Posttraumatic Stress Disorder in the National Comorbidity Survey

Ronald C. Kessler, PhD; Amanda Sonnega, PhD; Evelyn Bromet, PhD; Michael Hughes, PhD; Christopher B. Nelson, MPH, PhD

Background: Data were obtained on the general population epidemiology of *DSM-III-R* posttraumatic stress disorder (PTSD), including information on estimated lifetime prevalence, the kinds of traumas most often associated with PTSD, sociodemographic correlates, the comorbidity of PTSD with other lifetime psychiatric disorders, and the duration of an index episode.

Methods: Modified versions of the *DSM-III-R* PTSD module from the Diagnostic Interview Schedule and of the Composite International Diagnostic Interview were administered to a representative national sample of 5877 persons aged 15 to 54 years in the part II subsample of the National Comorbidity Survey.

Results: The estimated lifetime prevalence of PTSD is 7.8%. Prevalence is elevated among women and the previously married. The traumas most commonly

associated with PTSD are combat exposure and witnessing among men and rape and sexual molestation among women. Posttraumatic stress disorder is strongly comorbid with other lifetime *DSM-III-R* disorders. Survival analysis shows that more than one third of people with an index episode of PTSD fail to recover even after many years.

Conclusions: Posttraumatic stress disorder is more prevalent than previously believed, and is often persistent. Progress in estimating age-at-onset distributions, cohort effects, and the conditional probabilities of PTSD from different types of trauma will require future epidemiologic studies to assess PTSD for all lifetime traumas rather than for only a small number of retrospectively reported "most serious" traumas.

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From the Institute for Social Research (Drs Kessler and Sonnega) and the Department of Sociology (Dr Kessler), University of Michigan, Ann Arbor; Department of Psychiatry and Behavioral Science, State University of New York at Stony Brook (Dr Bromet); Department of Sociology, Virginia Polytechnic Institute and State University, Blacksburg, Va (Dr Hughes); and Max Planck Institute of Psychiatry—Clinical Institute, Munich, Germany (Dr Nelson).

IT HAS LONG been known that pathologic stress response syndromes can result from exposure to war,[1] sexual assault,[2] and other types of trauma.[3-6] The codification of diagnostic criteria for these responses in *DSM-III*[7] under the diagnosis of posttraumatic stress disorder (PTSD) stimulated a considerable amount of research on these responses. A number of traumas have been studied in detail since that time, including criminal victimization,[8,9] sexual assault,[10,11] exposure to natural disaster,[12-14] and combat exposure.[15-18] The empiric information and conceptual refinements[19] generated by this research have importantly advanced our understanding of traumatic stress responses and led to revisions of the diagnostic criteria for PTSD in *DSM-III-R*. These require (A) exposure to a traumatic event that is "outside the range of usual human experience"; (B) reliving the experience in nightmares, flashbacks, or intrusive thoughts; (C) numbing or avoidant symptoms; and (D) hypersensitivity,

either as indicated by general signs and symptoms of autonomic arousal or by hypersensitivity to cues reminiscent of the trauma. These symptoms must persist for at least 1 month.[20] Despite a growing body of work on the extent to which PTSD is associated with specific traumas, limited epidemiologic data are available that describe the population prevalence of PTSD, the kinds of traumas most strongly associated with PTSD, the demographic correlates of PTSD, the comorbidity of PTSD with other disorders, and the typical course of PTSD. The purpose of this article is to present findings of this sort from the National Comorbidity Survey (NCS), the first nationally representative face-to-face general population survey to assess a broad range of *DSM-III-R* disorders that includes PTSD.

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PATIENTS AND METHODS

SAMPLE

The data come from the NCS, a survey designed to study the distribution, correlates, and consequences of psychiatric disorders in the United States. The survey is based on a stratified, multistage area probability sample of persons aged 15 to 54 years in the noninstitutionalized civilian population in the 48 contiguous states, including a supplemental sample of students living in campus group housing, selected from a clustered sample of 1205 block-level segments in 176 counties throughout the country. A special nonresponse survey was carried out to ascertain and then statistically adjust for nonresponse bias.[37] Interviews were administered by the staff of the Survey Research Center at the University of Michigan, Ann Arbor, between September 14, 1990, and February 6, 1992. The 158 interviewers who participated in the NCS had an average of 5 years of previous interviewing experience with the Survey Research Center. Interviewers went through a 7-day study-specific training program in the use of the Composite International Diagnostic Interview (CIDI)[38] and were closely monitored throughout the data collection period. The response rate was 82.4%. A total of 8098 respondents participated in the survey.

The NCS was administered in two parts, each of which took somewhat more than 1 hour to complete. Part 1 included the core diagnostic interview, a brief risk factor battery, and an inventory of sociodemographic information. Part 2 included a much more detailed risk factor battery and secondary diagnoses, including PTSD, that were not included in the core diagnostic interview. Part 1 was administered to all 8098 respondents. Budgetary constraints required that we administer part 2 to only a subsample of respondents consisting of all those aged 15 to 24 years (99.4% of whom completed part 2), all others who screened positive for any lifetime diagnosis in part 1 (98.1% of whom completed part 2), and a random subsample of other respondents (99% of whom completed part 2). A total of 5877 respondents completed part 2. More details about the design of the NCS are presented elsewhere.[37]

DIAGNOSTIC ASSESSMENT

The diagnostic interview in the NCS was a modified version of the CIDI.[38,39] The CIDI is a fully structured interview developed collaboratively by the World Health Organization and the US Alcohol, Drug, and Mental Health Administration to foster cross-cultural epidemiologic research by producing diagnoses according to the definitions and criteria of both *DSM-III-R*[20] and the Diagnostic Criteria for Research of the *International Classification of Diseases, 10th Revision*.[40] The modifications of the CIDI developed at the University of Michigan for the NCS consisted largely of changes in question order to improve flow and the introduction of clarifications to some of the more complex probe questions.[37]

The NCS disorders used to study comorbidity with PTSD included affective disorders (major depressive disorder, dysthymia, bipolar disorder), anxiety disorders (generalized anxiety disorder, panic disorder, phobia), antisocial personality disorder, and substance use disorders (alcohol abuse without dependence, alcohol dependence, drug abuse without dependence, drug dependence). All these diagnoses were based on *DSM-III-R* criteria. Diagnoses were generated by the use of the CIDI diagnostic program[41] for all disorders other than antisocial personality disorder. The latter was assessed with the antisocial personality disorder module from the DIS because this disorder was not part of the CIDI field trials. The field trials documented acceptable reliability and validity for all the CIDI diagnoses used herein.[42]

Posttraumatic stress disorder was assessed with a modified version of the Revised DIS[26] to be consistent with the assessment used in recent US epidemiologic surveys of PTSD.[26,29] In addition to the Revised DIS symptom questions, additional questions were asked about how soon the symptoms began after the trauma and how long the symptoms continued "at least a few times a week." Responses to the latter question were used as the basis for studying speed of recovery.

We also made four modifications to the Revised DIS PTSD section. The first involved the method for inquiring about traumatic stressors. Unlike the Revised DIS, which asks a single question about the lifetime occurrence of a list of traumatic events to oneself and a second question about traumas to others, the NCS asked 12 questions, one for each of 12 types of trauma, in an effort to focus memory search. Eleven questions were about events and experiences that qualify as traumas in *DSM-III-R* (**Figure 1**). A 12th question was an open-ended question about "any other terrible experience that most people never go through." Open-ended responses to this 12th question were subsequently coded as either qualifying under criterion A (eg, discovering a dead body) or not qualifying under criterion A (eg, normal bereavement). Responses that did not refer to specific events, were vague, or were confounded with PTSD (eg, biologic depression) were eliminated. In each case of the 12 events, we asked whether the event had ever occurred. For experiences 1, 9, and 10, that was the only

PREVALENCE

The two earliest community prevalence studies of PTSD were carried out as part of the Epidemiologic Catchment Area (ECA) Program in St Louis, Mo,[21] and North Carolina.[22] Using *DSM-III* criteria as operationalized in the Diagnostic Interview Schedule (DIS),[23] these studies found lifetime prevalences of 1.0% in St Louis and 1.3% in North Carolina. A lifetime prevalence of 2.6% was subsequently found in the control sample of a case-control study of the Mount St Helens volcanic eruption[24] with the use of the same diagnostic instrument and criteria as the ECA study. Two recent studies that used *DSM-III-R* criteria reported much higher rates. In a national telephone survey of women, Resnick et al[25] found that 12.3% of respondents (17.9% of those exposed to trauma)

question asked. For the others, we also asked the age at which the experience first occurred. Additional probe questions were also asked for some traumas, but are not included in the following analyses.

Second, based on evidence that respondents are sometimes reluctant to admit the occurrence of embarrassing and stigmatizing traumas, such as rape and sexual abuse, the 12 traumatic experiences were presented to respondents in a booklet. Interviewers asked about these experiences by number (eg, "Did you ever experience event number 1 on the list?" "How old were you when event number 1 first happened?") rather than by name.

The third modification is that we evaluated criteria B through D for the "most upsetting" event whether or not that event met the requirement in criterion A that it be outside the range of usual human experience. This allowed us to determine the extent to which the estimated prevalence of PTSD changed when criterion A was relaxed. The standard DIS symptom questions were used to evaluate criteria B through D, and standard DIS coding rules for criteria B through D were used to arrive at a diagnosis of PTSD according to the *DSM-III-R* criteria.

The fourth modification is that we evaluated criteria B through D only for one event per respondent. When a respondent reported the occurrence of more than one type of event, he or she was asked to nominate one of these as "most upsetting" for purposes of this evaluation. The Revised DIS, in comparison, evaluates these symptoms for up to three events. This restriction was imposed because of time and budget constraints in the NCS and with the recognition that only a small number of respondents who fail to meet PTSD diagnostic criteria for their "most upsetting" event are likely to meet these criteria for any other event (Naomi Breslau, PhD, oral communication, 1994).

The failure to obtain a complete trauma history and to assess PTSD for each lifetime trauma, a limitation not only of the NCS but of all previous community epidemiologic surveys of PTSD, means that estimates of lifetime prevalence are lower-bound estimates. It also means that the NCS and other community epidemiologic surveys of PTSD are unable to obtain unbiased data on either age-at-onset distributions or variation across events in the conditional probability of PTSD after trauma exposure. We will return to these limitations in the "Comment" section.

A small validation survey of the NCS PTSD module was conducted in which a probability sample of 29 NCS respondents who reported the occurrence of a lifetime trauma in the NCS were reinterviewed by trained clinical interviewers with a modified version of the PTSD module from an instrument that includes items from both the Structured Clinical Interview for *DSM-III-R*–Patient Version[43] and the Schedule for Affective Disorders and Schizophrenia–Lifetime Version.[44] This combined instrument was developed by researchers at the Harvard-Brown Anxiety Disorders Research Program.[45,46] Respondents who were diagnosed as having PTSD in the NCS (n=18) were oversampled compared with those diagnosed as being noncases (n=11). Interviewers were unaware of the NCS diagnoses. A weighted analysis that took this oversampling into consideration led to an estimated cross-sectional κ of 0.75, with an SE of .11. Positive predictive value was 1.0 and negative predictive value was 0.88, indicating that the NCS procedures somewhat underdiagnose PTSD.

ANALYSIS PROCEDURES

The NCS data were weighted to adjust for variation in within-household and between-household probabilities of selection and differential nonresponse. We also used a weight to adjust for differential nonresponse based on the nonrespondent survey and a comparison of the part 1 data reported by the small number of part 1 respondents who refused to complete part 2 vs those who did complete part 2. Respondents in the part 2 subsample were also weighted by the inverse of their probability of selection into part 2 to make the part 2 sample representative of the total population. Finally, the part 2 data were poststratified by means of an iterative procedure to approximate the national population distributions of the cross-classification of age, sex, race or ethnicity, marital status, education, living arrangements, region, and urbanicity as defined by the 1989 US National Health Interview Survey.[47] As shown in **Table 1**, the part 2 sample is representative of the total US population aged 15 to 54 years on a variety of sociodemographic characteristics. The weighted part 2 sample is used as the basis of the analyses reported in this article, and sample distributions reported reflect the weighted number of respondents (rounded to the nearest whole number).

Most of the results reported below are presented in the form of prevalences and zero-order odds ratios (ORs). The latter were obtained by exponentiating the regression coefficients from logistic models. The speed of recovery curve for the index episode was obtained by means of the Kaplan-Meier method for estimating survival curves. Because of the complex sample design, estimates of SEs of prevalences were obtained by the Taylor series linearization method.[48] The PSRATIO program in the OSIRIS software package[49] was used to make these calculations. Estimates of SEs of logistic regression coefficients were obtained by the method of balanced repeated replication[50,51] in 44 design-based balanced subsamples. The LOGISTIC program in the SAS software package[52] was used to estimate the parameters in each replicate, and an SAS macro was used to calculate the balanced repeated replication estimates of the variances of these parameter estimates across replicates. The speed of recovery curve was estimated by means of the SURVIVAL procedure in the SPSS software package.[53]

had a lifetime history of *DSM-III-R* PTSD. Breslau et al[26] administered the revised version of the DIS for *DSM-III-R* to a sample of young adults enrolled in a health maintenance organization in Detroit, Mich, and found that 11.3% of women (equivalent to 30.7% of those exposed to trauma) and 6% of men (equivalent to 14% of those exposed to trauma) had a lifetime history of PTSD.

Multiple factors might be involved in the much higher prevalences in the *DSM-III-R* vs *DSM-III* studies, including differences in diagnostic criteria, assessment procedures, and other sample characteristics.[27,28] Resnick et al[25] noted that the anonymity of telephone interviews may have contributed to the fact that so many women in their study reported traumatic experiences. Breslau et al[26] noted that recall bias might have been minimized in their study because of the young age of their respon-

Did Any of These Events Ever Happen to You?

1. You had direct combat experience in a war
2. You were involved in a life-threatening accident
3. You were involved in a fire, flood, or natural disaster
4. You witnessed someone being badly injured or killed
5. You were raped (someone had sexual intercourse with you when you did not want to by threatening you or using some degree of force)
6. You were sexually molested (someone touched or felt your genitals when you did not want them to)
7. You were seriously physically attacked or assaulted
8. You were physically abused as a child
9. You were seriously neglected as a child
10. You were threatened with a weapon, held captive, or kidnapped
11. Other ("any other terrible experience that most people never go through")
12. You suffered a great shock because one of the events on this list happened to someone close to you

Figure 1. *Questions about events and experiences that qualified as traumas according to DSM-III-R.*

TYPES OF TRAUMA

Only limited information is available on the types of traumatic experiences most strongly associated with PTSD. Many of the traumas identified as likely to cause PTSD are common,[9,29] and so the stipulation in criterion A of *DSM-III-R* that the trauma must be outside the range of usual human experience is difficult to defend.[30] Yet, ignoring this stipulation and allowing people with intrusive recollections of any stressful event to be evaluated as potential cases could dilute the meaning of PTSD as a stress-response syndrome.[31] One way of investigating this issue more carefully is to obtain base rates of exposure to specific traumas and to study variation in conditional probabilities of PTSD across different traumas. Data of this sort are presented below.

COMORBIDITY

Another important consideration in understanding PTSD is the high rate of comorbidity. Kulka et al[18] reported that 98.8% of Vietnam theater veterans with PTSD had a history of some other DIS *DSM-III-R* disorder, compared with 40.6% of those without PTSD. Helzer et al[21] and Breslau et al[26] reported that close to 80% of respondents with PTSD had experienced other psychiatric disorders, compared with about 30% and 44.3%, respectively, of those without PTSD. Rates of comorbidity between 62%[22] and 92%[24] have been reported in other population-based surveys of PTSD. Research in both treatment samples[32,33] and population-based samples[29] has used information on age at onset to show that history of other psychiatric disorders is associated with increased risk of subsequent PTSD. It is not clear, however, how large a proportion of all PTSD cases are primary vs secondary. This issue is examined in the present report.

Table 1. National Health Interview Survey (NHIS)*–National Comorbidity Survey (NCS) Part II Demographic Comparisons (n=5877)

	US Population (NHIS), %*	NCS Weighted, %	NCS Unweighted, %
Sex			
Male	49.1	47.8	48.2
Female	50.9	52.2	51.8
Race			
White	75.0	76.3	76.5
Black	11.9	11.4	11.3
Hispanic	8.6	9.0	8.9
Other	4.5	3.3	3.2
Education, y			
0-11	22.5	23.2	20.6
12	36.8	36.7	32.4
13-15	21.2	21.7	26.9
≥16	19.5	18.3	20.1
Marital status			
Married	59.8	62.1	49.3
Separated/widowed/ divorced	10.1	9.7	15.3
Never married	30.1	28.2	35.3
Region			
Northeast	20.0	20.2	19.3
Midwest	24.6	25.2	26.3
South	33.7	34.2	33.3
West	21.7	20.4	21.2
Age, y			
15-24	25.5	25.9	29.9
25-34	30.8	30.8	30.4
35-44	25.9	27.4	24.9
≥45	17.8	15.9	14.9
Urbanicity†			
MSAs ≥250 000	71.2	68.1	69.7
MSAs <250 000	8.1	7.3	6.3
Not MSA	20.7	24.6	24.0
Total No.	65 244	5877	5877

*National Health Interview Survey, 1989, *US Department of Health and Human Services, National Center for Health Statistics.[47]*
†*MSA indicates Metropolitan Statistical Area.*

CHRONICITY

Finally, we consider the issue of chronicity. The *DSM-III-R* requires a 1-month duration of symptoms as a criterion for PTSD. The sub–work group on PTSD for *DSM-IV* suggested that PTSD that endures for 3 months should be considered chronic based on evidence from several prospective studies of trauma victims that the number of people with PTSD symptoms decreases substantially within 3 months[34] and on evidence that people whose symptoms persist beyond 3 to 6 months have a high probability of becoming chronic cases.[21,24,32,35] Although much of this evidence comes from treatment samples in which chronicity would be expected to be worse, Breslau and Davis[36] found that 57% of PTSD cases in their sample had a duration of more than 1 year. We present data herein on the persistence of an index episode of PTSD in a nationally representative general population sample to investigate whether PTSD does, in fact, become chronic if symptoms last beyond 3 months.

Table 2. Lifetime Prevalence of Posttraumatic Stress Disorder by Age, Sex, and Marital Status

	% (SE)							
	Married		Previously Married		Never Married		Total	
Age, y	Male	Female	Male	Female	Male	Female	Male	Female
15-24	9.6 (5.0)	16.4 (2.6)	12.6 (9.4)	10.4 (5.3)	1.7 (0.5)	7.9 (1.3)	2.8 (0.7)	10.3 (1.2)
25-34	6.0 (1.7)	9.9 (1.5)	11.1 (5.2)	20.5 (5.9)	2.9 (0.9)	10.0 (2.8)	5.6 (1.0)	11.2 (1.3)
35-44	5.1 (1.7)	8.1 (1.7)	7.0 (2.0)	25.8 (4.9)	1.1 (0.8)	16.3 (6.7)	5.0 (1.4)	10.6 (1.6)
45-54	7.1 (2.1)	8.3 (1.9)	10.2 (5.4)	11.6 (3.8)	4.6 (1.9)	11.8 (7.3)	7.6 (2.0)	8.9 (1.7)
Total	6.1 (0.9)	9.6 (0.8)	9.4 (2.8)	18.9 (3.0)	1.9 (0.4)	8.9 (1.4)	5.0 (0.6)	10.4 (0.8)

RESULTS

PREVALENCE OF PTSD

The estimated lifetime prevalence of *DSM-III-R* PTSD in the total sample was 7.8% (with an SE of 0.5%). This estimate increased only modestly, to 8.4% (SE, 0.5%), when nonqualifying events were included, so the remainder of the analysis was based only on qualifying events. Lifetime prevalence estimates within the cells of the three-way cross-classification of age, sex, and marital status are reported in **Table 2**. As shown there, women were more than twice as likely overall as men to have lifetime PTSD (10.4% vs 5.0%, z=5.4, P<.05). Gender differences were apparent in all birth cohorts with lifetime prevalence significantly greater among older birth cohorts for men but not women. Lifetime prevalence was higher among the previously married (separated, divorced, or widowed) than the currently married, but this was significant only among women (18.9% vs 9.6%, z=3.0, P=.004, compared with 9.4% vs 6.1%, z=1.3, P=.17 among men). Prevalence was also higher among the married than the never married, but this was significant only among men (6.1% vs 1.9%, z=4.3, P=.001, compared with 9.6% vs 8.9%, z=0.4, P=.37 among women).

PREVALENCE OF TRAUMA EXPOSURE

Estimates of the lifetime prevalence of trauma exposure are presented in **Table 3** separately for men and women; 60.7% of men and 51.2% of women reported at least one traumatic event (z=3.8, P=.001). Consistent with previous research,[9] the majority of people with some type of lifetime trauma actually experienced two (14.5%/60.7%=23.9% of men with a lifetime trauma, 13.5%/51.2%=26.4% of women with a lifetime trauma), three (9.5%/60.7%=15.7% of men with a lifetime trauma, 5.0%/51.2=9.8% of women with a lifetime trauma), or more (10.2%/60.7%=16.8% of men with a lifetime trauma, 6.4%/51.2%=12.5% of women with a lifetime trauma) types of trauma. The types of trauma experienced by the largest proportions of people were witnessing someone being badly injured or killed (35.6% of men and 14.5% of women), being involved in a fire, flood, or natural disaster (18.9% of men and 15.2% of women), and being involved in a life-threatening accident (25% of men and 13.8% of women). A significantly higher proportion of men than women reported experiencing each of these

Table 3. Lifetime Prevalence of Trauma Experience

	Lifetime Prevalence of Trauma					
	Men (n=2812)*			Women (n=3065)*		
Trauma	%	(SE)	No.	%	(SE)	No.
Rape	0.7†	(0.2)	19	9.2	(0.8)	281
Molestation	2.8†	(0.5)	78	12.3	(1.0)	376
Physical attack	11.1†	(1.0)	313	6.9	(0.9)	210
Combat	6.4†	(0.9)	179	0.0	...	0
Shock	11.4	(1.1)	320	12.4	(1.1)	381
Threat with weapon	19.0†	(1.3)	535	6.8	(0.6)	208
Accident	25.0†	(1.2)	703	13.8	(1.1)	422
Natural disaster with fire	18.9†	(1.4)	532	15.2	(1.2)	467
Witness	35.6†	(2.0)	1002	14.5	(0.7)	445
Neglect	2.1†	(0.4)	58	3.4	(0.5)	105
Physical abuse	3.2†	(0.4)	91	4.8	(0.6)	146
Other qualifying trauma	2.2	(0.5)	61	2.7	(0.4)	83
Any trauma	60.7†	(1.9)	1707	51.2	(1.9)	1570
No. of traumas						
1	26.5	(1.5)	745	26.3	(1.7)	806
2	14.5	(0.9)	407	13.5	(0.9)	415
3	9.5†	(0.9)	268	5.0	(0.6)	154
4	10.2†	(0.8	287	6.4	(0.6)	195

*Sample distributions reflect the weighted number of respondents rounded to the nearest whole number.
†Sex difference significant at the .05 level, two-tailed test.

three as well as physical attacks, combat experience, and being threatened with a weapon, held captive, or kidnapped. A significantly higher proportion of women than men, in comparison, reported rape, sexual molestation, childhood parental neglect, and childhood physical abuse.

DIFFERENCES ACROSS TRAUMAS IN PROBABILITY OF PTSD

As described above, the NCS assessed PTSD either for the respondent's only lifetime trauma or, in the case of respondents who experienced more than one trauma type, for the one lifetime trauma nominated as "most upsetting." As shown in **Table 4**, the probability of a trauma being the basis for the assessment of PTSD (P1 in the table) varied substantially across trauma types. This variation was a complex function of differences in the distribution of the joint occurrences of multiple traumas and the likelihood that some types of trauma are generally more distressing than others. Among men and women alike, rape was the listed trauma with the highest conditional probability of

Table 4. Conditional Probabilities of Specific Traumas Being the Basis for the Assessment of Posttraumatic Stress Disorder (PTSD) and, Once Selected for Assessment, for Being Associated With PTSD*

| | Lifetime Prevalence of PTSD | | | | | |
| | Men | | | Women | | |
Trauma	P1 (SE)	P2 (SE)	n_t	P1 (SE)	P2 (SE)	n_t
Rape	62.1 (11.6)	65.0 (15.6)	12	74.4 (4.1)	45.9 (5.9)	209
Molestation	26.9 (6.2)	12.2† (5.3)	21	61.4 (2.8)	26.5 (4.0)	231
Physical attack	35.7 (5.1)	1.8† (0.9)	112	42.0 (7.7)	21.3 (7.3)	88
Combat	57.7 (6.7)	38.8† (9.9)	103	...	...	0
Shock	44.8 (4.7)	4.4† (1.4)	144	55.4 (4.0)	10.4 (2.0)	211
Threat with weapon	32.9 (3.0)	1.9† (0.8)	176	36.4 (4.8)	32.6 (7.8)	76
Accident	44.6 (3.6)	6.3 (1.8)	314	44.5 (4.1)	8.8 (4.3)	188
Natural disaster with fire	35.9 (2.8)	3.7 (1.8)	191	44.4 (4.4)	5.4 (3.8)	207
Witness	52.4 (2.7)	6.4 (1.2)	524	47.1 (4.2)	7.5 (1.7)	209
Neglect	27.8 (5.8)	23.9 (10.3)	16	28.1 (5.8)	19.7 (7.7)	30
Physical abuse	50.4 (4.7)	22.3† (5.2)	46	37.0 (5.0)	48.5 (9.5)	54
Other qualifying trauma	77.6 (7.8)	12.7† (4.8)	48	80.8 (5.0)	33.4 (8.0)	67
Any trauma	...	8.1 (1.0)	1707	...	20.4 (1.5)	1570

**P1 indicates the probability that a respondent who reported the lifetime occurrence of a particular trauma type will have this be the basis for the assessment of PTSD (ie, that this trauma will either be the respondent's only lifetime trauma or the nominated "most upsetting" trauma); P2, the probability that a particular trauma type, once selected as the basis for the assessment of PTSD, will be associated with PTSD; and n_t, the weighted number of respondents (rounded to the nearest whole number) with a particular "only or most upsetting" trauma type who were diagnosed as having lifetime PTSD.*
†Sex difference significant at the .05 level, two-tailed test.

being the basis for the assessment of PTSD, while sexual molestation and childhood neglect had the lowest conditional probabilities for men and women, respectively.

Consistent with previous research reviewed by March[31] and by Kilpatrick and Resnick,[9] the columns in Table 4 labeled P2 show that the proportion of respondents with a trauma who met criteria for PTSD varied significantly by type of most upsetting trauma. The trauma of this sort most likely to be associated with PTSD among men and women alike was rape. Sixty-five percent of men and 45.9% of women who reported this as their most upsetting trauma developed PTSD. Other most upsetting listed traumas associated with a high probability of PTSD included combat exposure, childhood neglect, and childhood physical abuse among men (with probabilities of developing PTSD of 38.8%, 23.9%, and 22.3%, respectively) and sexual molestation, physical attack, being threatened with a weapon, and childhood physical abuse among women (with probabilities of developing PTSD of 26.5%, 21.3%, 32.6%, and 48.5%, respectively).

A comparison of the results in Tables 3 and 4 shows that, although men were more likely than women to experience at least one trauma overall, women were more likely than men to experience a trauma associated with a high probability of PTSD. While 44.6% of men with a lifetime trauma reported that their most upsetting trauma was one of those associated with high probability of PTSD among men (ie, rape, combat exposure, childhood neglect, or childhood physical abuse), a significantly higher percentage of women (67.6%; z=11.5, P=.001) with a lifetime trauma reported that their most distressing trauma was one of those associated with a high probability of PTSD among women (ie, rape, sexual molestation, physical attack, being threatened with a weapon, or childhood physical abuse). Furthermore, for all most upsetting traumas other than rape and childhood neglect, a

higher proportion of women than men met criteria for PTSD. The combination of these influences—greater exposure to high-impact traumas and greater likelihood of developing PTSD once exposed—led to the finding that women exposed to a trauma were more than twice as likely as men to develop PTSD (20.4% of women compared with 8.2% of men, z=6.7, P=.001).

DISTRIBUTION OF MOST UPSETTING TRAUMAS AMONG PEOPLE WITH PTSD

The probabilities of having each type of most upsetting trauma in the subsample of respondents with lifetime PTSD are presented in **Table 5**. The traumas most commonly associated with PTSD among men were combat exposure, which was the nominated most upsetting trauma for 28.8% of men with PTSD, and witnessing someone being badly injured or killed, which was the nominated trauma for 24.3% of men. Combat exposure was a fairly uncommon event (6.4% lifetime prevalence among men) associated with a high probability of PTSD when it was nominated as most upsetting (38.8%). Witnessing, in comparison, was a much more common event (35.6% lifetime prevalence among men) associated with a low probability of PTSD when it was nominated as most upsetting (6.4%).

Among women, the events most commonly associated with PTSD were rape, which was nominated as most upsetting for 29.9% of women with PTSD, and sexual molestation, which was the nominated event for 19.1% of female cases. Together, rape and molestation were the nominated events for 49% of women with PTSD. These events are both common in the general population of women (9.2% of women in the NCS reported lifetime rape and 12.2% reported molestation) and associated with high probabilities of PTSD when nominated as most upsetting (45.9% for rape and 26.5% for molestation).

Table 5. Those With Posttraumatic Stress Disorder (PTSD) Reporting Each Most Upsetting Trauma Type by Sex

Trauma	Men (n=139)*		Women (n=320)*	
	% (SE)	No.*	% (SE)	No.*
Rape	5.4† (2.8)	8	29.9 (3.4)	96
Molestation	1.8† (0.7)	3	19.1 (3.1)	61
Physical attack	1.4† (0.6)	2	5.9 (1.6)	19
Combat	28.8 (6.1)	40	...	0
Shock	4.5 (1.4)	6	6.8 (1.2)	22
Threat with weapon	2.5† (1.1)	3	7.7 (2.2)	25
Accident	12.1 (3.4)	20	5.1 (2.4)	16
Natural disaster with fire	5.2 (2.5)	7	3.5 (2.3)	11
Witness	24.3† (4.8)	30	4.9 (1.1)	16
Neglect	2.8 (1.1)	4	1.8 (0.7)	6
Physical abuse	7.4 (2.0)	10	8.2 (2.9)	26
Other qualifying trauma	3.8 (1.6)	6	7.0 (2.1)	22
Any trauma	100.0 (...)	139	100.0 (...)	320

*Sample distributions reflect the weighted number of respondents rounded to the nearest whole number.
†Sex difference significant at the .05 level, two-tailed test.

DEMOGRAPHIC CORRELATES OF PTSD

Multiple logistic regression analyses were carried out to describe the sociodemographic correlates of lifetime PTSD. Sex, age, marital status, and the interactions of age with sex and sex with marital status were all found to be significant predictors of lifetime PTSD. Once these significant predictors were controlled, there were no significant residual associations of PTSD with race, education, urbanicity, or region of the country.

The ORs under model 1 in **Table 6** describe the significant associations of age, sex, and marital status with PTSD. The results in the rest of the table decompose these total associations into components resulting from the relationships of these predictors with exposure to at least one lifetime trauma (model 2), with PTSD in the subsample of respondents exposed to at least one lifetime trauma (model 3), and with PTSD in the subsample of respondents exposed to at least one lifetime trauma after controlling for differences in most upsetting trauma type (model 4). If the association of a particular demographic variable with PTSD results from its being associated with higher-impact traumas, the OR for that variable under model 3 will be larger than the OR under model 4.

Sex

Consistent with our earlier results, Table 6 shows that women had a significantly higher lifetime prevalence of PTSD than men. The coding of the variables in Table 6, however, is such that the OR of 4.87 for women under model 1 is for the comparison between never-married women and never-married men aged 15 to 24 years. A substantial sex difference in PTSD existed in this subsample despite the finding under model 2 that a lower proportion of women than men in this subsample reported ever experiencing a trauma (OR=0.82). As shown under model 3, women in this subsample who had been exposed to at least one trauma had a much higher odds than comparable men of developing PTSD (OR=6.13). The OR is smaller under model 3 than model 4, which means that this greater vulnerability partly results from the fact that the most upsetting traumas nominated by women were associated with a higher probability of PTSD than those nominated by men (assuming, for purposes of this analysis, that there was no sex difference in the probability of PTSD among men and women who nominated the same most upsetting event). However, the fact that the OR under model 4 remained significant shows that these women were significantly more vulnerable than men even when we controlled for sex differences in the types of most upsetting trauma. This sex difference might be explained by detailed aspects of trauma exposure, such as age at exposure and/or previous trauma history, but we were unable to investigate this possibility because PTSD was not assessed for a random trauma.

Age

Because the relationship between age and lifetime prevalence of PTSD differed by sex, the ORs associated with age were estimated separately for men and women in Table 6. Among men, there was no consistent association between age and PTSD (model 1), controlling for marital status. The results under model 2, however, show that lifetime trauma exposure was significantly and positively associated with age, while the results under models 3 and 4 showed a counterbalancing, but not statistically significant, negative association between age and probability of PTSD given exposure. Among women, in comparison, there was a nonsignificant trend for lifetime PTSD to be negatively associated with age (model 1), controlling for marital status. This is because the increasing prevalence of trauma exposure with age was much less pronounced among women than men, while the same general pattern of a modestly decreasing probability of PTSD among the exposed with increasing age held for women as well as men.

Marital Status

Lifetime PTSD was significantly more prevalent among the previously married (separated, divorced, or widowed) than the currently married for both men and women, controlling for age. Furthermore, among men but not women, PTSD was significantly more prevalent among the currently married than the never married, controlling for age. These associations resulted largely from a combination of significantly elevated probabilities of PTSD among the exposed (models 3 and 4) rather than differential lifetime probabilities of trauma exposure.

LIFETIME COMORBIDITY BETWEEN PTSD AND OTHER DISORDERS

Estimates of the lifetime prevalences of 11 DSM-III-R disorders are reported in **Table 7** separately for men and women with and without a lifetime history of PTSD. The ORs show a consistently significant cross-sectional relationship between lifetime PTSD and these other disor-

Table 6. Sociodemographic Correlates of Lifetime Posttraumatic Stress Disorder (PTSD)*

	OR (95% Confidence Interval)			
	Model 1: Risk of PTSD	Model 2: Risk of Trauma	Model 3: Risk of PTSD in Trauma Subsample	Model 4: Risk of PTSD in Trauma Subsample Controlling Trauma Type
Sex				
Male	1.00 (...)	1.00 (...)	1.00 (...)	1.00 (...)
Female	4.87† (2.92-8.12)	0.82 (0.65-1.04)	6.13† (3.59-10.46)	4.05† (2.48-6.63)
Age (males), y				
15-24	1.00 (...)	1.00 (...)	1.00 (...)	1.00 (...)
25-34	0.87 (0.36-2.07)	1.25 (0.92-1.70)	0.85 (0.36-1.99)	0.81 (0.32-2.09)
35-44	0.66 (0.21-2.10)	1.46† (1.00-2.13)	0.58 (0.18-1.88)	0.31 (0.09-1.10)
45-54	0.96 (0.34-2.72)	1.76† (1.02-3.05)	0.81 (0.28-2.29)	0.57 (0.17-1.95)
Age (females), y				
15-24	1.00 (...)	1.00 (...)	1.00 (...)	1.00 (...)
25-34	0.89 (0.60-1.31)	1.06 (0.78-1.43)	0.83 (0.52-1.32)	0.82 (0.51-1.33)
35-44	0.81 (0.49-1.35)	1.45† (1.00-2.10)	0.61 (0.36-1.03)	0.58 (0.37-1.05)
45-54	0.64 (0.36-1.30)	1.05 (0.72-1.53)	0.55 (0.31-1.00)	0.59 (0.35-1.01)
Marital status (males)				
Never married	1.00 (...)	1.00 (...)	1.00 (...)	1.00 (...)
Married	3.82† (1.64-8.87)	1.14 (0.79-1.63)	3.56† (1.62-7.82)	3.21† (1.43-7.86)
Previously married	6.00† (1.73-20.79)	1.60 (0.87-2.93)	5.11† (1.39-18.71)	3.47 (0.96-15.04)
Marital status (females)				
Never married	1.00 (...)	1.00 (...)	1.00 (...)	1.00 (...)
Married	1.27 (0.77-2.10)	1.02 (0.73-1.42)	1.33 (0.78-2.26)	1.20 (0.76-1.91)
Previously married	2.86† (1.48-5.53)	1.35 (0.83-2.21)	2.93† (1.14-6.08)	2.59† (1.33-5.06)

*The coefficients are based on multivariate logistic regression models in which age, sex, marital status, age × sex, and marital status × sex are predictors of the outcome. The outcome in the first model is PTSD. The outcome in the second model is trauma. The outcome in the third model is the same as in the first, with the exception that the model is estimated in the subsample of respondents who experienced trauma. The outcome in the fourth model is the same as in the third and in the same subsample, with the exception that the model includes controls for trauma type. The interaction between age and sex (3 dfs) is significant in each of the four models, with Wald χ^2 values (adjusted for design effects) ranging between 10.6 and 16.7. The interaction between marital status and sex (2 dfs) is also significant in all models, with Wald χ^2 (again adjusted for design effects) ranging between 13.1 and 17.5. More detailed modeling failed to find any significant age × sex or age × sex × marital status interactions.

†The odds ratio (OR) is significantly different at the .05 level (two-tailed) from the reference category value of OR=1.0.

ders among both men and women. A lifetime history of at least one other disorder was present in 88.3% of the men with lifetime PTSD and 79% of the women with lifetime PTSD.

The relative magnitudes of the ORs in Table 7 are worth noting in light of observations by previous commentators that comorbidity with PTSD would be expected for some disorders because of overlap in symptom criteria.[54,55] In particular, several of the criteria C and D symptoms of PTSD (eg, diminished interest, restricted range of affect, sleep difficulties, difficulty concentrating) overlap with symptoms of depression, while several criterion C symptoms of PTSD (eg, irritability, hypervigilance, startle) overlap with symptoms of generalized anxiety disorder, and criterion D6 (physiologic reactivity) could create an overlap with social phobia, simple phobia, and panic disorder. The cross-sectional results in Table 7 show that PTSD does, in fact, have substantial comorbidities with all of these disorders.

Absence of a complete PTSD assessment for all lifetime traumas made it impossible to determine unequivocally how often comorbid PTSD was a primary disorder in the sense of having an earlier age at onset than other comorbid conditions. It is possible, however, to place upper and lower bounds on this estimate. The upper bound is the percentage of patients with comorbidity who had

no other NCS/DSM-III-R disorder as of the age at their earliest lifetime trauma. The lower bound is the percentage of patients with comorbidity who had no other NCS/DSM-III-R disorder as of the age at their most upsetting trauma. These upper and lower bound estimates are reported in **Table 8**. The results suggest that PTSD was primary more often than not with respect to comorbid affective disorders and substance use disorders and, among women, with respect to comorbid conduct disorder (range, 52.7% to 84.3%). Posttraumatic stress disorder was less likely to be primary with respect to comorbid anxiety disorders and, among men, comorbid conduct disorder, although even in these cases the percentage of cases in which PTSD was primary was substantial (range, 30.3% to 61.4%). We estimate that PTSD was primary with respect to all other comorbid disorders between 29.3% and 51.3% of the time among men and between 40.8% and 57.6% of the time among women.

PERSISTENCE OF PTSD

As noted earlier, NCS respondents who met criteria for PTSD were asked how many weeks, months, or years after onset of their index episode they continued to have symptoms at least a few times a week. Survival curves based on these retrospective reports are presented in **Figure 2** separately for respondents who ever sought pro-

Table 7. Comorbidity of Posttraumatic Stress Disorder (PTSD) With Other Disorders in the Total Sample*

	PTSD		No PTSD		
	% (SE)	No.†	% (SE)	No.†	OR (95% CI)
Men					
Affective disorders					
MDE	47.9 (5.5)	67	11.7 (0.8)	314	6.90‡ (4.36-10.92)
Dysthymia	21.4 (4.5)	30	4.4 (0.4)	117	5.95‡ (3.18-11.13)
Mania	11.7 (3.5)	16	1.3 (0.3)	34	10.41‡ (4.20-25.76)
Anxiety disorders					
GAD	16.8 (4.5)	23	3.3 (0.4)	89	5.89‡ (2.59-13.38)
Panic disorder	7.3 (2.3)	10	1.9 (0.4)	52	4.11‡ (1.60-10.11)
Simple phobia	31.4 (6.0)	44	6.0 (0.5)	161	7.14‡ (4.13-12.35)
Social phobia	27.6 (4.9)	38	11.3 (0.7)	302	2.99‡ (1.77-5.04)
Agoraphobia	16.1 (4.7)	22	4.1 (0.5)	109	4.53‡ (1.88-10.92)
Substance use disorders					
Alcohol abuse/dependence	51.9 (6.7)	72	34.4 (1.2)	919	2.06‡ (1.14-3.70)
Drug abuse/dependence	34.5 (6.9)	48	15.1 (1.0)	403	2.97‡ (1.52-5.79)
Other disorder					
Conduct disorder	43.3 (4.9)	60	19.5 (1.2)	521	3.15‡ (2.12-4.69)
Any disorder§					
No other diagnosis	11.7 (3.0)	67	45.2 (1.9)	1476	0.16‡ (0.07-0.35)
1 diagnoses	14.9 (2.8)	49	24.4 (1.1)	515	2.36 (0.99-5.64)
2 diagnoses	14.4 (3.9)	59	14.7 (1.1)	341	3.80‡ (1.37-10.58)
≥3 diagnoses	59.0 (5.2)	144	15.7 (0.9)	414	14.51‡ (6.65-31.66)
Women					
Affective disorders					
MDE	48.5 (3.4)	155	18.8 (0.9)	516	4.07‡ (3.08-5.39)
Dysthymia	23.3 (3.3)	75	6.8 (0.6)	187	4.14‡ (2.74-6.25)
Mania	5.7 (1.7)	18	1.3 (0.4)	37	4.45‡ (1.74-11.41)
Anxiety disorders					
GAD	15.0 (2.5)	48	5.9 (0.7)	162	2.81‡ (1.60-4.95)
Panic disorder	12.6 (2.3)	40	4.3 (0.5)	119	3.18‡ (1.89-5.37)
Simple phobia	29.0 (2.9)	93	14.5 (1.2)	397	2.42‡ (1.66-3.51)
Social phobia	28.4 (3.1)	91	14.1 (1.2)	387	2.42‡ (1.71-3.43)
Agoraphobia	22.4 (2.8)	72	7.8 (0.7)	214	3.42‡ (2.40-4.88)
Substance use disorders					
Alcohol abuse/dependence	27.9 (3.6)	90	13.5 (1.1)	372	2.48‡ (1.78-3.45)
Drug abuse/dependence	26.9 (3.4)	86	7.6 (0.7)	209	4.46‡ (3.11-6.39)
Other disorder					
Conduct disorder	15.4 (2.0)	49	5.9 (0.7)	163	2.88‡ (1.98-4.18)
Any disorder§					
No other diagnosis	21.0 (3.7)	16	53.8 (2.2)	1209	0.23‡ (0.14-0.37)
1 diagnosis	17.2 (2.2)	20	20.4 (1.4)	522	2.17‡ (1.35-3.48)
2 diagnoses	18.2 (3.1)	9	11.7 (0.8)	398	3.98‡ (2.11-7.50)
≥3 diagnoses	43.6 (3.8)	93	14.1 (1.4)	544	7.91‡ (4.82-12.96)

*OR indicates odds ratio; CI, confidence interval; MDE, major depressive episode; and GAD, generalized affective disorder. n=139 and 2673 for men with and without PTSD, respectively; n=320 and 2745 for women with and without PTSD, respectively.
†Sample distributions reflect the weighted number of respondents rounded to the nearest whole number.
‡Odds ratio significant at the .05 level, two-tailed test.
§Odds ratios for one, two, and three or more disorders from a multivariate model.

fessional treatment for a mental problem and those who did not. The survival curves decreased most steeply in the first 12 months after the onset of symptoms in both subsamples. The curves continued to decline with a more gradual slope for approximately 6 years after symptom onset. The median time to remission was 36 months among the respondents who ever sought professional treatment (n=266) and 64 months among those who did not (n=193). Statistical analysis based on the Lee-Desu χ^2 test[56] showed that these two survival curves were significantly different (χ^2=5.0, df=1, P=.02), although absence of data on the timing of treatment made it impossible to interpret this difference as resulting from the effects of treatment. Perhaps of more interest than the difference between the two curves was the consistent finding that PTSD failed to remit in somewhat more than one third of persons even after many years not only in the subsample of respondents who did not receive professional treatment but also in the treatment subsample.

COMMENT

PREVALENCE

The results reported herein are based on data that require lifetime recall of traumas and the symptoms asso-

ciated with them. It is likely that there was some recall failure in respondent reports, leading to underestimation of the lifetime prevalences of both traumatic experiences and PTSD. In addition, PTSD was assessed for only one event per respondent, which could have led to additional underestimation of PTSD. Furthermore, the clinical validation study of the NCS diagnostic assessment showed that PTSD was somewhat underdiagnosed.

Even with these biases toward underreporting, however, the results show that PTSD is a highly prevalent disorder. A full 7.8% of respondents (5% of men and 10.4% of women) were estimated to have a lifetime history of PTSD. Similar prevalence estimates were reported by Breslau et al[26] (6% among men and 11.3% among women) and Resnick et al[25] (12.3% among women) in the two previous epidemiologic surveys of PTSD that used DSM-III-R criteria. These are much higher than the 1% to 3% prevalence estimates found in the ECA study[21,22] and in a subsequent study that used the same methods as the ECA.[24]

It is unclear why the results of recent studies differ so dramatically from those of the earlier ECA studies. Differences in diagnostic criteria, sampling frames, years of administration, or administrative procedures could all be involved. There are also differences across studies in the kinds of events that were counted as fulfilling criterion A. For example, Davidson et al,[22] in their analysis of the North Carolina ECA data, included among the qualifying events such things as mother's illness and death and anaphylactic reaction to medication as qualifying events,

while Helzer et al,[21] in their analysis of the St Louis ECA data, included having a miscarriage and Shore et al[24] included husband's illness and death and wife's seizures. Our reading of DSM-III-R suggests that none of these is a qualifying event and, as a result, open-ended reports of such events by NCS respondents were not counted in estimating PTSD. At the same time, some of the events that we included might not have been included by previous investigators. Because of these differences, it is difficult to make rigorous comparisons across the different community surveys of PTSD.

The estimated prevalence of PTSD did not increase much when we relaxed criterion A to include nonqualifying events reported in response to an open-ended question about "any other terrible experiences that most people never go through." It is important to recognize, though, that we did not systematically attempt to elicit information about nonqualifying events by asking explicit questions about such things as chronic illness, job loss, or marital difficulties, and we have no way of knowing how often these experiences are associated with PTSD-like symptoms. It would be useful for subsequent research to conduct a more broad-based investigation of this sort to determine which types of nonqualifying life events are most likely to provoke such symptoms and to facilitate research on individual differences in vulnerability aimed at explaining why some people develop PTSD-like symptoms in response to events that are not normally considered traumatic.[9,31] This would be especially useful in light of the substantial changes introduced into DSM-IV concerning the definitions of qualifying events.[57]

EXPOSURE TO TRAUMATIC EXPERIENCES

The results concerning the types of traumatic experiences that are associated with PTSD are also relevant to a controversy concerning criterion A in DSM-III-R, which stipulates that the trauma must be outside the range of usual human experience and of a type that would be markedly distressing to almost anyone. The NCS results are consistent with recent research in showing that virtually all of the qualifying events for PTSD are quite common[9] and that none is such that virtually everyone exposed to it develops PTSD. There is also enormous

Table 8. Proportions of Comorbid Lifetime Posttraumatic Stress Disorder That Are Primary Disorders

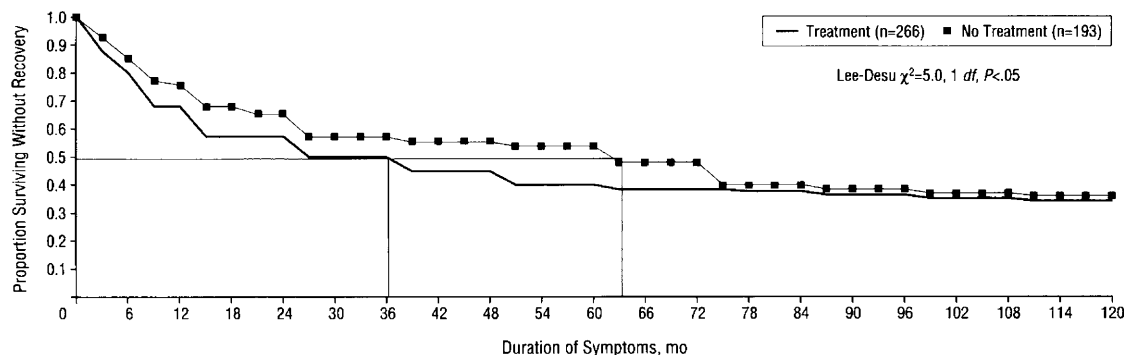|	Men, % (SE)		Women, % (SE)	
	Upper Bound	Lower Bound	Upper Bound	Lower Bound
Any affective disorder	76.8 (6.1)	53.0 (8.1)	78.4 (3.5)	57.9 (4.9)
Any anxiety disorder	50.0 (7.4)	30.3 (6.2)	56.1 (4.9)	37.3 (4.1)
Conduct disorder	61.4 (8.1)	45.9 (7.9)	72.7 (8.8)	56.3 (9.4)
Any alcohol or substance disorder	65.3 (5.9)	52.7 (6.8)	84.3 (2.7)	65.1 (4.2)
Any disorder	51.3 (5.0)	29.3 (4.6)	57.6 (3.6)	40.8 (3.5)

Figure 2. *Survival curves based on duration of symptoms for respondents who did and did not receive treatment for posttraumatic stress disorder.*

variability across nominated most distressing traumatic events in the probability of PTSD. Furthermore, events that are traumatic in one sector of the population may not be traumatic in another. For example, men in the NCS were nearly twice as likely as women to report being seriously physically attacked or assaulted (11.1% vs 6.9%, z=3.2, P=.002). Yet, this type of event, when nominated as most upsetting, was more than 15 times as likely to be associated with PTSD among women as men (21.3% vs 1.8%, z=2.6, P=.01). Such subgroup differences make it difficult to categorize stressful events neatly into those that are traumatic and those that are not traumatic.[31]

In evaluating the results concerning the types of traumatic experiences associated with PTSD, it is important to remember that the NCS assessed criteria B through D for only one event per person. As a result, the event-specific analyses focus on the subsample of events that were rated most upsetting by respondents who had two or more lifetime trauma types. This creates the potential for an overestimation of the associations of particular events with PTSD. For example, while 65% of the subsample of men who reported that being raped was either their only or their most upsetting lifetime trauma developed PTSD after that event, a much smaller percentage (46.4%) of the larger group of all men who reported being raped (whether or not it was their only or most upsetting trauma) reported lifetime PTSD associated with their most upsetting trauma. The most plausible way to interpret this discrepancy is to assume that the rapes nominated as most upsetting shared some objective features that made them more traumatizing than the rapes not nominated as most upsetting. If this is the case, it would be a mistake to assume that "typical" traumas are associated with probabilities of PTSD as high as those found herein.

The only way to correct this problem and obtain unbiased estimates of the extent to which traumas of particular types are likely to lead to PTSD is to obtain data on "typical" traumas rather than "most upsetting" traumas. This could be done, in simplest form, by carrying out a survey in which an enumeration of all lifetime traumas was obtained from each respondent and a randomly selected trauma or subset of traumas from this list was assessed for PTSD. A complete assessment of trauma history and whether PTSD occurred after each lifetime trauma would provide much better information. However, this would be a substantial task. The results in Table 3 show that more than 10% of men and 6% of women in the NCS reported four or more types of lifetime traumas, some of which involved multiple occurrences (eg, being in two or more natural disasters at different times in their lives). In some cases, a complete assessment of trauma history would involve an assessment of 20 or more traumas. Nonetheless, our ability to distinguish primary and secondary PTSD, to estimate age-at-onset distributions, to evaluate the significance of intercohort trends in prevalence, and to obtain unbiased estimates of the conditional probabilities of PTSD associated with such things as different types of trauma, different trauma ages, and different trauma histories all require complete assessments of this sort. This should be a goal of future epidemiologic research on PTSD.

SOCIODEMOGRAPHIC CORRELATES OF PTSD

The NCS found that PTSD was approximately twice as prevalent among women as men. This is consistent with the findings of Breslau et al[26] in a community survey of young adults, but inconsistent with the results of two reports from the ECA study, neither of which found a sex difference in PTSD.[21,22] Both the NCS and Breslau et al[26] found that women exposed to a trauma are significantly more likely than men exposed to a trauma to develop PTSD and that this is the main reason for the sex difference in PTSD. This evidence of greater vulnerability among women is inconsistent with studies of people exposed to a single trauma that found conflicting results concerning whether men and women exposed to the same trauma differ significantly in the probability of PTSD.[13,58-60]

The NCS findings concerning different patterns of PTSD with age among men and women could reflect sex differences in substantive age effects, in substantive cohort effects, in methodologic artifacts caused by differential recall failure or differential sample attrition, or in some combination of these processes. There is no way to distinguish these possibilities with the data available to us. The situation is especially difficult in that we have no way of establishing age at onset of first PTSD because PTSD was assessed only for a single lifetime trauma.

The NCS found that lifetime PTSD was significantly more prevalent among respondents who were previously married than those who were married at the time of interview and, among men, more prevalent among the currently married than the never married. The only other general population study of PTSD that examined similar associations was that of Davidson et al[22] in the North Carolina ECA, who found an elevated but nonsignificant prevalence of PTSD among married respondents vs others in the sample. Results concerning the effects of marital status in studies of particular traumas are inconsistent.[18,61,62]

COMORBIDITY

The NCS results concerning comorbidity are consistent with previous research[21,22,24,32,33,35] in showing that the relative odds of other lifetime disorders are significantly elevated among people with lifetime PTSD and that the vast majority of these people also have at least one other lifetime DSM-III-R disorder. Absence of age-at-onset data for PTSD in the NCS made it impossible to obtain unbiased estimates of the proportion of cases in which first onset of PTSD (as opposed to onset associated with the most upsetting trauma) occurred at an earlier or later age than comorbid disorders. Estimates of upper and lower bounds, however, showed that while PTSD often occurs before other comorbid conditions, it usually occurs subsequent to at least one previous DSM-III-R disorder. This suggests that a complete assessment of lifetime PTSD would likely show both that it often occurs to people with a history and that it is often associated with the subsequent onset of yet other disorders. Further research is needed to investigate these issues. In the ideal case, this would be done prospectively to avoid the retrospective

recall bias that clouds the interpretation of this part of the NCS analysis.

It was noted above that previous commentators have argued that comorbidity with PTSD would be expected for some disorders because of overlap of several criteria C and D symptoms of PTSD with symptoms of depression, of several criterion C symptoms of PTSD with symptoms of generalized anxiety disorder, and of criterion D6 of PTSD with social phobia, simple phobia, and panic disorder.[54,55] It would be useful for future research to determine whether comorbidity of PTSD with these other disorders remains if the definition of PTSD were based on the more distinctive criterion B symptoms concerning flashbacks and reactions to reexposure.

DURATION OF THE INDEX EPISODE

Our analysis of the duration of PTSD symptoms associated with the most upsetting lifetime trauma, finally, yielded several important results. First, we found that the average duration of symptoms was shorter in the subsample of people who ever obtained treatment (36 months) than in the subsample of people who did not obtain treatment (64 months). Although this difference cannot be taken as definitive evidence of the effectiveness of treatment because of differential selection into treatment and the possibility that error in recall of symptom duration is correlated with treatment, it suggests that treatment may be effective in reducing the duration of PTSD. Second, we found that more than one third of persons with PTSD never fully remit even after many years and irrespective of whether they were in treatment. In addition, consistent with the results of several previous prospective and retrospective studies,[21,22,32,36,37] we found that the survival curve decreased most steeply in the first 12 months after the onset of symptoms. We also found that the curve continues to decline with a more gradual slope for approximately 6 years after symptom onset. This part of the pattern is inconsistent with the suggestion of the sub–work group on PTSD for *DSM-IV* that people whose symptoms persist beyond 3 months rarely recover without professional treatment. Indeed, these results suggest that even after 2 years, the average person with PTSD who has not been in treatment still has a 50% chance of eventual remission.

CONCLUSION

The results reported herein show that PTSD is a highly prevalent lifetime disorder that often persists for years. The qualifying events for PTSD are also common, with many respondents reporting the occurrence of quite a few such events during their lifetimes. Although there is great variability in the associations of these different events with PTSD, none is such that virtually everyone exposed to it develops the disorder. Future research should assess PTSD for each respondent's full lifetime trauma history to resolve uncertainties concerning age at onset, cohort effects, the relative risk of PTSD associated with different precipitating events, the impact of previous disorders on subsequent PTSD, and the impact of PTSD on subsequent secondary disorders.

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