were at significantly lower risk of having avoidant personality disorder compared with those in the 18- to 29-year-old age group. The odds of having avoidant personality disorder were also greater among respondents in the 3 lowest-income groups (0-19,999 OR = 4.18; 20,000-334,999 OR = 2.45;35,000-69,999 OR = 1.96). The odds of having avoidant personality disorder were 2.7 times greater among respondents with less than a high school education, 2.2 times greater among those with only a high school education, and 1.7 times greater among respondents with some college education compared with respondents with at least a 4-year college degree. Widowed/ divorced/separated and never-married respondents were about 1.6 times and 1.9 times, respectively, more likely to have avoidant personality disorder than respondents who were married or cohabiting. The odds of having avoidant personality disorder were significantly lower among respondents not residing in a central city (OR = 0.77) and those not residing in a metropolitan statistical area (MSA) (OR = 0.69) compared with residents living in the most urbanized areas. Respondents living in the Northeast region (OR = 0.70) were at lower risk of having avoidant personality disorder than respondents living in the West.

Dependent personality disorder. Women were at greater risk of having dependent personality disorder.

There were no differences found in the risk of dependent personality disorder among the race-ethnic subgroups of the population. Respondents in the 3 oldest age groups were at significantly lower risk of having dependent personality disorder than 18- to 29-year-old respondents. The odds of dependent personality disorder were significantly greater among respondents in the lowest-income group (OR = 14.58). The risk of dependent personality disorder was also significantly greater for the least educated groups (less than high school education, OR = 4.71; high school education, OR = 2.83; some college, OR = 1.78) compared with respondents with a bachelor's degree or higher. Widowed/divorced/separated (OR = 2.42) and never-married (OR = 2.28) respondents were at greater risk of dependent personality disorder compared with those who were married or cohabiting. There were no area or regional differences in the risk of dependent personality disorder.

Obsessive-compulsive personality disorder. There were no gender, income, marital status, or area differences in the odds of obsessive-compulsive personality disorder. The odds of this personality disorder were significantly lower for Asians (OR = 0.60) and Hispanics (OR = 0.71) relative to whites. The risk of obsessivecompulsive personality disorder was significantly lower among the oldest age group (OR = 0.62) compared with the youngest age group. The odds of obsessivecompulsive personality disorder were also significantly greater for respondents with some college education (OR = 1.18), but the effect size was small. Further, the risk of obsessive-compulsive personality disorder was significantly lower for respondents with less than a high school education (OR = 0.77) compared with those who had a bachelor's degree or higher.

Paranoid personality disorder. Women were at significantly greater risk of paranoid personality disorder. Blacks (OR = 2.15), Native Americans (OR = 3.12), and Hispanics (OR = 1.43) were at greater risk of paranoid personality disorder compared with whites. The risk of paranoid personality disorder was significantly lower for the 3 oldest age groups compared with the 18- to 29-yearold group. The odds of a paranoid personality disorder were significantly greater among respondents in the 2 lowest-income groups (\$0-\$19,999 OR = 3.55; \$20,000-34,999 OR = 2.39) compared with respondents in the highest-income group. The odds of paranoid personality disorder were significantly greater among respondents with less than a high school education (OR = 3.84), with a high school education (OR = 2.71), or with some college education (OR = 2.51) compared with those with at least a 4-year college degree. There was also an increased risk of paranoid personality disorder among respondents who were widowed/divorced/separated (OR = 1.94) or never married (OR = 2.03) compared with respondents who were married or cohabiting. The odds of paranoid person-

Table 1. Prevalence ^a and	Popul	ation E	stimate:	s ^b of L	VI-MSO	^r Persona.	lity Dis-	orders	Among	Socio	demos	graphic Su	bgrot	sdr							
	7	Avoidant			Depend	ent	Obsessi	ve-Con	npulsive		Paranc	id		Schizo	d		Histrio	nic		Antiso	cial
Sociodemographic Characteristic	%	SE Es	oulation	%	SE I	opulation Estimate	%	SE E	pulation stimate	%	E F	opulation Estimate	%	SE	opulation Estimate	%	SE	opulation Estimate	%	SE	^o opulation Estimate
Sex Male	190	14	905	04	0.07	365	79.0	86	7841	38	0.20	3813	3 2	0 18	3171	1 9	013	1880	v v	0.25	5506
Female	2.8 0	0.16	2990 2990	0.6	0.06	656	7.9 0.7	27	8541	5.0	0.20	5363	3.1	0.14	3327	1.8	0.11	1949	1.9	0.11	2048
Race-ethnicity																					
White	2.4 0	.13	3599	0.5	0.06	774	8.3 0	.26	12,209	3.7	0.17	5410	2.8	0.14	4103	1.8	0.10	2573	3.6	0.17	5326
Black	2.0 (.22	452	0.4	0.08	86	8.0 0.8	.39	1831	7.6	0.46	1743	4.9	0.35	1119	2.6	0.23	600	3.7	0.31	844
Native American	3.8 (.67	166	0.5	0.22	22	10.0	.42	439	10.0	1.33	470	6.3	1.14	278	2.4	0.57	105	9.7	1.36	428
Asian	2.2 (.44	202	0.5	0.19	43	5.1 0	.65	464	3.4	0.69	309	1.4	0.38	129	1.8	0.46	165	1.8	0.41	160
Hispanic	2.0 (.24	476	0.4	0.09	76	6.0 0	.37	1440	5.2	0.37	1245	3.6	0.33	870	1.6	0.20	386	3.3	0.31	796
Age, y	- - -	5	172	0	11	000		0	2010	0 9	<i>сс</i> 0	000	¢		1010	0 (LV L1	0		0000
10-29 30-44	2.1 2.1 0	110	1001	0.7	0.07	280 281	0.000	40	0715	0.0	CC.U	2005 2011	4. c	00.0	1910 2065	0.0 X X	00.0	11.75	7.0 7	10.0	0707
45-64	12	115	1344	10	0.07	250	0 67	32	5121	3.6	0.23	2291	3.0	0.20	1949	170	0.11	763	1 0	0.21	1844
65+	0.8	111	272	0.3	0.07	98	5.2 0.	30	1773	1.8	0.17	592	1.7	0.17	574	0.6	0.09	194	0.6	0.12	204
Income, \$/year																					
0-19,999	3.2 (.19	3164	0.9	0.10	890	7.6 0.	.30	7432	6.0	0.23	5876	3.8	0.19	3680	2.2	0.16	2186	3.8	0.21	3753
20,000 - 34,999	1.9 C	.18	668	0.2	0.04	93	8.1 0.	.41	3815	4.1	0.28	1939	3.1	0.23	1462	1.9	0.16	908	4.0	0.27	1898
35,000–69,999	1.5 0	0.17	669	0.1	0.03	28	8.3 0.	.41	3787	2.3	0.18	1063	2.3	0.22	1070	1.2	0.12	553	3.1	0.24	1435
70,000+	0.8 (0.20	133	0.1	0.05	11	8.0 0.8	.65	1348	1.8	0.28	298	1.7	0.30	286	1.1	0.21	182	2.8	0.38	468
Education																					
< 12 years	3.4 C	.32	1112	1.0	0.19	319	6.2 0	.46	2028	6.9	0.43	2250	4.0	0.33	1302	2.0	0.28	640	5.4	0.39	1750
12 years	2.8 C	.20	1707	0.6	0.08	361	7.3 0.	.34	4440	5.0	0.25	3040	3.3	0.20	2018	2.1	0.15	1290	3.9	0.24	2376
Some college/	2.2 (.17	1402	0.4	0.06	234	9.3 0.	.37	5802	4.6	0.26	2904	3.5	0.21	2205	2.2	0.14	1345	3.7	0.23	2325
2-year degree																					
Bachelor's degree	1.3 (.12	674	0.2	0.05	109	8.0 0.8	.37	4112	1.9	0.16	983	1.9	0.17	974	1.1	0.12	554	2.1	0.21	1102
or higher																					
Marital status																					
Married/living with	1.8 (.12	2330	0.3	0.05	417	8.0 0.8	.30	10, 191	3.3	0.17	4171	2.7	0.14	3424	1.2	0.10	1607	3.0	0.16	3852
someone as if married																					
Widowed/divorced/	2.9 (.21	1053	0.8	0.12	284	7.6 0	.34	2761	6.1	0.36	2226	3.5	0.23	1268	2.1	0.20	755	3.6	0.29	1290
separated	1			1			1												1		
Never married	3.5 (.26	1512	0.7	0.11	321	7.9 0	.34	3429	6.4	0.32	2779	4.2	0.27	1806	3.4	0.24	1467	5.6	0.33	2413
Urbanicity																					
MSA-in central city	2.3 (.19	1439	0.6	0.09	348	7.6 0	.38	4658	5.0	0.28	3080	3.5	0.22	2123	2.1	0.15	1265	4.3	0.30	2620
MSA—not in central city	2.1 (.15	2224	0.4	0.06	435	8.0 0.8	.32	8483	3.9	0.20	4144	2.9	0.17	3045	1.8	0.12	1851	3.2	0.18	3427
Not in MSA	3.0 (.21	1233	0.6	0.10	238	7.9 0.7	.44	3241	4.8	0.30	1952	3.2	0.28	1330	1.7	0.17	714	3.7	0.29	1507
Region																					
Northeast	1.8	.19	732	0.5	0.10	190	7.2 0	.50	2938	3.8	0.35	1565	3.0	0.28	1225	1.7	0.15	677	2.9	0.25	1202
Midwest	2.8	.24	1353	0.4	0.08	214	8.3 0	.49	3977	4.6	0.33	2196	3.2	0.25	1550	2.0	0.19	983	3.8	0.29	1849
South	2.3 (.15	1659	0.5	0.07	361	7.4 0	.34	5453	4.6	0.24	3354	3.2	0.21	2322	1.7	0.13	1223	3.2	0.22	2338
West	2.5 (.32	1151	0.6	0.13	257	8.8 0	.60	4014	4.5	0.32	2061	3.1	0.28	1401	2.1	0.25	946	4.7	0.46	2165
^a Prevalences based on weigh	ited dat	a.																			
^b Population counts in thous: Abbreviation: MSA = metro	nds. politan	statistic	al area.																		

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Table 2. Odds Ratios (ORs) c	of DSM-IV Personalit	ty Disorders and Socie	odemographic Correla	tes			
Sociodemographic Characteristic	Avoidant OR (95% CI)	Dependent OR (95% CI)	Obsessive-Compulsive OR (95% CI)	Paranoid OR (95% CI)	Schizoid OR (95% CI)	Histrionic OR (95% CI)	Antisocial OR (95% CI)
Sex							
Male	0.69 (0.58 to 0.82)*	$0.60 (0.39 \text{ to } 0.94)^{*}$	1.00 (0.92 to 1.08)	$0.76 (0.67 \text{ to } 0.86)^{*}$	1.04 (0.91 to 1.18)	1.05 (0.88 to 1.25)	3.03 (2.65 to 3.48)*
Female	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Race-ethnicity							
White	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Black	0.80 (0.63 to 1.02)	0.71 (0.42 to 1.19)	0.96 (0.85 to 1.07)	2.15 (1.84 to 2.51)*	1.79 (1.49 to 2.14)*	1.51 (1.21 to 1.87)*	1.02 (0.84 to 1.23)
Native American	1.56 (1.07 to 2.28)*	0.94 (0.37 to 2.40)	1.23 (0.89 to 1.69)	3.12 (2.35 to 4.17)*	2.35 (1.60 to 3.44)*	1.38 (0.82 to 2.30)	2.86 (2.08 to 3.94)*
Asian	0.91 (0.61 to 1.36)	0.91 (0.43 to 1.92)	0.60 (0.46 to 0.78)*	0.92 (0.60 to 1.42)	$0.50~(0.29 \text{ to } 0.86)^{*}$	1.04 (0.64 to 1.70)	0.48 (0.29 to 0.78)*
Hispanic	0.81 (0.62 to 1.05)	0.76 (0.48 to 1.23)	$0.71 (0.61 \text{ to } 0.81)^{*}$	1.43 (1.21 to 1.70)*	1.31 (1.06 to 1.62)*	0.92 (0.70 to 1.21)	0.91 (0.74 to 1.13)
Age, y							
18-29	1.0	1.0	1.0	1.0	1.0	1.0	1.0
30-44	1.77 (1.64 to 1.93)*	0.50 (0.32 to 0.79)*	1.10 (0.97 to 1.25)	0.72 (0.62 to 0.82)*	0.76 (0.63 to 0.91)*	0.44 (0.36 to 0.55)*	0.65 (0.56 to 0.77)*
45-64	0.60 (0.48 to 0.74)*	0.45 (0.28 to 0.72)*	0.96 (0.85 to 1.09)	0.50 (0.43 to 0.59)*	0.71 (0.58 to 0.87)*	0.30 (0.23 to 0.38)*	0.44 (0.37 to 0.53)*
65+	0.22 (0.17 to 0.31)*	0.33(0.20 to 0.56)*	0.62 (0.53 to 0.72)*	0.24 (0.19 to 0.31)*	0.37 (0.31 to 0.50)*	0.14 (0.10 to 0.21)*	0.09 (0.06 to 0.14)*
Income, \$/year							
0-19,999	4.18 (2.48 to 7.05)*	14.58 (3.42 to 62.07)*	0.95 (0.78 to 1.15)	3.55 (2.53 to 4.99)*	2.26 (1.59 to 3.22)*	2.09 (1.36 to 3.22)*	1.40 (1.04 to 1.88)*
20.000 - 34.999	2.45 (1.44 to 4.17)*	3.14 (0.69 to 14.36)	1.02 (0.85 to 1.23)	2.39 (1.70 to 3.78)*	1.86 (1.28 to 2.71)*	1.80(1.17 to 2.77)*	$1.48 (1.10 \text{ to } 2.00)^*$
35,000-69,999	1.96 (1.12 to 3.42)*	0.99 (0.18 to 5.41)	1.05 (0.86 to 1.27)	1.33 (0.93 to 1.90)	1.40 (0.93 to 2.10)	1.12 (0.73 to 1.74)	1.14 (0.84 to 1.55)
70,000+	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Education							
< 12 years	2.68 (2.05 to 3.51)*	4.71 (2.58 to 8.57)*	0.77 (0.64 to 0.92)*	3.84 (3.05 to 4.83)*	2.17 (1.72 to 2.75)*	1.85 (1.29 to 2.65)*	2.61 (2.02 to 3.37)*
12 years	2.18 (1.75 to 2.72)*	2.83 (1.58 to 5.09)*	0.91 (0.80 to 1.04)	2.71 (2.21 to 3.33)*	1.78 (1.44 to 2.22)*	$2.00 (1.55 \text{ to } 2.56)^{*}$	1.86 (1.50 to 2.32)*
Some college/2-year degree	1.73 (1.36 to 2.20)*	1.78 (1.02 to 3.10)*	1.18 (1.04 to 1.34)*	2.51 (2.03 to 3.10)*	1.90 (1.55 to 2.33)*	2.03 (1.55 to 2.64)*	1.77 (1.41 to 2.23)*
Bachelor's degree or higher	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Marital status							
Married/living with someone	1.0	1.0	1.0	1.0	1.0	1.0	1.0
as if married							
Widowed/divorced/separated	1.61 (1.34 to 1.94)*	2.42 (1.58 to 3.70)*	0.95 (0.85 to 1.06)	1.94 (1.66 to 2.27)*	1.32 (1.13 to 1.54)*	1.67 (1.31 to 2.13)*	1.18 (0.99 to 1.42)
Never married	1.94 (1.63 to 2.32)*	2.28 (1.49 to 3.50)*	0.99 (0.89 to 1.11)	2.03 (1.77 to 2.33)*	1.58 (1.34 to 1.86)*	2.75 (2.26 to 3.34)*	1.90 (1.62 to 2.22)*
Urbanicity					4		
MSA—in central city	1.0	1.0	1.0	1.0	1.0	1.0	1.0
MSA—not in central city	$0.77 \ (0.62 \ \text{to} \ 0.97)^*$	0.98 (0.62 to 1.54)	0.96 (0.81 to 1.13)	1.06 (0.88 to 1.27)	1.06 (0.85 to 1.34)	1.19 (0.92 to 1.53)	1.17(0.94 to 1.45)
Not in MSA	$0.69 (0.56 \text{ to } 0.85)^{*}$	$0.71 \ (0.45 \ \text{to} \ 1.19)$	1.02 (0.88 to 1.19)	$0.82 \ (0.69 \ to \ 0.97)^{*}$	0.89 (0.71 to 1.10)	1.01 (0.79 to 1.28)	0.88 (0.72 to 1.08)
Region							
Northeast	0.70 (0.50 to 0.99)*	0.83 (0.43 to 1.59)	0.80 (0.65 to 0.99)*	0.84 (0.66 to 1.07)	0.98 (0.75 to 1.28)	0.80 (0.58 to 1.09)	$0.61 (0.47 \text{ to } 0.79)^{*}$
Midwest	1.12 (0.82 to 1.52)	0.79 (0.43 to 1.46)	0.94 (0.77 to 1.14)	1.01 (0.82 to 1.25)	1.05 (0.82 to 1.34)	0.99 (0.72 to 1.35)	0.80 (0.62 to 1.04)
South	0.90 (0.67 to 1.20)	0.88 (0.50 to 1.53)	0.84 (0.70 to 1.00)	1.02 (0.84 to 1.22)	1.04 (0.83 to 1.30)	0.80 (0.60 to 1.08)	$0.66(0.52 \text{ to } 0.85)^{*}$
West	1.0	1.0	1.0	1.0	1.0	1.0	1.0
*p < .05. Abhreviation · MSA = metronolit	an statistical area						

ality disorder were significantly lower among respondents not residing in an MSA (OR = 0.82) relative to respondents living in the most urbanized areas of the country. No regional differences were found in the risk of paranoid personality disorder.

Schizoid personality disorder. There were no sex, area, or regional differences in the risk of schizoid personality disorder found in this study. Blacks (OR = 1.79), Native Americans (OR = 2.35), and Hispanics (OR = 1.31) were at significantly greater risk of schizoid personality disorder, while Asians (OR = 0.50) had a significantly lower risk of schizoid personality disorder compared with whites. The odds of schizoid personality disorder were significantly lower for the 3 oldest age groups compared with the 18- to 29-year-old group. Respondents in the 2 lowestincome groups (\$0-\$19,999 OR = 2.26; \$20,000-\$34,999 OR = 1.86) were at significantly greater risk of schizoid personality disorder compared with respondents in the highest-income group. The odds of schizoid personality disorder were significantly greater among respondents with less than a high school education (OR = 2.17), with a high school education (OR = 1.78), and with some college education (OR = 1.90) compared with respondents in the most highly educated group. The risk of schizoid personality disorder was also significantly higher for respondents who were never married (OR = 1.58) or widowed/ separated/divorced (OR = 1.32) compared with respondents who were married or cohabiting.

Histrionic personality disorder. There were no risk differentials observed for gender or area or region of the country. Blacks were at significantly greater risk (OR = 1.51) of histrionic personality disorder compared with whites. The odds of histrionic personality disorder were significantly lower among the 3 oldest age groups compared with respondents in the youngest age group. The risk of histrionic personality disorder was significantly elevated in the 2 lowest-income groups (\$0-\$19,999 OR = 2.09; \$20,000-\$34,999 OR = 1.80) compared with respondents in the highest-income group. Respondents with less than a high school education (OR = 1.85), with a high school education (OR = 2.00), or with some college (OR = 2.03) were at significantly greater risk for histrionic personality disorder than the most highly educated respondents. The odds of histrionic personality disorder were also significantly greater among respondents who were widowed/separated/divorced (OR = 1.67) or never married (OR = 2.75) compared with respondents who were married or cohabiting.

Antisocial personality disorder. The risk of antisocial personality disorder was 3 times greater among men than women. The odds of antisocial personality disorder were greater among Native Americans (OR = 2.86) and lower among Asians (OR = 0.48) compared with whites. The odds of antisocial personality disorder were also significantly lower among the 3 oldest age groups compared

with the 18- to 29-year-old group. With regard to annual income, the odds of antisocial personality disorder were significantly greater among respondents in the \$0-to-\$19,999 (OR = 1.40) and \$20,000-to-\$34,999 (OR = 1.48) income groups relative to respondents in the highest income group. The risk of antisocial personality disorder was also significantly higher among respondents with less than a high school education (OR = 2.61), with a high school education (OR = 1.86), and with some college or a 2-year degree (OR = 1.77) compared with the most highly educated respondents. The odds of antisocial personality disorder also were greater among the never-married (OR = 1.90) compared with respondents who were married or living together. Respondents living in the Northeast (OR = 0.61) and South (OR = 0.66) were at lower risk of having antisocial personality disorder compared with respondents living in the West.

Disability

Avoidant, dependent, paranoid, schizoid, and antisocial personality disorders (p < .02 to p < .0001) were each statistically significant predictors of the MCS, SF, and RE scores of the SF-12v2 after adjusting for age, other personality disorders, and Axis I disorders (Table 3). Respondents with each of these personality disorders had significantly greater disability than respondents who did not have the personality disorder. In contrast, histrionic personality disorder was not associated with greater disability, and respondents with obsessive-compulsive personality disorder had significantly greater (p < .0001) disability as measured with the MCS score, but not the SF or RE scores, compared with respondents without obsessive-compulsive personality disorder.

DISCUSSION

Personality disorders are pervasive in the U.S. population. Overall, 14.8% of adult Americans, or 30.8 million, had at least 1 personality disorder: 4.9 million had avoidant personality disorder, 1.0 million had dependent personality disorder, 16.4 million had obsessivecompulsive personality disorder, 9.2 million had paranoid personality disorder, 6.5 million had schizoid personality disorder, 3.8 million had histrionic personality disorder, and 7.6 million had antisocial personality disorder. The prevalence of DSM-IV personality disorders found in the NESARC would most likely have been greater if borderline, narcissistic, and schizotypal personality disorders had also been assessed. Personality disorders appear to be much more pervasive in the U.S. general population than in the Australian population (6.62%), a difference that may be due, in part, to differences in diagnostic criteria and interviews used to assess the disorders.

The DSM-IV provides information on the distribution and demographic correlates of personality disorders in the

	Mental Su	Health Cou	mponent ore	Social	Functionin	g Score	Ro Fu	ole Emotio	nal ore
Personality Disorder	β	SE	р	β	SE	р	β	SE	р
Avoidant	-4.35	0.44	< .0001	-4.05	0.52	< .0001	-3.22	0.59	<.0001
Dependent	-5.22	1.04	< .0001	-6.12	1.17	< .0001	-8.48	1.26	< .0001
Obsessive-compulsive	-1.01	0.21	< .0001	-0.20	0.25	.4289	-0.28	0.23	.2335
Paranoid	-2.97	0.35	< .0001	-2.63	0.43	< .0001	-2.52	0.37	< .0001
Schizoid	-1.64	0.43	.0003	-2.06	0.48	<.0001	-1.70	0.47	.0006
Histrionic	0.05	0.52	.9287	-0.72	0.56	.2060	-0.21	0.53	.6902
Antisocial	-0.86	0.35	.0167	-1.66	0.41	.0002	-1.10	0.36	.0033

text provided with each disorder while acknowledging that the available data on which to base such information are very limited. In a number of respects, the findings of this study did not agree with this DSM-IV text. Since DSM-IV is an important source of training material in psychiatry and the allied mental health fields, we comment specifically on the relationship of the findings of this study to the information found in DSM-IV.

In the total population, obsessive-compulsive personality disorder was by far the most prevalent personality disorder (7.88%). In the Australian survey, anancastic personality disorder, which is roughly equivalent to the DSM-IV construct of obsessive-compulsive personality disorder, was the most prevalent personality disorder (3.09%). According to the DSM-IV Text Revision (DSM-IV-TR), the prevalence of obsessive-compulsive personality disorder is "about 1% in community samples and about 3% to 10% in individuals presenting to mental health clinics," and "in systematic studies, the disorder appears to be diagnosed about twice as often among males."28(p728) The present study found a much greater prevalence of obsessive-compulsive personality disorder (7.88%) in the general population, and no sex differential was observed. In contrast, the Australian survey found an increased risk of obsessive-compulsive personality disorder among men.

The DSM-IV-TR states that "the prevalence of avoidant personality disorder in the general population is between 0.5% and 1.0%" and that the disorder "appears to be equally frequent in males and females."^{28(p719)} In the current study, the prevalence of avoidant personality disorder was 2.36%. The risk of avoidant personality disorder was much greater among women than among men. These results are consistent with the Australian survey results that estimated the prevalence of ICD-10 anxious personality disorder, roughly equivalent to the DSM-IV construct of avoidant personality disorder, at 2.25%. The prevalence of avoidant personality disorder found in that survey was also significantly greater for women compared with men.

According to the DSM-IV-TR, dependent personality disorder is "among the most frequently reported personal-

ity disorders encountered in mental health clinics." In clinical settings, dependent personality disorder "has been diagnosed more frequently in females, although some studies report similar prevalence rates among males and females."^{28(p723)} In contrast, the current study found that the prevalence of dependent personality disorder was the lowest (0.49%) among personality disorders in the general population. In contrast to findings from clinical studies underlying the DSM-IV-TR predictions, the risk of dependent personality disorder in the current study was significantly greater among women than men. Prevalence of dependent personality disorder in the Australian survey was slightly higher (1.02%) and also greater among women than among men.

The DSM-IV-TR states that the prevalence of paranoid personality disorder is "0.5% to 2.5% in the general population" and that "in clinical samples, the disorder appears to be more commonly diagnosed in males."^{28(p692)} The NESARC found the prevalence of paranoid personality disorder to be much greater, 4.41%, and the prevalence of this disorder was significantly greater among women. The Australian study found a much lower prevalence of paranoid personality disorder (1.34%), but found no sex differential.

As for schizoid personality disorder, the DSM-IV-TR reports no prevalence figures, but states that it is "uncommon in clinical settings" and "is diagnosed slightly more often in males."^{28(p696)} The prevalence of schizoid personality disorder in the NESARC was 3.13% compared with 1.85% found in the Australian survey. There were no sex differences found in either of these general population surveys.

With regard to histrionic personality disorder, the DSM-IV-TR states that based on "limited data from the general population," the prevalence of this disorder is "about 2% to 3%." DSM-IV-TR also states that "in clinical settings, this disorder has been diagnosed more frequently in females; however, the sex ratio is not significantly different than the sex ratio of females within the respective clinical setting" and "some studies using structured assessments report similar prevalence rates among males and females."^{28(p712)} Consistent with the

DSM-IV-TR, the prevalence of histrionic personality disorder in the NESARC was 1.84%, and there was no difference observed in the risk of the disorder between men and women. The rate for histrionic personality disorder was much lower (0.52%) in the Australian survey, and no sex differential was reported.

The DSM-IV-TR states that "the overall prevalence of antisocial personality disorder in community samples is about 3.0% in males and about 1% in females."^{28(p704)} Consistent with the DSM-IV-TR, the overall prevalence of antisocial personality disorder was 3.63% in the current survey and was significantly greater in men than women. Not one individual in the Australian survey met ICD-10 criteria for dissocial personality disorder, the equivalent of DSM-IV antisocial personality disorder.

With the exception of antisocial personality disorder, the prevalence estimates of personality disorders and their associated sex differentials reported in the DSM-IV-TR are based on clinical studies of treated patients and local community surveys. Prevalences and information on sex differences derived from these studies are not representative of the general population, which accounts for the inconsistencies of the reported figures with those from the nationally representative sample of the NESARC. There are several hazards of using treated rates to draw inferences about the true prevalence and sociodemographic correlates of personality disorders, including (1) differential availability of treatment, (2) the influence of cultural factors in help-seeking, (3) differences in the severity or level of impairment of the disorders, (4) the potential influence of other comorbid psychiatric disorders, and (5) differences among the personality disorders in the likelihood of seeking treatment.²⁹ Nonetheless, knowledge of the prevalence of personality disorders in such settings has important clinical implications and is informative as to treatment response and outcomes.

There are several methodological reasons why some results of the Australian survey differed from the NESARC findings. The Australian survey, although large (N = 10,641), was still limited in its capacity to provide estimates of rare personality disorders. The authors also acknowledge that no information was available on the psychometric properties of their personality assessment interview and the limitations of using only 1 question to operationalize the more complex personality disorder symptom criteria. Although the design, methods, and samples of the Australian survey and the NESARC were similar, the diagnostic criteria used to assess personality disorders were different. With the exception of avoidant (anxious) personality disorder, rates of DSM-IV personality disorders were greater in the NESARC than the corresponding rates of ICD-10 personality disorders in the Australian survey. The higher diagnostic thresholds may help explain why the prevalences of ICD-10 personality disorders in the Australian survey were lower than the rates of DSM-IV personality disorders found in this study and other studies that have applied both criteria sets to the same population.^{30,31} The larger sample size (N = 43,093) of the NESARC, along with its psychometrically sound measures of personality disorders, provided for more accurate estimates of the prevalence and associated sociode-mographic correlates of DSM-IV personality disorders in the U.S. population than the related figures for ICD-10 personality disorders in the Australian population. In addition, there may be true variation in the occurrence of personality disorders between the 2 countries. Epidemiologic surveys of personality disorders in additional countries would provide an indication of whether there is cross-cultural variation in these disorders.

The NESARC importantly identified, for the first time, vulnerable subgroups of the population at risk for specific personality disorders across a broad range of sociodemographic characteristics. Taken together, the results of this study suggest that prevention and intervention programs for personality disorders be targeted at these high risk subgroups, particularly among Native Americans, blacks, young adults, individuals with low socioeconomic status, and individuals who are divorced, separated, widowed, or never married. Future studies on these sociodemographic subgroups of the population in which personality disorders are overrepresented would be useful in elucidating the determinants and consequences of these disorders and the service needs of those suffering from them.

This study showed that a number of personality disorders, including avoidant, dependent, paranoid, schizoid, and antisocial personality disorders, were associated with considerable emotional disability and impairment in social and role functioning. Although individuals classified with obsessive-compulsive personality disorder did identify at least 1 symptom of the disorder that caused social and/or occupational dysfunction, obsessive-compulsive personality disorder was not consistently associated with disability as measured by the SF-12v2 scores. These findings suggest that many individuals who demonstrate the preoccupation with orderliness, perfectionism, and mental and interpersonal control that are characteristic of the disorder may be high functioning even in the absence of flexibility, openness, and efficiency. Furthermore, individuals with histrionic personality disorder were not significantly more disabled than those without the disorder despite identifying at least 1 symptom of the disorder that caused social and/or occupational dysfunction. The pervasive and excessive emotionality and attention-seeking behavior of individuals with histrionic personality disorder might well be protective against social and role impairment and emotional disability, at least in the short term. Alternatively, obsessive-compulsive and histrionic personality disorders may be more culture-bound than other personality disorders, making it particularly difficult to differentiate culture-specific concepts of self,

styles of communication, and coping mechanisms from manifestations of psychopathology. It also may be the case that disabilities associated with obsessive-compulsive and histrionic personality disorders are obscured by a complex of comorbid disorders that are associated with much greater disability.

This study assessed personality disorders categorically, as required by the DSM-IV and in conformity with clinical tradition. We acknowledge that a dimensional approach to the measurement of personality disorders may have great merit for understanding the pathophysiology underlying personality disorders. We are also aware of the debate surrounding the arbitrary nature of thresholds and the considerable overlap between personality disorders associated with this categorical classification. Nonetheless, despite limitations in case definition, it has been argued that the current categories are good enough and should be tested in epidemiologically representative samples.32,33 Recently, several researchers^{32,34,35} have argued that large-scale epidemiologic surveys of personality disorders, as currently defined, can importantly serve to identify individuals at high risk of personality disorders and identify required services. Further data on prevalence and risk factors give rise to etiologic hypotheses that can be generated and tested and eventually aid in the development of models for prevention.

The NESARC was the first nationally representative survey to examine the relationship between race-ethnicity and selected personality disorders. This is noteworthy since most clinical studies of personality disorders do not present data on race-ethnicity. The absence of such data has recently been described as striking,³⁴ given that culture is so intertwined with personality, influencing theoretical world views, interpersonal expectations, styles of communication, and coping mechanisms and self-concept.36-38 Why certain race-ethnic subgroups of the population were found to have differential risk of personality disorders in this study raises questions regarding the influence of cultural experiences on personality psychopathology. Whether culturally oriented experiences protect against or increase vulnerability for the development of personality disorders or whether the DSM-IV-defined categories are culturally uninformed are important research questions for future epidemiologic studies in nontreated populations.

In future studies using the NESARC data, comorbidity between DSM-IV Axis II personality disorders and between DSM-IV Axis I and Axis II symptom disorders will be examined and the disability attributable to each disorder will be determined. In the meantime, the NESARC findings make a significant contribution to the epidemiology of personality disorders for several reasons. First, the NESARC is the only representative survey of most DSM-IV personality disorders in the U.S. population. Second, the NESARC results have determined the scope of these disorders confronting the nation and identified important subgroups of the population at greatest risk for specific personality disorders and, thus, in greatest need of prevention and intervention efforts. Lastly, the NESARC findings have established significant associations between most specific personality disorders and disability and impairment in social and role functioning. Future directions should address the burdens on the health care, social services, and criminal justice agencies that result from this disability, as well as the development of models of prevention and intervention.

In the spirit of full disclosure and in compliance with all ACCME Essential Areas and Policies, the faculty for this CME activity were asked to complete a full disclosure statement. The information received is as follows: Drs. Grant, Hasin, Stinson, Dawson, and Chou; Ms. Ruan; and Mr. Pickering have no significant commercial relationships to disclose relative to the presentation.

Disclosure of off-label usage: The authors have determined that, to the best of their knowledge, no investigational information about pharmaceutical agents has been presented in this article that is outside U.S. Food and Drug Administration–approved labeling.

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