The Epidemiology of Social Anxiety Disorder 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 12-month and lifetime prevalence, correlates and comorbidity of social anxiety disorder (SAD) among adults in the United States as determined by the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions.

Design: Face-to-face survey.

Setting: The United States.

Participants: Adults (aged 18 and over) residing in households and group quarters (N = 43,093). *Main Outcome Measures:* Prevalence and

associations of SAD with sociodemographic and psychiatric correlates and Axis I and II disorders.

Results: The prevalence of 12-month and lifetime DSM-IV SAD was 2.8% (95% CI = 2.5 to 3.1) and 5.0% (95% CI = 4.6 to 5.4), respectively. Being Native American, being young, or having low income increased risk, while being male, being of Asian, Hispanic, or black race/ethnicity, or living in urban or more populated regions reduced risk. Mean age at onset of SAD was 15.1 years, with a mean duration of 16.3 years. Over 80% of individuals with SAD received no treatment, and the mean age at first treatment was 27.2 years. Current and lifetime SAD were significantly related to other specific psychiatric disorders, most notably generalized anxiety, bipolar I, and avoidant and dependent personality disorders. The mean number of feared social situations among individuals with SAD was 7.0, with the majority reporting anxiety in performance situations.

Conclusions: Social anxiety disorder was associated with substantial unremitting course and extremely early age at onset. Social anxiety disorder often goes untreated, underscoring the need for health care initiatives geared toward increasing recognition and treatment. Comprehensive evaluation of patients with SAD should include a systematic assessment of comorbid disorders, and novel approaches to the treatment of comorbid SAD are needed.

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S ocial anxiety disorder (SAD; social phobia) is characterized by marked and persistent fear of social or performance situations in which an individual fears acting in an embarrassing or humiliating way on exposure to observation or scrutiny of others.¹ Social anxiety disorder is a chronic, debilitating psychiatric disorder with significant economic costs^{2,3} in the form of educational underachievement, increased financial dependency, decreased work productivity, social impairment, and poor quality of life.⁴⁻⁶ Social anxiety disorder is also highly associated with other psychiatric disorders, and this comorbidity increases the personal and economic burden of the disorder.^{7,8}

The prevalence of SAD in national and international epidemiologic surveys conducted since the early 1980s has varied widely. For the *Diagnostic and Statistical Manual of Mental Disorders*, Third Edition (DSM-III),⁹ 12-month (range, 1.1%–1.7%; mean, 1.4%; median, 1.4%) and lifetime (range, 0.5%–4.1%; mean, 2.5%; median, 2.6%)¹⁰⁻¹⁹ SAD prevalences were substantially lower than DSM-III, Revised (DSM-III-R),²⁰ 12-month (range,

0.5%–7.9%; mean, 6.9%; median, 6.7%) and lifetime (range, 7.8%–16.0%; mean, 10.7%; median, 13.4%) rates.^{21–29} Rates for DSM, Fourth Edition (DSM-IV),¹ 12-month (range, 1.2%–6.7%; mean, 2.8%; median, 2.1%) and lifetime (range, 1.9%–7.2%; mean, 4.2%; median, 3.7%) SAD were in the intermediate range,^{30–41} with the exception of the 2001–2003 National Comorbidity Survey Replication (NCS-R), in which DSM-IV–determined rates of 12-month (6.8%) and lifetime (12.1%) SAD were excessively high.^{42,43}

Although changes in the conceptualization and diagnostic criteria of SAD since its introduction in the DSM-III are, in part, responsible for variation in the rates, measurement issues have been implicated. Earlier surveys using DSM-III-based instruments, largely the Diagnostic Interview Schedule,44 assessed only a limited range of feared social situations (no. = 3), leading to the suggestion that the lower prevalence estimates found in these studies may have been underestimated.8,25,40,45 Rates of SAD, using DSM-III-R-based instruments, primarily variants of the Composite International Diagnostic Interview (CIDI),46 have been empirically shown to decrease by 50% when using the DSM-IV clinical significance criterion for diagnoses.⁴⁷ Similar overestimates of the rates of generalized anxiety disorder in the NCS-R^{42,43} could be attributed, in part, to the failure to apply the DSM-IV clinical significance criterion, in addition to including cases of SAD that were substance-induced or due to a general medical condition.^{1(p192)} In addition, 1 variant of the CIDI, the University of Michigan CIDI (UM-CIDI)⁴⁸ used in the 1990-1992 NCS²⁵ conducted in the United States, and other surveys using DSM-III-R criteria²⁸ did not measure the focus of the social fear (i.e., humiliation or embarrassment), which also may have led to overestimation of the DSM-III-R rates of SAD.

Although several international epidemiologic surveys have presented information on SAD according to DSM-IV criteria, no comparable data are available in the United States. This leaves important questions unanswered about the current U.S. epidemiology of DSM-IV SAD and its comorbidity with other disorders. First, given changes in the diversity of the U.S. population, treatment disparities in disadvantaged groups, and the aging of the population that has occurred since the last major U.S. survey covering SAD was conducted, delineating the current prevalence of SAD in specific U.S. demographic groups (i.e., age and race-ethnic groups) is necessary. This delineation requires larger samples than in most previous surveys (usually $N \le 5000$). Second, obtaining accurate information on SAD comorbidity with other specific mental disorders is important, since etiology and treatment implications of specific disorders within broader categories may differ considerably. Assessing comorbidity on a disorder-specific basis also requires larger samples than in the past. Third, information on personality disorders,

especially avoidant personality disorder, is highly relevant to SAD, as indicated by numerous clinical studies that have investigated whether avoidant personality disorder (and other personality disorders) and generalized SAD represent distinct disorders or different variants of the same spectrum of psychopathology. Only 1 large national survey⁴⁹ conducted in Australia assessed personality disorders other than antisocial personality disorder. While groundbreaking on this topic, the survey collected information on ICD-10 personality disorders and only reported the association of personality disorders with the broad "any anxiety disorder" category.^{50,51} To begin building a knowledge base on the co-occurrence and implications of SAD with DSM-IV personality disorders, large-scale survey data are critical.

The National Epidemiologic Survey on Alcohol and Related Conditions $(NESARC)^{52,53}$ was conducted to address these and related questions. The NESARC was large enough (N = 43,093) to indicate the prevalence of DSM-IV SAD in minorities not studied previously on a national basis, as well as the comorbidity of DSM-IV SAD with specific, often rare, conditions, including personality disorders.

A major theme in research on social anxiety is the examination of the utility and clinical and theoretical implications of the distinction between generalized (i.e., fearing most social situations) and nongeneralized or specific subtypes. In view of this, detailed information is presented on the distribution and types of feared social situations that often form the basis of these classifications. This information can importantly serve as a platform for further research on evaluating generalized and other SAD subtyping schemata.

METHOD

Sample

The 2001–2002 NESARC is a representative sample of the United States conducted by the National Institute on Alcohol Abuse and Alcoholism (NIAAA).^{52,53} The NESARC target population was the civilian population residing in households or group quarters, 18 years and older. Face-to-face interviews were conducted with 43,093 respondents. The survey response rate was 81%. Blacks, Hispanics, and young adults (aged 18–24 years) were oversampled, with data adjusted for oversampling and household- and person-level nonresponse. The weighted data were then adjusted to represent the U.S. civilian population based on the 2000 Census.

DSM-IV Diagnostic Interview

The diagnostic interview used to generate diagnoses was the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV Version (AUDADIS-IV).⁵⁴ This structured diagnostic interview, designed for lay interviewers, was developed to advance measurement of substance use and mental disorders in large-scale surveys.

Social anxiety disorder. Consistent with the DSM-IV, a diagnosis of SAD required a marked or persistent fear of at least 1 of 14 social or performance situations (including a residual "other situation" category) in which embarrassment or humiliation may occur. In addition, the fear had to be recognized as excessive or unreasonable. Also, exposure to the situation must have almost invariably provoked anxiety (which may have taken the form of a situationally bound or predisposed panic attack), and the feared social situation must have been avoided or else endured with intense anxiety. These latter DSM-IV criteria for SAD help to further define the feared situation(s) as both excessive and unreasonable. All SAD diagnoses required that the clinical significance criterion of the DSM-IV^{1(p416)} be met (i.e., symptoms of the disorder must have caused clinically significant distress and/or impairment in social, occupational, or other areas of functioning). The AUDADIS-IV questions used to operationalize the clinical significance criterion were disorder-specific and included: (1) being upset or made uncomfortable by the phobic symptoms and/or avoidance, (2) interference with relationships with other people, (3) interference with occupational or other role responsibilities, (4) restriction of usual activities, and (5) preventing the respondent from engaging in usual activities. Unlike the diagnoses provided by other instruments used in epidemiologic surveys,^{19,30,46,48,55}AUDADIS-IV diagnoses of SAD were primary (or independent)⁵³; substance-induced disorders or those due to medical conditions were excluded.1(p192) Removing substance-induced cases or those due to general medical conditions reduced the lifetime prevalence of SAD by 0.7%.

Other psychiatric disorders. As described in detail elsewhere,^{53,56} the AUDADIS-IV also assessed 3 other DSM-IV anxiety disorders—panic disorder, specific phobia, and generalized anxiety disorder—and 4 major mood disorders, including dysthymic, major depressive, bipolar I, and bipolar II disorders. All of these disorders followed DSM-IV criteria, required that the clinical significance criteria be met, and ruled out substance-induced episodes or those due to a medical condition.

The AUDADIS-IV questions operationalize DSM-IV criteria for alcohol and drug-specific abuse and dependence for 10 drug classes^{57,58} (aggregated in this report). Consistent with DSM-IV, 12-month and lifetime AUDADIS-IV diagnoses of alcohol abuse required that at least 1 of the 4 criteria for abuse be met, either in the 12-month period preceding the interview or previously. The AUDADIS-IV lifetime alcohol dependence diagnoses required that at least 3 of the 7 DSM-IV criteria for dependence be met during the past year or prior. For prior diagnoses of alcohol dependence, at least 3 criteria must have been met within a 1-year period, according to the DSM-IV.

Drug abuse and dependence and nicotine dependence⁵⁹ used the same algorithms.

The AUDADIS-IV assessments of DSM-IV personality disorders have been described in detail previously.^{60,61} These include avoidant, dependent, obsessive-compulsive, paranoid, schizoid, and antisocial personality disorders. DSM-IV personality disorder diagnoses require evaluating long-term patterns of functioning. The AUDADIS-IV personality disorder diagnoses were made accordingly. To receive an AUDADIS-IV personality disorder diagnosis, respondents needed the required number of DSM-IV symptoms for the specific personality disorder, with at least 1 symptom causing distress and/or social or occupational dysfunction. Diagnoses of antisocial personality disorder required the specified number of DSM-IV symptoms for conduct disorder before age 15 years and adult antisocial personality disorder since age 15 years.

As reported elsewhere, test-retest reliability of SAD diagnoses was fair ($\kappa = 0.42-0.46$),⁶² and reliability ($\kappa >$ $(0.74)^{62-65}$ and validity^{57,58,66-71} were good to excellent for substance use disorders. Reliability was fair to good for mood and other anxiety disorders ($\kappa = 0.40-0.60$) and personality disorders ($\kappa = 0.40-0.67$).⁶² In addition, evidence for the validity of SAD diagnoses was assessed using the Short Form 12, version 2 (SF-12v2),⁷² a reliable and valid impairment measure in population surveys. Controlling for sociodemographic factors and other mental disorders, SAD and SF-12v2 scales (i.e., mental component summary, social functioning, role-emotional functioning, mental health) showed highly significant relationships (p < .0001). Similar relationships were found between other AUDADIS-IV anxiety, mood, and personality disorders.53,56,60,62,73

Statistical Analysis

Weighted percentages, means, medians, and crosstabulations were computed to derive estimates of 12month and lifetime prevalences, correlates, course, and treatment seeking. Odds ratios (ORs) indicated bivariate associations between SAD and: (1) sociodemographic correlates and (2) other psychiatric disorders. Hazard rates reflecting the onset of SAD at specific ages among the population at risk at those ages were calculated using standard life table methods.⁷⁴ During the NESARC interview, respondents reporting onset of SAD as "all of their lives" were coded with age at onset of 1 year. Standard errors and 95% confidence intervals were estimated using Software for Survey Data Analysis (SUDAAN),⁷⁵ which adjusts for characteristics of complex sample surveys.

RESULTS

Prevalence and Sociodemographic Characteristics

Overall, 12-month and lifetime prevalences of SAD were 2.8% (95% CI = 2.5 to 3.1) and 5.0% (95%

CI = 4.6 to 5.4; Table 1). The odds of SAD were significantly greater for women than men. Compared to whites, Native Americans had significantly greater odds of SAD, while the odds for blacks, Hispanics, and Asians were lower than those for whites. Compared to respondents 65 years and older, all others had higher odds of SAD. Relative to those in the highest income bracket, respondents in the 3 lowest income brackets had significantly greater odds of SAD. In addition, the odds of SAD were significantly lower among respondents residing in urban areas and among respondents residing in the South and Northeast regions of the country relative to those living in the West.

Onset, Course, Treatment, and Disability

Mean age at onset of SAD was 15.1 years, with a median age of 12.5 years. The hazard rate for onset of SAD (Figure 1) was bimodal, sharply peaking at 5 years or younger (for respondents who reported having the disorder as long as they could remember) and from the ages of 13 to 15 years. The risk of onset then declined rapidly until ages 22 and 23 years, when the hazard rate curve considerably flattened, indicating that onsets after these ages are rare. Among respondents with lifetime SAD, a mean duration of 16.3 years was reported. Twenty percent of those with SAD reported treatment specifically for the disorder. Further, controlling for sociodemographic factors and other psychiatric disorders, impairment, as assessed on each of the 4 SF-12v2 disability scales, was found to be highly associated (p < .01-.001) with treatment. Among respondents with SAD, those who were more disabled were more likely to receive treatment. Mean age at first treatment, 27.2 years, indicated a 12year lag between onset and first treatment.

Substantial percentages of respondents with SAD reported substantial distress (92.6%), interpersonal/ occupational dysfunction (62.4%), and restriction of usual activities or interference with plans (59%) related to their fear, anticipatory anxiety, and avoidance of social situations.

Number and Type of Feared Social Situations

Among respondents with lifetime SAD, 97.1% reported at least 1 performance fear, while 82.2% reported at least 1 interactional fear as typically classified in the clinical and epidemiologic literature (Table 2). With regard to performance fears, speaking fears (range, 72.6%–89.8%) were more common than nonspeaking fears (range, 18.2%–79.8%). About 50% of respondents with SAD reported fear related to 4 interactional situations, including: having conversations with people they didn't know well, going to parties or other social gatherings, being interviewed, and speaking to an authority figure. The percentage of respondents with pure speaking fears or pure performance fears, often operationalizations used to define

Table 1. Prevalence of 12-Month and Lifetime DSM-IV Social
Anxiety Disorder and Odds Ratios of Lifetime Social Anxiety
Disorder by Sociodemographic Characteristics

	12-1	Month					
	(N = 1140)			Lifetir	Lifetime ($N = 1983$)		
Characteristic	%	SE	%	SE	OR	95% CI	
Total	2.8	0.13	5.0	0.20			
Sex							
Male	2.1	0.14	4.2	0.22	0.7	0.65 to 0.82	
Female	3.3	0.17	5.7	0.25	1.0		
Race-ethnicity							
White	3.0	0.15	5.5	0.22	1.0		
Black	2.0	0.23	3.5	0.28	0.6	0.51 to 0.73	
Native American	3.6	0.85	8.6	1.24	1.6	1.17 to 2.24	
Asian	2.1	0.39	3.3	0.58	0.6	0.41 to 0.85	
Hispanic	2.0	0.20	3.2	0.30	0.6	0.47 to 0.69	
Age, y							
18-29	3.1	0.25	5.0	0.32	1.7	1.44 to 2.07	
30-44	3.1	0.22	5.4	0.31	1.9	1.54 to 2.22	
45-64	2.8	0.19	5.6	0.30	1.9	1.64 to 2.30	
65+	1.6	0.16	3.0	0.22	1.0		
Marital status							
Married/living	2.6	0.15	4.8	0.24	1.0		
with someone							
as if married							
Widowed/	2.8	0.21	5.1	0.29	1.1	0.93 to 1.20	
separated/							
divorced							
Never married	3.2	0.24	5.2	0.31	1.1	0.94 to 1.26	
Education							
Less than	3.1	0.27	4.8	0.40	0.9	0.82 to 1.18	
high school							
High school	3.0	0.23	5.4	0.32	1.1	0.98 to 1.28	
College or higher	2.5	0.14	4.8	0.21	1.0		
Income, \$/y							
0-19,000	3.3	0.18	5.5	0.27	1.8	1.33 to 2.36	
20,000-34,000	2.6	0.22	5.2	0.32	1.6	1.21 to 2.22	
35,000-69,000	2.2	0.22	4.2	0.33	1.3	0.96 to 1.85	
70,000+	1.9	0.32	3.2	0.43	1.0		
Urbanicity							
Urban	2.6	0.14	4.6	0.22	0.7	0.59 to 0.84	
Rural	3.6	0.29	6.4	0.39	1.0		
Region							
Northeast	2.2	0.24	4.3	0.38	0.7	0.53 to 0.92	
Midwest	3.5	0.33	5.8	0.48	1.0	0.74 to 1.27	
South	2.4	0.18	4.2	0.26	0.7	0.54 to 0.88	
West	3.0	0.30	6.0	0.58	1.0		

nongeneralized SAD, were 3.5% and 16.8%, respectively. Generalized SAD, often defined as fear of at least 1 interactional situation (with or without a performance fear), characterized 82.2% of respondents with SAD.

The mean number of feared social situations was 7.0. The percentages of respondents with SAD with 3 or more, 5 or more, or 7 or more social fears were 93.1%, 76.1%, and 53.8%, respectively.

Prevalence and Odds Ratios of 12-Month and Lifetime Axis I and II Disorders Among Respondents With and Without Social Anxiety Disorder

Tables 3 and 4 show the 12-month and lifetime prevalence, respectively, of other disorders among respondents with and without SAD. For both time periods, the prevalences of substance use, mood, other anxiety, and person-

Figure 1. Hazard Rates for Age at Onset of DSM-IV Social Anxiety Disorder



ality disorders were much greater among those with than without SAD.

Among those with SAD in the prior 12 months, 13.1% had an alcohol use disorder, 5.5% had a drug use disorder, and 27.1% had nicotine dependence. Furthermore, 48.8% had at least 1 other anxiety disorder, with specific prevalences ranging from 15.3% to 37.3%, and 38.3% had at least 1 mood disorder, with rates ranging from 3.0% to 19.9%. The prevalence of any personality disorder was also high (61.0%), and prevalences were quite variable from personality disorder to personality disorder (5.6% - 33.1%).

Among those with lifetime SAD, 48.2% had an alcohol use disorder, 22.3% had a drug use disorder, 33.0% had nicotine dependence, 54.1% had any other anxiety disorder, 56.3% had a mood disorder, and 55.4% had a personality disorder. Considerable variability also occurred in the lifetime prevalence of specific disorders within broad diagnostic categories.

The 12-month and lifetime associations between SAD and other psychiatric disorders adjusted for sociodemographic factors are also shown in Tables 3 and 4, respectively. Social anxiety disorder was significantly associated at varying levels with all other disorders except alcohol abuse. Odds ratios were generally greater for 12-month than lifetime disorders.

SAD was more strongly related to dependence than abuse for alcohol and drug use disorders, with strongest associations for drug dependence. Associations were similar for last 12-month and lifetime disorders.

Other anxiety disorders were strongly related to SAD regardless of time frame. The considerable variability in the odds ratios by specific anxiety disorder illustrates the importance of examining the disorders separately. In both 12-month and lifetime time frames, generalized anxiety disorder had the strongest association with SAD (ORs = 10.6 and 8.4), while the odds were slightly lower for panic disorder (ORs = 8.5 and 5.7) and specific phobia (ORs = 7.9 and 6.6). Among the mood disorders, SAD

Situation	%	SE
Type of fear		
Performance		
Speaking		
Speaking in front of other people	89.8	0.78
Taking part/speaking in class	80.3	0.96
Taking part/speaking at a meeting	72.6	1.22
Nonspeaking		
Eating/drinking in front of other people	18.2	1.03
Writing when someone watches	22.3	1.13
Performing in front of other people	79.8	1.15
Taking an important exam	51.4	1.30
Interactional		
Having conversations with people	56.9	1.27
you don't know well		
Going to parties or other social gatherings	53.4	1.42
Dating	25.2	1.17
Being in a small group situation	18.6	1.08
Being interviewed	47.0	1.24
Speaking to an authority figure	49.0	1.31
Any other	38.4	1.32
Pure speaking	3.5	0.53
Pure performance	16.8	1.06
Pure interactional	2.3	0.37
Any performance	97.1	0.39
Any interactional	82.2	1.08
Number of feared social situations		
(mean [SE] = 7.0 [0.08])		

0.44

0.68

0.70

0.78

0.86

0.84

0.82

0.86

0.82

0.74

0.64

0.56

0.41

0.41

0.74

1.09

1.37

2.7

4.2

6.6

10.4

11.6

10.7

10.5

10.0

9.3

8.3

6.8

4 5

2.8

1.7

93.1

76.1

53.8

Table 2. Prevalence and Distribution of Feared Social

was more strongly related to bipolar I disorder (ORs = 7.2
and 6.1) than to major depressive, bipolar II, or dysthymic
disorders (ORs = $3.1 - 4.9$).

With respect to personality disorders, 12-month and lifetime associations were greatest for avoidant personality disorder (ORs = 23.8 and 22.0); intermediate for dependent, obsessive-compulsive, paranoid, and schizoid personality disorders (ORs = 6.3-14.4); and weakest for histrionic and antisocial personality disorders (ORs = 3.4-5.4).

DISCUSSION

The results indicate that, in the United States, 2.8% of adults experienced SAD in the prior 12 months, and 5.0% experienced SAD during their lifetimes. The 12-month

1 2

3

4

5

6

7

8

9

10

11

12

13

14

3 or more

5 or more

7 or more

	With 12-Month Social Anxiety Disorder		Without 12-Month Social Anxiety Disorder			
Comorbid Disorder	%	SE	%	SE	OR	95% CI
Any alcohol use disorder	13.1	1.30	8.3	0.24	1.6	1.26 to 2.06
Alcohol abuse	4.4	0.69	4.7	0.18	1.0	0.67 to 1.34
Alcohol dependence	8.6	1.16	3.7	0.13	2.3	1.68 to 3.13
Any drug use disorder	5.5	0.76	1.9	0.10	2.7	1.89 to 3.75
Any drug abuse	2.6	0.49	1.3	0.08	1.7	1.07 to 2.61
Any drug dependence	2.9	0.57	0.6	0.05	4.6	3.00 to 7.14
Nicotine dependence	27.1	1.67	12.4	0.38	2.2	1.86 to 2.69
Any mood disorder	38.3	1.87	8.3	0.20	6.0	5.06 to 7.14
Major depressive	19.9	1.53	4.9	0.15	4.1	3.33 to 5.08
Dysthymic	6.6	0.87	1.2	0.07	4.9	3.57 to 6.65
Bipolar I	13.2	1.22	1.7	0.08	7.2	5.76 to 9.06
Bipolar II	3.0	0.56	0.8	0.06	3.1	2.05 to 4.67
Any other anxiety disorder	48.8	1.88	8.6	0.27	9.1	7.78 to 10.76
Panic	15.3	1.31	1.7	0.08	8.5	6.71 to 10.72
Specific phobia	37.3	1.80	6.3	0.23	7.9	6.68 to 9.33
Generalized anxiety	17.3	1.48	1.6	0.07	10.6	8.37 to 13.39
Any personality disorder ^b	61.0	1.70	13.5	0.33	9.8	8.40 to 11.47
Avoidant	30.3	1.63	1.6	0.09	23.8	19.55 to 30.00
Dependent	5.6	0.87	0.3	0.04	13.4	9.05 to 19.72
Obsessive-compulsive	33.1	1.64	7.2	0.21	6.3	5.34 to 7.33
Paranoid	28.7	1.82	3.7	0.14	9.9	8.15 to 12.15
Schizoid	21.2	1.40	2.6	0.11	9.8	8.10 to 11.90
Histrionic	8.6	1.02	1.7	0.08	5.0	3.75 to 6.67
Antisocial	10.8	1.05	3.4	0.15	3.4	2.62 to 4.39

Table 3. Twelve-Month Prevalence and Odds Ratios (ORs) of DSM-IV Psychiatric Disorders Amo	ong
Respondents With and Without 12-Month DSM-IV Social Anxiety Disorder ^a	

^aORs adjusted for age, race-ethnicity, marital status, education, income, urbanicity, and region. ^bPersonality disorders assessed on a lifetime basis only.

and lifetime rates were within the ranges (1.2%-6.7%) and 1.9%-7.2%, respectively) and corresponded closely to the mean estimates (2.8% and 4.2%, respectively) found in previous surveys that used DSM-IV criteria.^{21–29}

SAD was more common among women, consistent with the findings of most,^{12,19,21-33,38-41} but not all,³⁶ national and international surveys. Due to its sample size, the NESARC provides more precise information on raceethnic differences than any other source. The Epidemiologic Catchment Area study (ECA)¹⁵ and NCS²⁵ found no differences in the odds of SAD among whites, blacks, and Hispanics. The NESARC findings of lower odds among Asians, blacks, and Hispanics compared with whites contribute new information. Further analyses are needed to understand whether disparities in treatment for SAD among these minorities exist, despite lower rates. This was the first survey to examine rates among Native Americans in a national survey, and the increased odds of SAD found among them highlights the need for attention to the mental health needs of this group.

At variance with the NCS²⁵ and Australian³⁶ surveys that found no elevated odds among the youngest age groups, but consistent with the Ontario²⁸ and ECA¹⁵ surveys, the lifetime odds of SAD were greater among the 3 youngest age groups (aged 18–64 years) relative to those 65 years and older. As previously noted,⁷⁶ the lower odds of SAD among individuals over age 65 years are surprising given the prominent problems with social isolation in the elderly. However, it is possible that the elderly grow out of or habituate to patterns of social phobic fear and avoidance, no longer recognizing these symptoms as problematic. Alternatively, decreased social activity or interaction often accompanying aging or underreporting of symptoms with age may also serve to reduce the elderly's exposure to previously feared social situations. Future epidemiologic surveys focusing on the elderly are necessary to clarify this issue.

Unlike earlier surveys^{15,25,36} that found increased odds of SAD among the never married or the widowed/ separated/divorced, this study found no marital status differences despite ample statistical power to detect such differences. Consistent with the findings of most,^{15,25} but not all,⁴⁰ previous surveys, however, the odds of SAD were higher among individuals in the lower income brackets. In contrast to the ECA¹⁵ and NCS,²⁵ this study found the odds of SAD to be lower among individuals living in urban areas and among those residing in the Northeast and South. The latter finding suggests that individuals with SAD may seek out the isolation associated with more rural and less populated areas of the United States as a means to reduce their exposure to performance and interactional situations. Alternatively, individuals living in urban or more populated regions may habituate to social phobic stimuli.

This study found the mean age at onset of SAD to be 15.1 years, similar to the mean ages at onset from 10.0 to 16.6 years found in previous epidemiologic sur-

	With Lifetime Social Anxiety Disorder		Without Lifetime Social Anxiety Disorder			
Comorbid Disorder	%	SE	%	SE	OR	95% CI
Any alcohol use disorder	48.2	1.41	29.3	0.76	2.3	2.04 to 2.65
Alcohol abuse	20.9	1.17	17.6	0.53	1.2	1.06 to 1.47
Alcohol dependence	27.3	1.39	11.7	0.33	2.7	2.36 to 3.20
Any drug use disorder	22.3	1.25	9.7	0.30	2.5	2.12 to 2.89
Any drug abuse	12.5	0.89	7.5	0.24	1.6	1.34 to 1.90
Any drug dependence	9.8	0.91	2.2	0.11	4.2	3.33 to 5.34
Nicotine dependence	33.0	1.23	16.9	0.48	2.1	1.87 to 2.42
Any mood disorder	56.3	1.46	17.6	0.34	5.5	4.83 to 6.27
Major depressive	34.1	1.31	12.1	0.28	3.3	2.92 to 3.79
Dysthymic	11.5	0.86	2.8	0.11	3.9	3.24 to 4.72
Bipolar I	15.8	1.14	2.7	0.11	6.1	5.00 to 7.34
Bipolar II	3.7	0.51	1.0	0.06	3.4	2.45 to 4.63
Any other anxiety disorder	54.1	1.41	12.8	0.35	7.4	6.51 to 8.47
Panic	22.0	1.09	4.2	0.13	5.7	5.03 to 6.47
Specific phobia	38.1	1.30	7.9	0.27	6.6	5.78 to 7.49
Generalized anxiety	23.3	1.22	3.1	0.14	8.4	7.14 to 9.83
Any personality disorder	55.4	1.35	12.7	0.31	8.4	7.41 to 9.56
Avoidant	23.3	1.10	1.3	0.08	22.0	18.54 to 26.16
Dependent	4.5	0.61	0.3	0.03	14.4	10.21 to 20.42
Obsessive-compulsive	32.4	1.28	6.6	0.20	6.6	5.74 to 7.51
Paranoid	23.3	1.29	3.4	0.13	8.6	7.22 to 10.14
Schizoid	17.5	0.97	2.4	0.10	8.7	7.43 to 10.25
Histrionic	8.0	0.76	1.5	0.08	5.4	4.28 to 6.75
Antisocial	11.3	0.82	3.2	0.14	3.7	3.08 to 4.54

Table 4. Lifetime Prevalence and Odds Ratios (ORs) of DSM-IV Psychiatric Disorders Among Respondents With and Without Lifetime DSM-IV Social Anxiety Disorder^a

veys.^{11,14,15,25,33,77} The onset of SAD was typically during childhood and adolescence, and onset later in life, after age 24 years, was relatively rare. Consistent with findings in epidemiologic^{15,25,41} and clinical studies^{78,79} the course of SAD was chronic, with a mean duration of 16.3 years, characterized by substantial disability and impairment in social/occupational functioning.

The NESARC indicated a continued lack of treatment for a substantial percentage of individuals with SAD. Over 80% of individuals with SAD received no treatment, which contrasts sharply with the percentage of individuals not receiving treatment for other major mood and anxiety disorders such as major depressive disorder (40%) and generalized anxiety disorder (50%). The significant lag between onset of SAD and first treatment (12 years) helps explain why the mean age of individuals in clinical studies (approximately 35 years) is much greater than that in the general population.⁸⁰ The suffering and social/ economic burden of this disorder are avoidable through highly effective pharmacologic and psychological treatments.⁸¹⁻⁸⁴ That the proportion of treated cases has remained virtually unchanged over the past 2 decades^{15,25} suggests that efforts are unmet to deliver effective treatments for SAD to the many who still need them and that such treatment be delivered earlier in the course of the disorder.

The NESARC provided important information on the distribution and types of feared social situations among individuals with SAD, information that will be useful in formulating new definitions of DSM-IV generalized SAD. Generalized SAD has typically been defined as encompassing individuals with multiple (usually 3 or more) feared situations.^{35,40,41} For nongeneralized SAD, the focus is on only 1 or 2 feared situations. Other sub-types of SAD have been proposed based on pure speaking or pure performance situations (i.e., the nongeneralized type) versus interactional situations with and without speaking fears or performance situations (i.e., the generalized type).⁸⁵

Data available on pure speaking versus nonspeaking fears from general population surveys clearly show that the prevalences of pure speaking fears vastly differ depending upon the number of feared situations assessed. In the NCS³⁵ and Ontario²⁸ surveys, pure speaking fears were estimated at 36.1% and 54.3%, and each of these surveys assessed 6 feared situations with no provision for an "any other feared situation" category. In the Alberta/ Winnipeg Survey⁴⁰ that assessed 12 situations and a residual category of situations not explicitly enumerated, the percentage of individuals with SAD associated with pure speaking fears fell to 2.9%. Consistent with the Alberta/Winnipeg Survey, we found extremely low percentages of fears of pure-speaking (3.5%) as well as pureperformance (16.8%) situations among individuals with SAD (i.e., from 83.2% to 96.5% of individuals with SAD would be classified with generalized SAD) when a broad range of social fears were assessed in this general population survey. The same result is true for earlier classifications of generalized SAD that encompassed individuals with 3 or more fears, the prevalence of which was found in this study to be 93.1%. Our results suggest that, al-though these classifications of SAD may be useful in clinical samples, their usefulness is limited when applied to general populations. Information about the distribution and types of feared social situations in the NESARC can serve as a basis for future investigations on identifying alternative subtyping of generalized SAD or other schemata for SAD.

Lifetime mood (56.3%) and other anxiety (54.1%) disorders were highly prevalent among individuals with lifetime SAD. Concerning specific mood comorbidity, bipolar I disorder was more strongly associated with SAD than either major depressive, bipolar II, or dysthymic disorders. These new findings were obscured in previous studies that assessed only manic and major depressive episodes (as opposed to major depressive and bipolar disorders). With respect to anxiety disorders, the association of 12-month SAD with generalized anxiety disorder (OR = 10.6) was somewhat greater than with panic disorder and specific phobia (ORs = 8.5 and 7.9, respectively). Taken together, these results suggest that SAD is more strongly comorbid with anxiety than mood disorders. Determining reasons for these variations in magnitude is important. The information in this report can provide a strong starting point for such investigation.

Information on personality disorders among U.S. adults was not previously available and is highly relevant to SAD as indicated by clinical studies.⁸⁴⁻⁸⁷ Avoidant personality disorder was more strongly related to SAD than any other personality disorder, a result consistently found among patients in treated samples.⁸⁸⁻⁹³ Whether avoidant personality disorder represents a severe subtype of SAD, especially generalized SAD, or generalized SAD and avoidant personality disorder represent quantitatively different variants of the same spectrum of psychopathology is yet to be resolved but is a focus of intense clinical investigation. The strong associations observed in this study between SAD and dependent personality disorder and 2 cluster-A personality disorders, paranoid and schizoid, have also been found in several clinical studies.86,94-101 The provision for the assessment of several personality disorders in the NESARC can help inform the debate on the relationship between generalized SAD and avoidant personality disorder and open up new areas of investigation about the relationship between generalized SAD and other personality disorders that are highly comorbid with it.

Clinical¹⁰²⁻¹⁰⁵ and epidemiologic^{14–19,21–27,31–33,53} studies have consistently demonstrated associations between SAD and substance use disorders and the frequent use of substances by individuals with SAD to alleviate anxiety associated with feared social situations.^{106–109} In this study, alcohol and drug use disorders and nicotine dependence were highly prevalent and strongly associated among individuals with SAD. Because SAD has a very early age at onset, substance use disorders (mean onset = 21.3 years) may develop as a result of self-medication. Although the relationship between SAD and substance use disorders is complex and not fully understood, the results of this and other studies underscore the need for earlier detection of individuals with SAD along with concomitant assessment of drinking and drug use patterns and smoking that may subsequently result in substance use disorders through mechanisms of self-medication.

In view of the high comorbidity of SAD with other disorders assessed in the NESARC, it is interesting to note that the majority of individuals with 12-month (82.2%) and lifetime (89.7%) SAD had at least 1 other psychiatric disorder. Importantly, this comorbidity was not substantially greater than for lifetime drug use, bipolar I disorder, dysthymic disorder, generalized anxiety disorder, panic disorder, and most personality disorders, with comorbidity percentages approximating or exceeding 90%. Further, with the exception of alcohol use disorders, other lifetime anxiety and mood disorders were highly comorbid, with from 80% to 90% of individuals having more than 1 other disorder. Nosologically speaking, there appears to be no more evidence for withholding independent status for SAD than for many other psychiatric disorders. Further, investigations on whether SAD might be better conceptualized as a prodrome, residual, or severity marker of other disorders rather than an independent disorder are warranted.

The findings of this study have several other implications. With regard to public health, this study has determined the magnitude of SAD confronting the nation and identified important subgroups of the population at risk for the disorder. This information is critical to the planning of local and national mental health services and the design of prevention and intervention programs and evaluation of the economic costs of the disorder. With regard to clinical implications, SAD was found to be highly comorbid with other anxiety, mood, and personality disorders, as well as substance use disorder. Comprehensive evaluation of patients with SAD and personality disorder should include a systematic assessment and treatment of these and other comorbid disorders.

Recent findings from the Rhode Island Methods to Improve Diagnostic Assessment and Services (MIDAS)¹¹⁰⁻¹¹² on underrecognition of psychiatric disorders, together with findings from Shear and colleagues¹¹³ in Pittsburgh and Basco and colleagues¹¹⁴ in Texas, have shown that SAD, similar to other anxiety disorders, is often undiagnosed in treated samples, but, once recognized, over 75% of the patients desired treatment for the disorder. As the results of this study demonstrated, about 80% of individuals with SAD do not receive treatment for this disorder, a factor contributing to its underrecognition in the health

care system. Health care initiatives geared toward increasing recognition and treatment of SAD among individuals with the disorder and among primary care and specialty care physicians appear warranted. As the MIDAS, Pittsburgh, and Texas studies have shown, incorporating semistructured diagnostic interviews covering a broad range of psychopathology into clinical practice can improve the detection and treatment of SAD. Such efforts can lead to a reduction in the economic burden of SAD and improve the quality of life of those afflicted with a disorder that is associated with significant impairment of normal functioning and a chronic, unremitting course.

Another factor significantly contributing to the underrecognition and treatment is that the very symptoms that individuals with SAD seek to relieve (anxiety, fear, and avoidance of social situations) may interfere with their ability to seek treatment. Health care professionals can help address these concerns by reassuring patients with SAD of their privacy. In addition, those individuals who have developed comorbid SAD and substance use disorders face unique treatment-seeking barriers.¹⁰⁷ If substances are used to alleviate the anxiety and fear of social situations, treatment programs for substance use disorders that typically involve an abstinence goal may not seem attractive to individuals with SAD. Moreover, the highly socially interactive nature of most alcohol and drug treatment programs may also complicate the search for treatment for individuals with SAD. The development of novel treatment approaches that reduce the interactional nature of traditional substance abuse treatment programs and provide for the combined treatment of both disorders is critically needed.

In sum, this study provides the most comprehensive information on the epidemiology of SAD among U.S. adults to date. Our findings provide new insights into the prevalence of SAD, how this prevalence compares with earlier surveys, its current sociodemographic and psychiatric correlates, and its comorbidity with other psychiatric disorders, most notably Axis II personality disorders. The average episode now lasts over 16 years. Reasons for the high rates found among Native Americans are unclear but warrant further investigation. The lower rates found for Asians, blacks, and Hispanics warrant explanation but do not diminish the need to reduce treatment disparities among minorities. Data on the variation in comorbidity by specific disorder, which were unavailable before, highlight the importance of detailed information provided by large-scale population surveys that might help guide future research on etiology and treatment of SAD. New information about the distribution and types of feared social situations among individuals with SAD in this large nationally representative survey can importantly serve as a platform for future investigations on identifying valid subtyping schemata for SAD, including those subtypes that have additionally included personality disorder comorbidity. Further, limitations of this cross-sectional study (e.g., problems with recall of onset of SAD and other disorders and lower stability reliability than desired) would be better addressed in longitudinal clinical and epidemiologic studies. Accordingly, Wave 2 of the NESARC, a 3-year follow-up of the participants, is currently underway and will be followed by subsequent waves. Given the chronic, unremitting, and disabling nature of SAD, the importance of information on its prevalence, demographic correlates, type and distribution of feared social situations, and psychiatric comorbidity should not be underestimated.

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