Gender differences in the prevalence of DSM-IV and ICD-10 PTSD

LORNA PETERS^{1*}, CATHY ISSAKIDIS², TIM SLADE² and GAVIN ANDREWS²

¹ Department of Psychology, Macquarie University, Sydney, Australia; ² Clinical Research Unit for Anxiety Disorders and WHO Collaborating Centre in Evidence for Mental Health Policy, St Vincent's Hospital and School of Psychiatry, University of New South Wales, Sydney, Australia

ABSTRACT

Background. Gender differences in the prevalence of post-traumatic stress disorder were examined by analysing discrepancies between the DSM-IV and ICD-10 diagnostic systems.

Method. Data from the Australian National Survey of Mental Health and Well-Being (n=10641) were analysed at the diagnostic, criterion and symptom level for DSM-IV and ICD-10 PTSD for males *versus* females.

Results. While there was a significant gender difference in the prevalence of PTSD for ICD-10, no such difference was found for DSM-IV. The pattern of gender difference at the diagnostic level was mirrored in the pattern of gender differences at the criterion level for both DSM-IV and ICD-10. Females only endorsed three symptoms at a significantly higher rate than males. For all other symptoms, endorsement was equal. This apparently small gender difference at the symptom level was sufficient to cause the gender difference at the diagnostic level for ICD-10, but not DSM-IV because of the different manner in which symptoms are configured into criteria in each of the diagnostic systems.

Conclusions. Gender differences in ICD-10 PTSD but not in DSM PTSD diagnoses are attributable in this study to different patterns of endorsement of symptoms by males and females. Possible reasons for the differential endorsement of symptoms and implications for the use of epidemiological instruments are discussed.

INTRODUCTION

Post-traumatic stress disorder (PTSD) has been the focus of considerable empirical attention over the last 20 years. More recently, there has been a particular focus on the prevalence of, and risk factors for, PTSD in the community as defined by the successive revisions of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM; APA, 1994). Although the relationship between risk factors, exposure to trauma, and the development of PTSD is not straightforward (cf. Norris, 1992), one of the most salient findings from both community and

(Email: Lorna.Peters@mq.edu.au)

clinical studies relates to the role of gender. Males are more frequently exposed to traumatic events, but females exhibit a greater risk of PTSD (Kessler *et al.* 1995; Breslau *et al.* 1997, 1998, 1999; Perkonigg *et al.* 2000). Several explanations for this finding have been postulated.

One explanation relates to the differential rates of exposure to particular types of traumatic events in males and females. Sexual trauma, which is more commonly experienced by women than men, is also one of the trauma types most likely to lead to PTSD (Kessler *et al.* 1995; Breslau *et al.* 1998; Cuffe *et al.* 1998; Perkonigg *et al.* 2000; Creamer *et al.* 2001). However, using data from the National Comorbidity Survey (NCS), Kessler *et al.* (1995) determined that

^{*} Address for correspondence: Dr Lorna Peters, Department of Psychology, Macquarie University NSW 2109, Australia.

women were at higher risk of developing PTSD even controlling for trauma type. Similarly, Stein *et al.* (2000) demonstrated that even if those exposed to sexual trauma were excluded from analysis, women were still at higher risk of developing PTSD than men. Thus, although higher rates of exposure to sexual trauma among women may be partially responsible for higher rates of PTSD among women, it does not wholly explain the finding.

A second explanation relates to differential responses to trauma in males and females. Breslau & Kessler (2001) showed that DSM-IV criterion A2, which requires that the person's emotional response to the traumatic event involve fear, helplessness or horror, is more commonly endorsed by females than males, a similar finding to that reported by Brewin et al. (2000). Breslau & Kessler (2001) suggest that this, in turn, attenuates the gender difference in the prevalence of PTSD. Traumatic events experienced by females are more likely to meet this 'fear, helplessness or horror' criterion, than the same events experienced by males. Such studies suggest that the higher prevalence of PTSD among women may represent a true vulnerability to develop the disorder, similar to that associated with other mental disorders such as depression and anxiety (Stein et al. 2000).

The Australian National Survey of Mental Health and Well-Being (NSMHWB) was a largescale epidemiological survey that calculated the prevalence of the major mental disorders. A major advantage of the Australian NSMHWB over previous epidemiological surveys such as the NCS and the Epidemiological Catchment Area (ECA) study was that it assessed mental disorders according to the diagnostic criteria for both DSM-IV and International Classification of Diseases Tenth Edition Diagnostic Criteria for Research (ICD-10-DCR; WHO, 1993). In an earlier analysis from the Australian NSMHWB, Creamer et al. (2001) reported that while men were at higher risk of experiencing a traumatic event over their lifetime, controlling for trauma exposure, females were only at slightly higher risk of developing DSM-IV PTSD than males (OR 1.4, 95% CI 1.0–2.0). When trauma type was controlled, the increased vulnerability for females to develop DSM-IV PTSD was no longer significant. Creamer et al. (2001) noted

that lifetime rates of rape among women in the Australian sample were lower than those reported in the NCS, and they suggest that this may have contributed to the absence of a gender difference in the prevalence of DSM-IV PTSD. Even so, given that prior studies have demonstrated a gender difference in the prevalence of PTSD when trauma type is controlled, one would still expect higher rates of DSM-IV PTSD in females than in males. Creamer *et al.* (2001) suggest that there may be socio-cultural factors that contribute to the vulnerability to develop PTSD symptoms after trauma and that these factors may be driving the absence of a gender difference in the Australian sample.

ICD-10-DCR PTSD has not been subject to the same degree of analysis in this sample. However, if socio-cultural factors accounted for the absence of gender differences in the prevalence of PTSD in the Australian population one would expect this finding to exist independent of the psychiatric classification system employed to make the diagnosis. If this is the case then there should be no gender difference in the prevalence of PTSD according to ICD-10-DCR. A report published soon after the completion of the survey (Andrews et al. 2001) cited the prevalence of ICD-10-DCR PTSD as 2.3% in males and 4.2% in females (3.3% in the whole). These results show a clear gender difference in the prevalence of ICD-10-DCR PTSD. It is not known whether this gender difference remains once trauma type is controlled. However, a more detailed understanding of the gender profiles of DSM-IV and ICD-10-DCR PTSD is warranted.

A study carried out by Peters et al. (1999) as a pilot to the NSMHWB demonstrated that the prevalence of ICD-10-DCR PTSD was more than twice that of DSM-IV PTSD. As a result there were a significant number of ICD-only cases of PTSD, that is, cases that met all criteria for ICD-10-DCR PTSD but failed to meet all criteria for DSM-IV PTSD. The two major reasons why these cases failed to meet DSM-IV criteria related to the concept of general numbing of responsiveness (present in DSM-IV criterion C but absent in ICD-10-DCR) and the concept of clinical significance (present in DSM-IV criterion F but absent in ICD-10-DCR). It is, therefore, possible that the gender difference in ICD-10-DCR PTSD may be related to the discrepancies in diagnostic criteria between the two classification systems. An understanding of the relationship between gender and discrepancies in DSM-IV and ICD-10-DCR PTSD may provide insights into the ways in which males and females respond to questions about trauma, which will ultimately aid in a more comprehensive understanding of the

classification of PTSD. Thus, the current study explores the relationship between gender and PTSD (both DSM-IV and ICD-10-DCR) using data from the Australian NSMHWB through examination of the major sources of discrepancy in criteria between the two diagnostic systems.

METHOD

Data came from the Australian NSMHWB, a nationwide household survey of adults conducted in 1997. The methods and primary results for the study are described in detail elsewhere (Andrews et al. 2001). A national probability sample of Australian households was contacted and 10641 adults over the age of 18 years agreed to participate in the survey (representing a response rate 78%). Participants were interviewed face-to-face in their homes by trained lay interviewers using the computerized version of the Composite International Diagnostic Interview 2.0 (CIDI-Auto; WHO, 1997). Diagnoses of the major mental disorders (including PTSD) were made according to the complete list of diagnostic criteria for both DSM-IV and ICD-10-DCR. The present study used the 12-month version of the CIDI-Auto that asks about the occurrence of symptoms in the 12 months prior to the interview. Thus, the prevalence rates reported in this paper are 12-month, rather than lifetime, prevalence rates.

The PTSD section is incorporated in the anxiety disorders section of the CIDI and has been shown to be a valid measure of PTSD (Peters et al. 1996). The PTSD section of the 12-month CIDI elicits events that may have occurred in the lifetime of the participant and then, if an event has occurred, symptoms of PTSD that occurred in the 12 months prior to the interview are addressed. If a respondent has endorsed multiple events, they are asked to specify the worst event and symptoms of PTSD are elicited for that worst event. There are 10 events listed in the CIDI: direct combat experience, physical assault, torture (including being threatened with a weapon, being held captive or kidnapped), rape, molestation, lifethreatening accidents, natural disaster, witnessing someone being badly injured or killed, learning about one of the previous events occurring to a family member or friend, and other traumas. The PTSD section of the CIDI contains multiple skipping rules such that if a person does not endorse enough symptoms to meet each given criterion then they are not asked the remaining symptoms questions. For example, if people do not endorse any of the symptoms relating to arousal (contained in criterion D for both DSM-IV and ICD-10-DCR) then they are not asked about any of the symptoms relating to avoidance or numbing.

All data were analysed using the SUDAAN software package, designed specifically for use with complex survey samples (Shah et al. 1997).

RESULTS

Diagnosis

The weighted prevalence of DSM-IV PTSD in the 12 months prior to the interview was 1.2%(s.e. = 0.2) for males and 1.4% (s.e. = 0.1) for females. The weighted prevalence of ICD-10-DCR PTSD in the 12 months prior to the interview was 2.3% (s.e. = 0.3) for males and 4.2% (s.e. = 0.3) for females. While there is no difference between males and females in the prevalence of DSM-IV PTSD there is an obvious relationship between gender and ICD-10-DCR PTSD with almost twice as many females than males meeting criteria for ICD-10-DCR PTSD. When modeled using multiple logistic regression, the association between ICD-10-DCR PTSD and gender is significant even after restricting the sample to those who had experienced trauma and controlling for age, marital status and trauma type.

Diagnostic criteria

In order to understand the gender difference in ICD-10-DCR but not DSM-IV PTSD we next turned to differences in criteria between the two classification systems. We followed the same method carried out in an earlier study of the discrepancies between DSM-IV and ICD-10-DCR PTSD (Peters et al. 1999). The percentage Table 1. Endorsement of DSM-IV criteria in people who meet full criteria for ICD-10 PTSD but do not meet criteria for DSM-IV PTSD (Positive ICD-10/Negative DSM-IV) and endorsement of ICD-10 criteria in people who meet full criteria for DSM-IV PTSD but do not meet criteria for ICD-10 PTSD (Positive DSM-IV/ Negative ICD-10)

Positive ICD-10/Negative DSM-IV (n=249)	% (s.e.) of subjects negative on each DSM-IV criterion
DSM-IV criterion	
A – Exposure and reaction to stressor	6.7 (3.1)
B – Re-experiencing symptoms	0 (-)
C – Avoidance or numbing symptoms	65.8 (6.0)
D – Arousal symptoms	12.5 (3.5)
E – Duration of 1 month	19.1 (2.6)
F – Distress or impairment	70.8 (3.3)
Positive DSM-IV/Negative ICD-10 (n = 28)	% (s.e.) of subjects negative on each ICD-10 criterion
ICD-10 criterion	
A – Exposure to stressor	0 (-)
B – Re-experiencing symptoms	0 (-)
C – Avoidance symptoms	30.1 (11.4)
D – Arousal symptoms or inability to recall	0 (-)
E – Onset within 6 months	74.4 (11.0)

of those with discrepant diagnostic status according to the two classifications who do not meet each diagnostic criterion is displayed in Table 1. Consistent with the earlier study the major discrepancies occurred when ICD-10-DCR was positive and DSM-IV was negative: 249 respondents met criteria for ICD-10-DCR PTSD but not DSM-IV PTSD, while 28 respondents met criteria for DSM-IV PTSD but not for ICD-10-DCR PTSD. This concurs with the higher prevalence of ICD-10-DCR PTSD than of DSM-IV PTSD. Consistent with our earlier findings, the two major sources of discrepancy when the positive ICD-10-DCR/ negative DSM-IV cases were examined in detail, were criterion C and criterion F. Sixty-six per cent of this group was negative on DSM-IV PTSD because they did not endorse any of the symptoms of avoidance or general numbing of responsiveness. Seventy-one per cent of this group was negative on DSM-IV PTSD because they did not endorse distress or impairment (collectively known as the clinical significance criterion). Again consistent with our earlier results, the only sources of discrepancy for the 28 individuals who had a diagnosis of DSM-IV PTSD but not ICD-10-DCR PTSD were ICD-10-DCR criteria C and E: for these individuals they did not receive a diagnosis of PTSD according to ICD-10-DCR because they did not endorse symptoms of avoidance and they did not endorse onset of the disorder within 6 months.

In order to test whether the gender difference at the diagnostic level was present at the criterion level, we then calculated the endorsement of each ICD-10-DCR and DSM-IV criterion separately for females and males in the subsample of people who experienced a traumatic event and were asked each of the symptom questions. These endorsement rates along with the odds of endorsing each criterion for females versus males are shown in Table 2. It should be pointed out that because the endorsement rates are calculated for people who have endorsed any traumatic event, criterion A in ICD-10-DCR, which merely assesses the presence of a traumatic event, is obviously endorsed by 100 % of people. While criterion A (exposure to trauma and reaction to the stressor) and criterion B (re-experiencing symptoms) in DSM-IV are endorsed significantly more by females than males, none of the other DSM-IV criteria are differentially endorsed by females and males. (It should be noted that that the operationalization of criterion B in DSM-IV and criterion B in ICD-10-DCR is identical in this study.) In fact two DSM-IV criteria (C and F) are endorsed slightly more, albeit not significantly, by males. This pattern of gender differences for some but not all criteria in DSM-IV is consistent with the lack of gender difference at the diagnostic level. This is in contrast to ICD-10-DCR where all criteria are endorsed significantly more by females than males. So, the gender difference at the diagnostic level is borne out by a similar gender difference at the criterion level for ICD-10-DCR.

Symptoms

An analysis of the endorsement by males and females of each of the symptoms making up the diagnostic criteria in DSM-IV and ICD-10-DCR was then conducted. Again this analysis was conducted in the subsample of people who had experienced a traumatic event and were

Criterion	Females		Males		criterion for females
	% (s.e.)	n	% (s.e.)	n	OR (95% CI)
DSM-IV					
A – Exposure and reaction to stressor	81.9 (0.9)	3024	70.6 (0.9)	3080	1.88 (1.60-2.21)*
B – Re-experiencing symptoms	37.1 (1.0)	3024	21.9(0.9)	3080	2.10 (1.80-2.44)*
C – Avoidance or numbing symptoms	23.7 (1.7)	706	25.0 (2.4)	382	0.93 (0.69-1.25)
D – Arousal symptoms	34.1 (1.6)	1122	29.1 (2.4)	670	1.26 (0.99-1.59)
E – Duration of 1 month	85.7 (1.8)	482	84.5 (2.3)	239	1.10 (0.65-1.86)
F – Distress or impairment	41.3 (1.9)	482	44.6 (3.7)	239	0.87 (0.64-1.19)
ICD-10-DCR					
A – Exposure to stressor	100 (-)	3024	100 (-)	3080	-
B – Re-experiencing symptoms	37.1 (1.0)	3024	21.9 (0.9)	3080	2.10 (1.80-2.44)*
C – Avoidance symptoms	55.9 (1.9)	706	46.3 (3.5)	382	1.47 (1.05-2.06)*
D – Arousal symptoms or inability to recall	60.1 (1.9)	706	51.6 (3.8)	382	1.41 (1.04–1.93)*
E – Onset within 6 months	91.9 (1.5)	482	88.0 (1.7)	239	1.55 (1.00-2.42)*

 Table 2.
 Endorsement by gender of each diagnostic criterion for DSM-IV and ICD-10 posttraumatic stress disorder (PTSD) in the subsample who were asked each symptom question

 Table 3. Endorsement of symptoms of numbing, avoidance and arousal by gender in the subsample who were asked each symptom question

* *p* < 0.05.

Symptom	Females		Males		
	% (S.E.)	п	% (S.E.)	п	OR (95% CI)
Avoidance of thoughts or feelings ^a	46.8 (1.8)	706	38.6 (3.4)	382	1.40 (1.00-1.97)*
Avoidance of activities ^a	31.6 (1.5)	706	28.4 (3.0)	382	1.16 (0.82–1.65)
Inability to recall.	14.4(2.2)	706	13.3 (2.3)	382	1.10(0.65 - 1.85)
Diminished interest in usual activities ^b	17.5 (1.1)	706	17.5 (2.7)	382	1.00 (0.69–1.44)
Detachment from others ^b	22.0(1.4)	706	26.7 (2.2)	382	0.77 (0.63-0.96)*
Restricted affect ^b	20.3(1.4)	706	20.3 (2.4)	382	1.00(0.70 - 1.44)
Sense of foreshortened future ^b	6.6 (0.9)	706	9.7 (1.4)	382	0.66(0.41 - 1.05)
Sleep problems ^c	30.7 (1.4)	1122	22.9 (1.8)	670	1.49 (1.18–1.89)*
Irritability ^c	13.7 (1.0)	1122	17.5 (1.9)	670	0.75(0.55-1.02)
Concentration problems ^c	20.0(1.4)	1122	19.5 (1.6)	670	1.03 (0.82-1.30)
Hypervigilance	43.3 (1.7)	1122	43.9 (2.0)	670	0.98 (0.81-1.18)
Exaggerated startle response ^c	23.0 (1.5)	1122	14.1 (1.6)	670	1.82 (1.41-2.35)*

^a Avoidance symptoms; ^b numbing symptoms; ^c arousal symptoms.

* *p* < 0.05.

asked each of the symptom questions. Criterion B was not examined as the operationalization of this criterion is identical for ICD-10-DCR and DSM-IV. Rates of endorsement and the odds of endorsing the symptom for females *versus* males are presented in Table 3. While not all numbing symptoms were endorsed significantly more by males (probably explaining why overall the criterion is not endorsed significantly more by males), the symptom of detachment from others was endorsed significantly more by males than females. Avoidance of thoughts, but not avoidance of activities, was endorsed significantly more by females than by males. There were two arousal symptoms on which there was a gender difference (sleep problems and exaggerated startle response) and on these symptoms rates of endorsement were higher in females than in males.

DISCUSSION

Consistent with our previous research (Peters *et al.* 1999), the findings regarding prevalence of DSM-IV and ICD-10-DCR PTSD in this larger household sample suggest that the two diagnostic systems are not comparable: the prevalence of ICD-10-DCR PTSD was more

than twice that of DSM-IV PTSD. Again, consistent with our previous research, the presence of numbing of general responsiveness (criterion C) and the clinical significance criterion (criterion F) as components of the diagnostic criteria in DSM-IV but not in ICD-10-DCR appeared to play a major role in the discrepancy between the two systems.

The more interesting aspect of this research, however, is what the discrepancies between the two diagnostic systems can reveal about the gender differences in PTSD as ascertained by epidemiological instruments like the CIDI. In particular, while there was no overall gender difference in the prevalence of PTSD as defined by DSM-IV, females were twice as likely as males to attract a diagnosis of PTSD according to ICD-10-DCR. The lack of a gender difference in diagnosis of DSM-IV PTSD is contrary to other large epidemiological surveys (e.g. Kessler et al. 1995) and requires exploration. The gender difference at the diagnostic level for ICD-10-DCR was borne out by significant gender differences on all of the ICD-10-DCR diagnostic criteria, with females being one-anda-half to two times as likely to meet each of the criteria as males. Consistent with the lack of a gender difference in the prevalence of diagnosis of DSM-IV PTSD, there were less gender differences evident at the criterion level for DSM-IV than for ICD-10-DCR. Females were more likely to meet criterion A (exposure and reaction to the stressor) and criterion B (reexperiencing of the event) than were males, but females and males were equally likely to meet all other DSM-IV criteria. Importantly, there was no gender difference in endorsement of questions about clinical significance which make up criterion F in DSM-IV but do not contribute to the ICD-10-DCR diagnosis of PTSD. Thus, it can be concluded that the gender difference in ICD-10-DCR PTSD is not due to more severe symptomatology in females than in males. It appears that the gender difference in ICD-10-DCR but not in DSM-IV may have its source in the differential endorsement of symptoms that make up the other diagnostic criteria.

When the endorsement by males and females of the symptoms was examined, the pattern of gender differences seen in all criteria for ICD-10-DCR is not shown for all symptoms: there was a higher endorsement by females than males on only three symptoms (avoidance of thoughts and feelings, sleep problems, and exaggerated startle response), but for most symptoms there was equal endorsement of the symptoms by males and females, and, for one symptom (detachment from others) higher endorsement by males than by females. This pattern of symptom endorsement is consistent with the equal prevalence of DSM-IV PTSD, but not consistent with the higher prevalence for females of ICD-10-DCR PTSD. The apparent inconsistency is explained by the configuration of symptoms in the ICD-10-DCR and DSM-IV in order to make a diagnosis (see Fig. 1). In particular, criterion C in ICD-10-DCR requires only that at least one symptom of avoidance be endorsed while in DSM-IV, three out of seven symptoms must be endorsed. While males and females endorse one of the avoidance symptoms equally, females are more likely to endorse avoidance of thoughts and feelings and less likely to endorse detachment than are males. Therefore, females are less likely to meet the full criterion C requirements for DSM-IV PTSD than are males. Females are, however, more likely to meet the lesser criterion C requirements for ICD-10-DCR than they are for DSM-IV, which, in combination with the increased endorsement by females of the other criteria in ICD-10-DCR results in the increased prevalence of ICD-10-DCR PTSD amongst females when compared to males.

The findings, therefore, highlight the different symptoms that are endorsed by males and females who have experienced a traumatic event. Females were found to be more likely than males to endorse symptoms of re-experiencing the trauma and of arousal (although this latter difference was only significant for ICD-10-DCR). Males were found to be more likely than females to endorse symptoms of detachment. The gender differences apparent in this study in the endorsement of symptoms of re-experiencing the trauma are consistent with the pattern found for those who have experienced a trauma by other researchers in out-patient samples (Zlotnick et al. 2001) and epidemiological samples (Breslau et al. 1999) and the higher endorsement of arousal symptoms by females than by males is consistent with the pattern found for those who have experienced a trauma



FIG. 1. Pictorial relationship between criteria C and D in both DSM-IV and ICD-10-DCR.

in an epidemiological sample (Norris et al. 2001).

The results demonstrate that, depending on the diagnostic system chosen, gender differences in endorsement of symptoms after trauma will be more or less apparent. The analysis performed does not allow a conclusion to be drawn regarding which diagnostic system captures the true essence of PTSD. An analysis strategy that began with the symptoms and examined their structure (e.g. via factor analytic methods) may allow a better examination of which symptoms are core to PTSD and whether those symptoms are better captured by DSM-IV-TR or by ICD-10-DCR (a suggestion from an anonymous reviewer) given the way in which the CIDI allows questions to be skipped, however, such an analysis in this sample would not be possible.

The results raise the question of whether the gender differences in endorsement of symptoms after trauma reflect genuine differences between males and females in their post-trauma experience. Other researchers have put forward the suggestion that males and females have a different biological propensity to experience different symptoms after trauma (cf. Bryant & Harvey, 2003). An alternative explanation is that the gender difference in endorsement of symptoms is the result of response bias. In particular, the role of culturally defined gender roles, where the traditional male role is seen as one of 'strength' and the traditional female role is seen as one of 'weakness', may come in to play in the differential likelihood of men and women endorsing particular symptoms (see Gavranidou & Rosner, 2003, for a review of this issue). In this sample, males were more likely than females to report one symptom (detachment from others) which may be less likely to be interpreted as a sign of weakness than those symptoms which are endorsed equally by males and females (e.g. avoidance of activities) or more by females than males (e.g. exaggerated startle response). Response bias may be particularly pertinent in PTSD given the wellknown relationship between emotional events, memory and self-report (Kihlstrom et al. 2000). Given that, in many people with PTSD, the traumatic event occurred a long time prior to the interview, reconstruction of memories of traumatic events and resulting symptoms may be mediated by the individual's perception of which types of symptoms are culturally acceptable. Although speculative at this stage, the role of culturally defined gender roles in creating a response bias in answering questions about post-trauma reactions warrants more attention. How research might be done to examine whether gender differences in endorsement of symptoms reflects genuine differences in the post-trauma experience or is a result of response bias is, however, unclear.

Although the results of the current study are important in elucidating gender differences in endorsement of symptoms after trauma, there are a number of limitations. One of the most important limitations is the fact that the structure of the CIDI does not allow all respondents to be asked all of the questions. The CIDI uses skips when it is clear that the respondent is unlikely to meet full diagnostic criteria, a feature which is advantageous when conducting epidemiological surveys as it results in brevity, but which limits the analysis of the results from such surveys at the symptom level. As a result of the skips, the sample sizes on which each of the diagnostic criteria and symptoms are compared varies. Thus, it is possible that the rates of endorsement of each symptom may be influenced by gender differences in getting through each skip point of the CIDI. This raises the possibility that conclusions drawn about the gender differences in PTSD using epidemiological instruments like the CIDI should be tempered in light of methodological considerations. The skip structure of the CIDI also limits the application of other analysis strategies based on item response theory (cf. Embretson & Reise, 2000) which might allow a clearer examination of response bias to individual items.

In conclusion, the present study sought to explore the lack of gender difference in the diagnosis of DSM-IV PTSD reported for an epidemiological sample in Australia (Creamer *et al.* 2001) by comparing males and females on their endorsement of symptoms and criteria that make up DSM-IV and ICD-10-DCR. The results highlight discrepancies between the two diagnostic systems that lead to important differences in the conclusions that are to be drawn about the prevalence of PTSD, but more importantly, the results highlight the possible role of methodological artefacts in contributing to the overall prevalence estimates of PTSD in this sample.

ACKNOWLEDGMENTS

This study was supported by a contract from the Australian Department of Health and Aged Services to the WHO Collaborating Centre for Evidence in Mental Health Policy to support a survey data analysis consortium (G. Andrews, V. Carr, G. Carter, R. Crino, W. Hall, A. Henderson, I. Hickie, C. Hunt, L. Lampe, J. McGrath, A. McFarlane, P. Mitchell, L. Peters, M. Teesson, K. Wilhelm). The Australian Bureau of Statistics, who do not necessarily endorse the views expressed in this study, conducted the survey. We acknowledge the helpful comments of the anonymous reviewers.

DECLARATION OF INTEREST

None.

REFERENCES

- Andrews, G., Henderson, S. & Hall, W. (2001). Prevalence, comorbidity, disability and service utilisation: overview of the Australian National Mental Health Survey. *British Journal of Psychiatry* 178, 145–153.
- **APA** (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4th edn). American Psychiatric Association: Washington, DC.
- Breslau, N., Chilcoat, H. D., Kessler, R. C., Peterson, E. L. & Lucia, V. C. (1999). Vulnerability to assaultive violence: further specification of the sex difference in post-traumatic stress disorder. *Psychological Medicine* 29, 813–821.
- Breslau, N., Davis, G. C., Andreski, P., Peterson, E. L. & Schultz, L. R. (1997). Sex differences in posttraumatic stress disorder. Archives of General Psychiatry 54, 1044–1048.
- Breslau, N. & Kessler, R. C. (2001). The stressor criterion in DSM-IV posttraumatic stress disorder: an empirical investigation. *Biological Psychiatry* 50, 699–704.

- Breslau, N., Kessler, R. C., Chilcoat, H. D., Schultz, L. R., Davis, G. C. & Andreski, P. (1998). Trauma and posttraumatic stress disorder in the community: the 1996 Detroit Area Survey of Trauma. Archives of General Psychiatry 55, 626–632.
- Brewin, C. R., Andrews, B. & Rose, S. (2000). Fear, helplessness, and horror in posttraumatic stress disorder: investigating DSM-IV criterion A2 in victims of violent crime. *Journal of Traumatic Stress* 13, 499–509.
- Bryant, R. A. & Harvey, A. G. (2003). Gender differences in the relationship between acute stress disorder and posttraumatic stress disorder following motor vehicle accidents. *Australian and New Zealand Journal of Psychiatry* **37**, 226–229.
- Cuffe, S. P., Addy, C. L., Garrison, C. Z., Waller, J. L., Jackson, K. L., McKeown, R. E. & Chilappagari, S. (1998). Prevalence of PTSD in a community sample of older adolescents. *Journal* of the American Academy of Child & Adolescent Psychiatry 37, 147–154.
- Creamer, M., Burgess, P. & McFarlane, A. C. (2001). Post-traumatic stress disorder: findings from the Australian National Survey of Mental Health and Well-being. *Psychological Medicine* 31, 1237–1247.
- Embretson, S. E. & Reise, S. P. (2000). Item Response Theory for Psychologists. Lawrence Erlbaum Associates: Mahwah, New Jersey.
- Foa, E. B., Riggs, D. S. & Gershuny, B. S. (1995). Arousal, numbing and intrusion: symptom structure of PTSD following assault. *American Journal of Psychiatry* 152, 116–120.
- Gavranidou, M. & Rosner, R. (2003). The weaker sex? Gender and post-traumatic stress disorder. *Depression and Anxiety* 17, 130– 139.
- Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M. & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. Archives of General Psychiatry 52, 1048–1060.
- Kihlstrom, J. F., Eich, E., Sandbrand, D. & Tobias, B. A. (2000). Emotion and memory: implications for self-report. In *The Science of Self-Report: Implications for Research and Practice* (ed. A. A. Stone, J. S. Turkkan, C. A. Bachrach, J. B. Jobe,

H. S. Kurtzman and V. S. Cain). Lawrence Erlbaum Associates: Mahwah, New Jersey.

- Norris, F. H. (1992). Epidemiology of trauma: frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology* 60, 409–418.
- Norriss, F. H., Perilla, J. L., Ibañez, G. E. & Murphy, A. D. (2001). Sex differences in symptoms of posttraumatic stress: does culture play a role? *Journal of Traumatic Stress* 14, 7–28.
- Perkonigg, A., Kessler, R. C., Storz, S. & Wittchen, H.-U. (2000). Traumatic events and post-traumatic stress disorder in the community: prevalence, risk factors and comorbidity. *Acta Psychiatrica Scandinavica* 101, 46–59.
- Peters, L., Andrews, G., Cottler, L. B., Chatterji, S., Janca, A. & Smeets, R. M. W. (1996). The Composite International Diagnostic Interview post-traumatic stress disorder module: preliminary data. *International Journal of Methods in Psychiatric Research* 6, 167–174.
- Peters, L., Slade, T. & Andrews, G. (1999). A comparison of ICD10 and DSM-IV criteria for Posttraumatic Stress Disorder. *Journal* of Traumatic Stress 12, 335–343.
- Shah, B. V., Barnwell, B. G. & Beigler, G. S. (1997). SUDAAN User's Manual. Research Triangle Institute: Research Triangle Institute, NC.
- Stein, M. B., Walker, J. R. & Forde, D. R. (2000). Gender differences in susceptibility to posttraumatic stress disorder. *Behaviour Research & Therapy* 38, 619–628.
- WHO (1993). The ICD-10 Classification of Mental and Behavioural Disorders: Diagnostic Criteria for Research. World Health Organisation: Geneva.
- WHO (1997). CIDI-Auto 2: Administrator's Guide and Reference. Fast Books: Sydney.
- Zlotnick, C., Zimmerman, M., Wolsdorf, B. A. & Mattia, J. I. (2001). Gender differences in patients with posttraumatic stress disorder in a general psychiatric practice. *American Journal of Psychiatry* 158, 1923–1925.