The Impact of Changing Diagnostic Criteria in Posttraumatic Stress Disorder in a Canadian Epidemiologic Sample

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Background: Since its inclusion in *DSM-III*, posttraumatic stress disorder (PTSD) has undergone a number of changes in its diagnostic criteria, including the expansion of Criterion A (traumatic stressor), the addition of symptom duration (none specified in *DSM-III*), and the requirement for impairment or distress (Criterion F, *DSM-IV* only).

Method: This study examined the impact of changes in PTSD diagnostic criteria using a Canadian PTSD epidemiologic sample. The rates of PTSD and its correlates were evaluated in a nationally representative random sample of 3,006 adults. *DSM-III*, *DSM-III-R*, *DSM-IV*, and *ICD-10* criteria were employed. *DSM-III*, *DSM-III-R*, and *ICD-10* rates were re-evaluated, substituting specific *DSM-IV* criteria (A–F).

Results: The prevalence rates of lifetime PTSD ranged from 13.4% (*DSM-III*) to 13.0% (*ICD-10*) to 12.2% (*DSM-III-R*) to 9.2% (*DSM-IV*); all rates differed significantly from each other ($P < .001$). Regardless of diagnostic criteria, most people reported more than 1-year duration of symptoms, although rates were significantly higher in those with *DSM-IV* PTSD (68.2%, $P < .0001$). Rates of comorbid major depressive disorder and alcohol and substance abuse and dependence were also significantly higher ($P < .05$) using the *DSM-IV* PTSD criteria, and those with *DSM-IV* PTSD reported significantly higher rates of help-seeking ($P < .001$). When Criterion F was added to earlier versions, lifetime PTSD rates became much closer to those obtained using *DSM-IV* criteria: 10.6% (*DSM-III*), 10.2% (*DSM-III-R*), and 9.9% (*ICD-10*); however, rates fluctuated when operational definitions of Criterion F were modified. *DSM-III* PTSD was also substantially affected by *DSM-IV* Criteria A and C.

Conclusions: *DSM-IV* PTSD may identify a more severe disorder. The addition of the clinical significance criterion (F) appeared to affect the greatest change in prevalence rates. Defining Criterion F as having both clinically significant psychological distress and functional impairment lowered the diagnostic threshold to a greater degree than did either distress or impairment alone. This information may be useful for future revisions of PTSD diagnostic criteria.

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Few psychiatric diagnoses have sparked as much controversy as posttraumatic stress disorder (PTSD). Since its inclusion in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-III*),[1] the disorder itself, its boundaries, diagnostic criteria, core assumptions, clinical utility, and prevalence have all been subjects of great debate.[2] As a result, the diagnosis of PTSD has been significantly modified and redefined in successive editions of the *DSM*, and it will likely undergo further revisions in *DSM-5*. Table 1 illustrates the major changes in diagnostic criteria from *DSM-III* to *DSM-IV* as well as *International Classification of Diseases and Related Health Problems*, Tenth Revision (*ICD-10*) criteria.

Current debate has primarily focused on Criterion A (stressor), frequently cited as the "gatekeeper" for the diagnosis of PTSD; in particular the role of this criterion in the identification of false positives. The types of stressors included in the *DSM-IV*[3] criteria of A1 (stressor), as well as the utility of A2 (reacting with fear, helplessness, or horror), have been extensively examined. It is often argued that the A1 definition is vague, lacks clarity, and has led to the over application of "trauma," resulting in a "conceptual bracket creep" and overdiagnosis of PTSD.[4] Many investigations have examined whether stressors defined as normal life events, nontraumatic events, or low-magnitude events can result in PTSD. To date, the literature is equivocal.[4–9] Although most investigations have found that the prevalence of PTSD increases with the inclusion of such events, the magnitude of the inflation varies considerably.[10] Mol and colleagues[7] actually found that greater PTSD symptoms were associated with low-magnitude stressors than high in a random general population sample. Findings such as these have led some scholars to question the utility of specifying stressors at all and to hypothesize that it is an intrusive memory of an event and sequelae secondary to the memory that are at the core of PTSD.[11] However, as stated by McNally,[12] even if memory is at the core of PTSD symptomatology, an intrusive memory is a memory of something (in this case a traumatic event) and not an abstract entity. The debate surrounding the definition of a traumatic event is so heated that some have argued that the diagnosis need not require an event or even a stressor,[13,14] while others maintain that it is the exposure to trauma that distinguishes PTSD from other *DSM* disorders.[15] Furthermore, it has been suggested that as the stressor criterion has become more broadly defined, the diagnosis of PTSD may be identifying vulnerability factors regardless of causality and it is these vulnerabilities that are responsible for the suffering of the individual, not the memory of a stressor.[12]

Clinical Points

- Since its inclusion in *DSM-III*, PTSD has undergone a number of changes in its diagnostic criteria, which have had a significant impact upon prevalence rates.
- Changes in PTSD diagnostic Criteria A to E do not appear to have as much influence on the rates of PTSD as does the addition of the Criterion F: clinically significant distress or impairment.
- This change has raised the diagnostic threshold for PTSD as demonstrated by lower prevalence rates.
- Moving toward *DSM-5*, the key issue appears to be how clinically significant distress and functional impairment should be defined.

Specific traumas do appear to be associated more frequently with PTSD, however, including physical and sexual abuse/assault,[7] which seems to indicate that dispensing with Criterion A1 in PTSD is not warranted, although the list of qualifying traumas should probably be more limited. Criterion A2 has also been subject to dissection and analysis in relation to its utility in diagnosing PTSD. The presence of an A2 reaction in the face of trauma has been associated with an increased likelihood of developing PTSD,[5,13,16] with fear and helplessness reactions more common than horror and women being more likely to report these reactions than men.[8,16] However, prevalence rates of PTSD do not appear to be affected by the inclusion of A2,[13] which suggests that A2 may be unnecessary for the diagnosis of PTSD. Furthermore, the predictive ability of specific A2 items differs—helplessness has been found to be more predictive of PTSD than horror,[17] and other posttrauma emotions, including anger and shame, appear to have an impact on the diagnosis of PTSD.

The specificity of the PTSD syndrome has also been disputed in terms of the overlap of symptom clusters B to F with other *DSM-IV* disorders. Bodkin and colleagues[18] found that the prevalence of criteria B–F was high (78%) in patients seeking treatment for depression, whether they had experienced a traumatic event or not. Conversely, in a reanalysis of data from the National Comorbidity Survey, PTSD symptoms that overlapped with other mood and anxiety disorders were removed, and only a small decrease in the prevalence rate of PTSD was found,[19] potentially indicating the construct validity of the remaining PTSD symptoms. The relative contributions of symptom groups B (re-experiencing), C (numbing/avoidance), and D (physiologic arousal) have been well examined in the literature. Individuals exposed to trauma have been found to be 2 to 3 times more likely to meet criteria for groups B and D than group C, making group C a potentially rate-limiting factor for the diagnosis of PTSD.[14] Fulfillment of Criterion C has been reported to be largely responsible for and core to the diagnosis of PTSD and, in a recent review,[14] was concluded by the authors as being the most specific for the identification of PTSD. However, the utility of Criterion C3 (inability to recall an important aspect of the trauma) in PTSD has been questioned insofar as an inability to recall may be a result of a lack of encoding of specific details rather than an amnesic symptom associated with trauma.[12] Criterion F (clinically significant distress or impairment) has been examined in an analysis of 2 prospective longitudinal studies of PTSD, and it was found to have a major impact on the rate of PTSD. One sample was composed of individuals with and without combat stress reaction from the Lebanon war, and the other sample was composed of ex–prisoners of war and nonprisoners of war from the Yom Kippur war. The addition of an impairment criterion (as defined in *DSM-IV*) to *DSM-III*, *DSM-III-R*, and *ICD-10* criteria resulted in lower rates of PTSD in both study samples.[20] In addition, Breslau and Alvarado[21] evaluated the impact of Criterion F using data from the 1996 Detroit Area Survey of Trauma and the Mid-Atlantic Urban Youth Study. They found that the conditional probability of PTSD was reduced by 30% with the inclusion of a clinical significance criterion. Perhaps the most striking example of this phenomenon was found by Dohrenwend and colleagues[22] in a reanalysis of the National Vietnam Veterans Readjustment Study. Original *DSM-III-R* PTSD was reanalyzed by applying 3 adjustments: events had to have occurred during the war; reported traumas were corroborated using archival records; and traumas resulted in functional impairment as defined by a Global Assessment of Functioning score of 1–7 (or 10–70, "mild impairment") recorded by the original researchers. They found that original PTSD prevalence estimates decreased by 40% using this new set of criteria, although only a small percentage of the reduction was attributable to the impairment criterion.[21] However, when functional impairment was defined as being clinically significant (Global Assessment of Functioning scores of 1–6 or 10–60), PTSD prevalence was reduced by 65%.[23]

The *ICD* is the other primary diagnostic psychiatric system used globally by clinicians and researchers. As illustrated in Table 1, when the diagnosis of PTSD in the Tenth Revision of the *ICD*[24] is compared with that of *DSM-IV*, there are some notable discrepancies. Most notably, the definition of stressor in the *ICD-10* more closely resembles that of *DSM-III-R* (no A2 criterion), and although the clinical description of PTSD includes numbing of responses, this feature is not a requirement for an *ICD-10* diagnosis of PTSD. In addition, there is no requirement for functional impairment.

The impact of these changes in diagnostic classification on the prevalence rates of PTSD has been investigated in a small number of studies. In general, *DSM-III-R* has yielded the lowest rates of PTSD, while *DSM-III* has resulted in the highest, although good agreement between *DSM-III-R* and *DSM-IV* has been reported.[18] Peters and colleagues[25] compared *ICD-10* PTSD to *DSM-IV* PTSD and found a much higher 12-month rate using the *ICD* criteria (6.9%) versus the *DSM-IV* criteria (3.0%); however, the authors determined that adding an impairment (F) criterion to the *ICD* criteria decreased the rate of PTSD from 6.9% to 4.0%.

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Table 1. Changes in Posttraumatic Stress Disorder Diagnostic Criteria

Criterion	*DSM-III*	*DSM-III-R*	*DSM-IV*	*ICD-10*
A (stressor)	Stressor would evoke significant symptoms in almost everyone	Stressor is outside normal range of human experience and would be markedly distressing to almost anyone	A1: Broader definition of stressor, including events that were witnessed or learned about; A2: person's response involved helplessness or horror	Stressor is exceptionally threatening
B (re-experiencing)	Reexperiencing (≥ 1 of 3 symptoms)	Reexperiencing (≥ 1 of 4 symptoms)	Reexperiencing (≥ 1 of 5 symptoms)	Persistent remembering (≥ 1 of 4 symptoms)
C (numbing/avoidance)	Numbing or detachment (≥ 1 of 3 symptoms)	Avoidance or numbing (≥ 3 of 7 symptoms)	Avoidance or numbing (≥ 3 of 7 symptoms)	Avoidance (1 symptom of actual or preferred avoidance)
D (physiologic arousal/other)	Other symptoms not present prior: hyperalertness, sleep disturbance, guilt about surviving, memory impairment, avoidance, intensification of symptoms with exposure to triggers (≥ 2 of 6 symptoms)	Symptoms of increased physiologic arousal (≥ 2 of 6 symptoms)	Symptoms of increased physiologic arousal (≥ 2 of 5 symptoms)	D1: Inability to recall, OR D2: Sleep problems, irritability, concentration problems, hypervigilance, exaggerated startle response (≥ 2 symptoms)
E (duration)	…	Duration ≥ 1 mo	Duration ≥ 1 mo	Onset within 6 mo of stressor
F (distress and impairment)	…	…	Significant distress or impairment	…

Abbreviations: *DSM-III* = *Diagnostic and Statistical Manual of Mental Disorders*, Third Edition; *DSM-III-R* = *Diagnostic and Statistical Manual of Mental Disorders*, Third Edition Revised; *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition; *ICD-10* = *International Classification of Diseases, Tenth Revision*.
Symbol: … = not applicable.

In order to further examine the impact of changes in PTSD diagnostic criteria, the authors of the present study decided to reexamine data from an epidemiologic study of PTSD in Canada.[26]

METHOD

The original study was a randomly sampled cross-sectional survey of 3,006 adults, living in stratified regions of Canada, who were aged 18 years and older. (Please refer to detailed methodology in Van Ameringen et al.[26]) Canada's 10 provinces and 3 territories, which were sampled proportionately by population using the ASDE Survey Sampler—a geographically stratified, general phone population, random sampling program, based on the Mitofsky-Waksberg method, widely accepted for use in telephone surveys (ASDE Inc, Gatineau, Quebec, Canada).[27] Telephone interviews were conducted in French and English by trained interviewers. A survey organization having extensive experience with population-based health surveys executed the PTSD survey. All interviewers were women, carefully selected for their ability to handle sensitive subject matter over the telephone. Each interviewer completed approximately 8 hours of training, which included instruction, practice, and role-playing exercises. A manual for the survey instrument was provided to each interviewer. Random interviews were recorded, and reliability of ratings was evaluated by the investigators.

All respondents provided verbal consent prior to engaging in a structured interview. The primary instrument used to assess lifetime *DSM-IV* PTSD was the Canadian Community Health Survey[28] 1.2 module, which is very closely based on the World Mental Health 2000 surveys.[29] The World Mental Health 2000 surveys are revised versions of the Composite International Diagnostic Interview,[30] a validated instrument designed to be administered by experienced interviewers without clinical training and used in many previous epidemiologic studies of PTSD.[26] *DSM-IV* comorbid diagnoses (major depressive disorder and alcohol and substance use disorders) were assessed using the Mini International Neuropsychiatric Interview,[31] a validated instrument, which has also been used in telephone interviews.[32] The survey collected additional information on the types of traumas experienced, symptom duration, help-seeking behavior pretrauma and posttrauma, social supports, and childhood abuse.

Respondents were read a list of 18 traumatic events and asked if they had been exposed to any of these in their lifetime. In the original study analysis, 76% of the total sample reported lifetime exposure to 1 or more traumatic event; (73.4% of women, and 78.5% of men). The majority of these individuals reported exposure to multiple events, with a mean of 2.31 (SD = 2.33) lifetime events. Men reported a significantly higher mean number of traumatic exposures, 2.48 events (SD = 2.43), compared to women, who reported 2.15 events (SD = 2.23, $P < .001$, $t = 3.87$). Traumatic events found to be most closely associated with the development of subsequent *DSM-IV* PTSD were sexual assault ($P < .001$), being badly beaten ($P < .001$), and witnessing someone killed, dead, or badly injured ($P < .05$). Index traumas had occurred on average, 20 years (SD = 15.3) prior to the interview (range, 0–69 years).

Original survey questions were reviewed by the investigators and reorganized into algorithms to meet specific

DSM-III, *DSM-III-R*, *ICD-10*, and *DSM-IV* diagnostic criteria for lifetime PTSD (Table 1). For *DSM-III*, stressors (Criterion A) included participating in combat/military, serving as a peace keeper/relief worker, being a refugee escaping danger, being kidnapped/held captive, being exposed to a toxic substance that could cause serious harm, being in a life-threatening motor vehicle accident, being in a serious life-threatening work-related accident, being involved in a major natural disaster or fire, being badly beaten, being mugged/threatened with a weapon, and being the victim of sexual assault/sexual molestation. The *DSM-III-R* and *ICD-10* Criterion A algorithm also included a trauma occurring to a loved one, such as being kidnapped, tortured, or sexually assaulted; witnessing serious physical fights at home as a child; seeing someone being badly injured or killed; or witnessing atrocities. The sudden death of a loved one was also included in the *DSM-IV* Criterion A1 algorithm. The A2 criterion of reacting with fear, helplessness, or horror was included in the *DSM-IV* analysis only. The remaining domain algorithms of re-experiencing (B), numbing (C), physiologic arousal (D), and duration (E) (*DSM-III-R*, *DSM-IV*, and *ICD-10* only) were determined by investigators based on specific survey questions that satisfied descriptions of symptoms in each publication. The rates of help-seeking, as well as the duration of PTSD symptoms, were compared between *DSM* diagnostic criteria.

The effects of *DSM-IV* Criteria A–F were examined by adding these criteria to each classification system in turn and reanalyzing the rates of lifetime PTSD (eg, *DSM-III* PTSD Criteria B–D, plus *DSM-IV* Criterion A; then *DSM-III* Criteria A, C, and D plus *DSM-IV* Criterion B; then *DSM-III* Criteria A, B, and D plus *DSM-IV* Criterion C; then *DSM-III* Criteria A, B, and C plus *DSM-IV* Criterion D; then *DSM-III* Criteria A–D, plus *DSM-IV* Criterion E; then *DSM-III* Criteria A–D, plus *DSM-IV* Criterion F). In addition, we examined the effect of changing the definition of Criterion F on the rates of PTSD. Criterion F was fulfilled in the original *DSM-IV* analysis if respondents endorsed either "stopping or decreasing usual activities like going to work or school, seeing friends and family, or looking after children due to problems occurring as a result of the trauma" OR "if the problems occurring as a result of the trauma kept them from going to a party, social event, or meeting" (defined as functional impairment) OR if they "consulted a professional about the problems that occurred as a result of the event" (defined as clinically significant distress). In this analysis, we examined Criterion F defined as (1) both functional impairment and clinically significant psychological distress, (2) functional impairment only, (3) clinically significant psychological distress only, and (4) functional impairment OR clinically significant psychological distress (as in *DSM-IV*).

Statistical Analysis

Prevalence rates of lifetime PTSD and rates of comorbidity were calculated and compared using χ^2 analyses and nonparametric tests (Friedman test and Cochran Q). A similar procedure was used when comparing the effect of Criterion F on rates of lifetime PTSD.

Table 2. Prevalence of Lifetime Posttraumatic Stress Disorder (PTSD) by Diagnostic Criteria (N = 3,006)[a]

Diagnostic Classification	Lifetime PTSD, %
DSM-III	13.4
DSM-III-R	12.2
DSM-IV	9.2
ICD-10	13.0

[a]All rates differed significantly from each other ($P < .001$).
Abbreviations: *DSM-III = Diagnostic and Statistical Manual of Mental Disorders*, Third Edition; *DSM-III-R = Diagnostic and Statistical Manual of Mental Disorders*, Third Edition Revised; *DSM-IV = Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition; *ICD-10 = International Classification of Diseases, Tenth Revision.*

Table 3. Rates of Comorbid Conditions by Posttraumatic Stress Disorder (PTSD) Diagnostic Criteria

	Diagnostic Classification System				
DSM-IV Comorbid Condition	*DSM-III* PTSD, %	*DSM-III-R* PTSD, %	*DSM-IV* PTSD, %	χ^2_2	*P*
Major depressive disorder	65.1	69.6	74.3	50.3	< .001
Alcohol abuse	22.9	24.1	25.6	19.6	< .001
Alcohol dependence	19.5	20.3	22.5	15.3	< .001
Substance abuse	10.6	11.8	14.4	1.5	< .001
Substance dependence	13.4	14.0	17.3	6.7	< .05

Abbreviations: *DSM-III = Diagnostic and Statistical Manual of Mental Disorders*, Third Edition; *DSM-III-R = Diagnostic and Statistical Manual of Mental Disorders*, Third Edition Revised; *DSM-IV = Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition.

RESULTS

The original study reported a lifetime prevalence rate of *DSM-IV* PTSD of 9.2%. Beginning with *DSM-III*, successive *DSM* criteria resulted in decreasing rates of PTSD (Table 2). All rates differed significantly from each other ($P < .001$). The rate of *ICD-10* lifetime PTSD (13.0%) more closely resembled *DSM-III* lifetime PTSD (13.4%) than lifetime PTSD according to any other *DSM*. The duration of symptoms was more than 1 year for most respondents, although a significantly greater proportion of respondents with *DSM-IV* PTSD (68.2%) reported this than did respondents with *DSM-III* PTSD (61.9%) or *DSM-III-R* PTSD (67.5%; $P < .001$).

The rates of comorbid major depressive disorder, alcohol abuse and dependence, and substance abuse and dependence are reported in Table 3. All rates of comorbid conditions were significantly higher in the population meeting criteria for *DSM-IV* PTSD ($P < .001$).

More than half of respondents meeting criteria for lifetime PTSD (regardless of *DSM* criteria) reported seeking help for their symptoms; however, those with *DSM-IV* PTSD reported significantly higher rates of help-seeking (64.6%) vs those with *DSM-III* PTSD (52.1%) or those with *DSM-III-R* PTSD (54.1%; $P < .001$).

The effects of specific *DSM-IV* criteria are shown in Table 4. For *DSM-III*, Criterion C induced the greatest change (reduction) in rate of lifetime PTSD (13.4% decreased to 9.7%), followed by Criterion F (13.4% decreased to 11.2%),

Table 4. Effect of Changing Specific Posttraumatic Stress Disorder (PTSD) Diagnostic Criteria on Rates of Lifetime PTSD (using *DSM-IV* criteria)

DSM-IV Criteria Modification	*DSM-III* PTSD, %	*DSM-III-R* PTSD, %	*ICD-10* PTSD, %
No modification	13.4	12.2	13.0
Criterion A	15.2	12.7	13.0
Criterion B	13.4	12.2	12.7
Criterion C	9.7	12.2	12.5
Criterion D	13.0	12.0	12.9
Criterion E	12.3	12.2	13.0
Criterion F	11.2	10.5	10.3

Abbreviations: *DSM-III = Diagnostic and Statistical Manual of Mental Disorders*, Third Edition; *DSM-III-R = Diagnostic and Statistical Manual of Mental Disorders*, Third Edition Revised; *DSM-IV = Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition; *ICD-10 = International Classification of Diseases, Tenth Revision*.

Table 5. Effect of Criterion F (impairment) When Added to Diagnostic Classification[a]

Definition of Impairment	*DSM-III*, %	*DSM-III-R*, %	*DSM-IV*, %	*ICD-10*, %
Functional impairment only	9.0	8.8	8.0	8.4
Psychological distress only	7.0	6.6	6.1	6.1
Both[b]	5.4	5.3	4.7	4.6
Either[c]	10.6	10.2	9.2	9.9

[a]All rates were significantly different from each other ($P < .0001$).
[b]Both = Functional impairment + clinically significant psychological distress.
[c]Either = Functional impairment or clinically significant psychological distress.
Abbreviations: *DSM-III = Diagnostic and Statistical Manual of Mental Disorders*, Third Edition; *DSM-III-R = Diagnostic and Statistical Manual of Mental Disorders*, Third Edition Revised; *DSM-IV = Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition; *ICD-10 = International Classification of Diseases, Tenth Revision*.

Table 6. Traumatic Events Associated With Lifetime Posttraumatic Stress Disorder (PTSD) (n = 645, weighted analysis)[a,b]

	DSM-IV PTSD, %		*DSM-III* PTSD, %		*DSM-III-R* PTSD, %		*ICD-10* PTSD, %	
Traumatic Event	Lifetime PTSD	No PTSD	Lifetime PTSD	No PTSD	Lifetime PTSD	No PTSD	Lifetime PTSD	No PTSD
Assaultive violence								
Sexual assault	20.0***	9.3	19.8***	5.1	19.8***	6.4	18.2***	7.5
Sexual molestation	5.1	3.6	6.2**	1.3	5.2	3.0	4.1	4.6
Being badly beaten	11.7***	3.3	10.5***	1.7	9.9**	3.4	9.2**	3.8
Mugged/threatened with a weapon	3.3	3.9	3.0	4.6	3.5	4.1	3.8	3.3
Kidnapped	2.6	0.9	1.9	0.8	2.0	1.1	2.2	0.8
Participated in combat	0.4	3.3	1.6	2.5	2.0	1.9	2.4	1.3
Total assaultive violence	43.1***	24.0	43.0***	16.0	42.3***	20.0	39.9***	21.3
Other injury or shock								
Witnessed someone killed, dead or badly injured	8.7*	14.9	…	…	10.8	13.9	11.1	13.8
Witnessed physical domestic violence as a child	5.5	5.1	…	…	6.7	3.8	5.7	5.0
Life threatening motor vehicle accident	4.0	7.8	3.5**	10.2	3.8*	9.0	6.5	5.4
Witnessed atrocities	2.6	1.5	…	…	2.6	1.1	3.3*	0.4
Refugee	0.7	0.6	0.5	0.4	0.6	0.8	0.5	0.8
Involved in serious work-related accident	0.4	4.2	1.1**	5.1	1.2**	4.5	1.6	3.8
Involved in major natural disaster	0.7	4.2	1.9	3.4	0.9**	4.9	1.1**	4.6
Exposed to toxic chemicals	0	0.6	0.3	0.4	0	0.8	0.3	0.4
Peacekeeper/relief worker	0	0.3	0	0.4	0	0.4	0	0.4
Other trauma	0	5.7	3.2	3.0	2.9	3.4	2.4	4.6
Total other injury or shock	22.5***	45.1	28.8***	44.3	29.2***	42.1	32.5	38.8
Learning about others								
Trauma experienced by someone else	4.4	3.0	…	…	3.5	3.8	3.5	4.2
Sudden unexpected death	30.3	27.8	…	…	…	…	…	…
Total learning about others	34.5	31.0	…	…	28.6*	37.7	27.6***	40.0

[a]Individual percents do not always add up to marginal totals because of weighting.
[b]Pearson χ^2 tests of strength of association between a trauma and the subsequent development of PTSD for total 645 persons who experienced symptoms secondary to trauma exposure.
*$P < .05$; **$P < .01$; ***$P < .001$.
Abbreviations: *DSM-III = Diagnostic and Statistical Manual of Mental Disorders*, Third Edition; *DSM-III-R = Diagnostic and Statistical Manual of Mental Disorders*, Third Edition Revised; *DSM-IV = Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition; *ICD-10 = International Classification of Diseases, Tenth Revision*.
Symbol: … = not applicable.

and Criterion A (13.4% to 15.2%). For both *DSM-III-R* and *ICD-10*, changes to Criterion F appeared to yield the most substantial changes (12.2% decreased to 10.5%, *DSM-III-R*; 13.0% decreased to 10.3%, *ICD-10*). The rates of lifetime PTSD across diagnostic classification systems were reduced when Criterion F was added (Table 5), and became more in line with *DSM-IV* PTSD.

Rates of PTSD were the lowest when Criterion F was defined as having both functional impairment and clinically significant psychological distress followed by a Criterion F definition of psychological distress only and, finally, functional impairment only. Having either clinically significant psychological distress or functional impairment yielded the highest rates of PTSD, and 68.5% of the sample endorsed Criterion F defined in this manner.

The strength of association between specific traumas and the development of *DSM-III*, *DSM-III-R,* and *ICD-10* PTSD was examined (Table 6). In the original data, traumatic events found to be most closely associated with the development of subsequent *DSM-IV* PTSD were being the victim of

sexual assault ($P < .001$), being badly beaten ($P < .001$), and witnessing someone killed, dead, or badly injured ($P < .05$). In addition to being the victim of sexual assault ($P < .001$) and being badly beaten ($P < .001$), being the victim of sexual molestation ($P < .01$), being in a life-threatening motor vehicle accident ($P < .01$), and being involved in a serious work-related accident ($P < .01$) were significantly associated with the development of *DSM-III* PTSD. Traumas significantly associated with the development of *DSM-III-R* PTSD included being the victim of sexual assault ($P < .001$), being badly beaten ($P < .01$), being in a life-threatening motor vehicle accident ($P < .05$), being in a serious work-related accident ($P < .01$), and being involved in a serious natural disaster ($P < .01$). Being the victim of sexual assault ($P < .001$), being badly beaten ($P < .01$), witnessing atrocities ($P < .05$), and being involved in a serious natural disaster ($P < .01$) were significantly associated with the development of *ICD-10* PTSD.

Finally, we examined the degree of overlap between symptoms of comorbid major depressive disorder and PTSD within individuals who met criteria for *DSM-IV* major depressive disorder (N = 320). Within this population, 79.4% had *DSM-III* PTSD, 78.1% had *DSM-III-R* PTSD, 63.2% had *DSM-IV* PTSD, and 71.7% had *ICD-10* PTSD. When overlapping symptoms were removed from the PTSD algorithms in these individuals who met criteria for *DSM-IV* major depressive disorder and PTSD, rates of PTSD declined, most significantly for *DSM-III* PTSD (−11.2%, $P < .001$), followed by *DSM-III-R* PTSD (−10.2%, $P < .001$), *ICD-10* PTSD (−9.7%, $P < .001$), and *DSM-IV* PTSD (−0.5%, $P < .001$).

DISCUSSION

The rate of PTSD in this sample declined with successive definitions of the *DSM*. In contrast to previous versions of the *DSM*, *DSM-IV* PTSD appears to identify a more severe disorder given the significantly higher rates of comorbidity, symptom duration, and help-seeking behavior. This finding is consistent with previous reports in the literature.[20,21,25,33] The reanalysis of this data also revealed that *ICD-10* PTSD may more closely resemble *DSM-III* than *DSM-IV* PTSD. This finding may indicate potential difficulties in comparing epidemiologic reports using the *ICD-10* diagnostic system with reports using *DSM-IV*. Somewhat surprising was the high rate of *DSM-III* PTSD in this analysis (13.4%) as compared to that found by Helzer et al[34] in the Epidemiologic Catchment Area study (1%). Although this discrepancy can very likely be attributed to differences in study instruments and interviewers, the effect of specific *DSM-IV* criteria on the rate of PTSD was the interesting finding from this analysis.

Interestingly, this reanalysis showed that changes in Criterion A do not appear to have as much influence on the rates of PTSD as does the addition of Criterion C (*DSM-III* only) or Criterion F, with the exception of *DSM-III,* in which the expanded list of traumatic events inflated the rate of PTSD by over 2%. Given that Criterion C in *DSM-III* PTSD (numbing/detachment) requires only 1 of 3 symptoms and does not include avoidance, it seems reasonable that a broader range of qualifying symptoms (ie, 7 potential symptoms in *DSM-III-R* and *DSM-IV* PTSD) would yield higher rates, even though 3 symptoms are required instead of 2. When Criterion F was added to earlier *DSM* diagnostic criteria (and *ICD-10* criteria), the rates of lifetime PTSD decreased to more closely reflect *DSM-IV* PTSD criteria.

There are several limitations to our findings. An inherent limitation in many epidemiologic studies, as in this one, is the inability to verify individual reports of trauma and PTSD symptoms. There may also have been a recall bias posed by both the individual's level of distress and/or other psychiatric disturbances at the time of the trauma, by inaccuracies in retrospective recall as well as impairment related to an individual's comorbid illnesses at the time of interview. In addition, interviews were carried out by trained lay interviewers and diagnoses were not confirmed by a psychiatrist.

The clinical significance criterion was added to many diagnoses in *DSM-IV* in an attempt to raise the diagnostic threshold for a disorder, to distinguish individuals who may meet diagnostic symptom criteria of a disorder but have only mild difficulties from those who have substantial difficulties.[35] When data from the Epidemiologic Catchment Area study, the National Comorbidity Survey, and the Australian National Survey of Mental Health and Well-being were reanalyzed using a clinical significance criterion, prevalence rates of nearly all disorders, including PTSD, dropped substantially.[25,35–37] The clinical significance criterion appears to serve its intended purpose, by narrowing the diagnostic threshold and decreasing the number of potential false-positives attributed to previous versions of the *DSM*.

Moving toward *DSM-5*, the key issue appears to be how Criterion F should be defined. In this study, the addition of Criterion F defined as both psychological and impaired functioning resulted in the lowest rates of PTSD, followed by Criterion F defined as psychological distress only, then Criterion F defined as impaired functioning only. This phenomenon was previously examined in the reanalysis of results from 2 combat-related PTSD study samples in which differing definitions of Criterion F were compared. The addition of Criterion F defined as both clinically significant psychological distress and impaired functioning resulted in the lowest rates of PTSD, followed by Criterion F defined as impaired functioning only, then Criterion F defined as clinically significant psychological distress only.[20]

Beals and colleagues[35] examined several operational definitions of clinical significance across *DSM-IV* disorders (including PTSD) in an epidemiologic sample of 3,084 Native Americans using structured interviews. They found that prevalence rates were lowest when clinical significance was defined as "'a lot' of distress or impairment" or as "help-seeking or 'a lot' or impairment" and highest when clinical significance was defined as "'a lot or some' distress or impairment" or "'a lot' of distress or impairment or some of both." McNally asserts that the aspect of "clinically significant

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distress" should be omitted from Criterion F in *DSM-5*, as it is redundant. If PTSD symptom criteria are met as defined, the individual would be experiencing clinically significant distress.[12]

On the surface, the results of our study seem to indicate that clinically significant psychological distress is more of a rate-limiting factor than impaired functioning. However, our operational definition of clinically significant distress actually captured help-seeking behavior, under the assumption that distress must be present for an individual to seek help. Although this definition of distress effectively excludes individuals who may be significantly distressed but did not seek or have access to appropriate help, it is reasonable to assume that these individuals would likely have been experiencing functional impairment as a result of their distress and would be captured under the "functional impairment" definition.

Without easily identifiable biologic markers to indicate psychopathology, clear thresholds for diagnosis must be established and maintained.[35] The addition of a Criterion F to the *DSM* has raised the diagnostic threshold and enabled clinicians to capture a key subjective element of PTSD, which is important, since the development of sequelae following a trauma depends on many variables impacting the individual. One cannot assume that 2 people who experience a trauma and have similar levels of symptoms will have the same levels of distress or impairment.[20] Although this clinical significance criteria has been shown to be important, impairment and distress are currently evaluated in a subjective manner by clinicians, and therefore they may not accurately represent the experience of the individual.[21] Further examination of how to operationalize impairment and whether or not to include "distress" would be a useful refinement in subsequent revisions of *DSM* PTSD diagnostic criteria.

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