

Clinical Presentations of Posttraumatic Stress Disorder across Trauma Populations

A Comparison of MMPI-2 Profiles of Combat Veterans and Adult Survivors of Child Sexual Abuse

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This investigation examined differences in symptom patterns of two different trauma samples using the Minnesota Multiphasic Personality Inventory-2 (MMPI-2). MMPI-2s of 122 male combat veterans seeking outpatient treatment for combat-related PTSD were compared with those of 64 PTSD-diagnosed adults seeking outpatient treatment for the effects of child sexual abuse (CSA). We examined variables related to degree of health concerns, depression, somatization, anger and hostility, masculine-feminine traits, paranoid ideation, anxiety, difficulties thinking and concentrating, elevated mood, and social introversion, as well as test-taking attitude. MANOVAs revealed between-group differences on several variables. However, when analyses controlled for the effect of age, nearly all differences disappeared; the only remaining difference was in a scale measuring anger. Thus, it appears CSA survivors and combat veterans are much more similar than different in their clinical presentation on the MMPI-2. Conceptual issues in the assessment of PTSD are discussed.

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Numerous studies have investigated clinical presentations in individuals suffering from posttraumatic stress disorder (PTSD), in an attempt to explore the long-term effects of trauma. Two separate bodies of literature have emerged to investigate the impact of trauma in the following clinical samples of survivors: a) assessment of civilians and b) assessment of veterans. However, because these two research areas have generally remained quite separate from each other, surprisingly little research has been reported that compares the psychiatric presentations of different trauma samples. Thus, the extent to which PTSD is similar across different types of traumatized individuals is relatively unknown. The current investigation attempts to gain a better understanding of the manifestation of PTSD with a comparative analysis of trauma groups to explore for such differences.

A significant body of literature in PTSD assessment has implemented the Minnesota Multiphasic

Personality Inventory-2 (MMPI-2; Butcher et al., 1989) with combat veterans. Of these studies, most find highest scores on scales measuring depression (scale 2), difficulties thinking or concentrating (scale 8), emotional distress and atypical experiences (scale F; Albrecht et al., 1994; Fairbank et al., 1983), and significant anxiety (scale 7; Beckham et al., 1997; Forbes et al., 1999). In addition, a considerable amount of research has explored the effects of child sexual abuse (CSA) with the MMPI-2, demonstrating that survivors (with or without PTSD) score highest on scales measuring hostility and impulsivity (scale 4), and difficulties thinking and concentrating (scale 8; Belkin et al., 1994; Griffith et al., 1997; Lundberg-Love et al., 1992). Additional high scores are noted for scales tapping depression (scale 2; Belkin et al., 1994; Engels et al., 1994; Gregg and Parks, 1995), and distress and unusual experiences (scale F; Belkin et al., 1994; Hunter, 1991; Nash et al., 1993). A recent MMPI-2 cluster analysis (Elhai et al.⁴) discovered groups of profiles that involved distinct combinations of these scale elevations.

The present study involves the comparison of symptomatology between two samples of patients

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⁴ Elhai JD, Flitter JMK, Gold SN, Sellers AH (submitted) Identifying subtypes of women survivors of childhood sexual abuse: An MMPI-2 cluster analysis.

diagnosed with PTSD: combat veterans and survivors of CSA. Our aim is to investigate how the psychopathology of PTSD differs between trauma groups. As our measurement of symptomatology was the MMPI-2, it is noteworthy that we could find no MMPI-2 investigations of PTSD that compared a civilian with a noncivilian sample, thus making the present analysis unique.

Methods

Participants

PTSD Combat Veteran Patients. This clinical sample consisted of archival data from 122 male patients diagnosed with PTSD at a Veterans Affairs Medical Center (VAMC) outpatient PTSD clinic. These individuals constituted a subgroup of patients from a larger sample previously reported on in published research studies (*e.g.*, Frueh et al., 1996). The larger patient sample completed a full evaluation for treatment, but only those diagnosed with PTSD by multidisciplinary team consensus were included in the present study. The MMPI-2 was administered as part of the standard intake evaluation.

The veteran sample was diagnosed according to the DSM-III-R or DSM-IV (American Psychiatric Association, 1994) by a clinical staff consisting of a psychiatrist, clinical psychologist, and social worker. All PTSD diagnoses were provisional and reached by staff consensus after a thorough evaluation, which included a chart review, a psychosocial and military history interview, and the Clinician-Administered PTSD Scale (CAPS-1; Blake et al., 1990). Although a variety of scoring rules exist for the CAPS (Weathers et al., 1999), the original CAPS-1 scoring rules were used (Blake et al., 1990). Additional (nonmutually exclusive) axis I diagnoses were provided based on nonstandardized clinical interviews and included affective (mood; 75%), current substance abuse (24%), anxiety (19%), and psychotic (8%) disorders. For demographics, patient age ranged from 23 to 74 years, with a mean of 47.17 (SD = 7.94). Number of years of education completed ranged from 4 to 18 (mean = 12.26, SD = 2.31). Additional demographic information and military history characteristics for these participants (in percentages) is listed in Table 1. It is worth mentioning that sexual and physical abuse was reported by a number of veterans in the sample. Although it is possible that this finding could compromise the design's rigor (because the comparison group constitutes victims of sexual abuse), the veterans' prevalence of sexual abuse is comparable to that of other veteran samples (Smith et al., 1999) and men in general (Finkelhor et al., 1990).

TABLE 1
PTSD Groups' Demographics

	Combat War Veterans (%)	CSA Survivors (%)	N	$\chi^2(df)$
Demographic variables				
Ethnicity			185	30.34(2)*
Caucasian	62	79		
African-American/Black	37	6		
Other	1	14		
Annual household Income			182	1.32(4)
< \$10,000	50	47		
\$10,000–\$19,999	24	25		
\$20,000–\$29,999	16	13		
\$30,000–\$39,999	7	12		
≥ \$40,000	2	3		
Employment Status			180	3.65(2)
Part-time	9	17		
Full-time	34	38		
Unemployed	57	45		
Combat veteran characteristics				
Branch of military served				
Army	78			
Navy	4			
Air Force	2			
Marines	16			
War era				
World War II	6			
Korea	3			
Vietnam	84			
Persian Gulf	7			
Currently seeking				
VAMC Compensation	58			
History of Sexual Abuse Reported				
History of Physical Abuse Reported	17			
CSA survivor characteristics				
Intercourse occurred		56		
Anal (nonmutually exclusive)		19		
Vaginal (nonmutually exclusive)		48		
Force was used		75		

* $p < .01$.

PTSD Patients with Child Sexual Abuse (CSA) Histories

The second PTSD clinical sample was drawn from archival data of 64 patients (9 men, 55 women) diagnosed with PTSD. This data set was employed in a previous study (Elhai et al.⁵). These patients were at least 18 years old and presented to an outpatient program for treatment of the traumatic aftereffects of a reported history of CSA (*i.e.*, self-report of at least one sexually abusive incident occurring to them before age 18). The MMPI-2 was adminis-

⁵ Elhai JD, Gold SN, Sellers AH, Dorfman WI (submitted) The detection of malingered posttraumatic stress disorder with MMPI-2 fake bad indices.

tered as part of the standard intake evaluation, at a university-based community mental health center.

The CSA clinical sample was diagnosed according to DSM-III-R or DSM-IV (American Psychiatric Association, 1994) criteria. Diagnoses were assessed by a clinical team of advanced doctoral students in clinical psychology, supervised by a licensed clinical psychologist (fourth author) specializing in trauma assessment and treatment. All diagnoses were provisional, taken during initial intake examination, and obtained from nonstandardized clinical interviews. The Impact of Event Scale (IES) was used to further validate PTSD diagnoses, as this instrument has shown good validity for detecting PTSD (Horowitz et al., 1979; Zilberg et al., 1982). With a total score of 26 or higher suggesting significant posttraumatic stress (Fischer and Corcoran, 1994), 92% of the CSA survivors in the current study met or exceeded this cutoff score, suggesting good PTSD diagnostic validity. Additional (nonmutually exclusive) axis I diagnoses given included mood (63%), dissociative (17%), anxiety (14%), and substance-related (5%) disorders.

In this CSA group, age ranged from 18 to 50 years, with a mean of 31.21 (SD = 8.73). Number of years of education completed ranged from 8 to 17 (mean = 12.21, SD = 2.03). Additional demographic information for these participants (in percentages) is listed in Table 1. The mean reported age at onset of CSA was 7.11 years (SD = 3.59), ranging from ages 1 to 16. The mean number of perpetrators reported was 3.30 (SD = 2.94), ranging from 1 to 15.

Measures

Minnesota Multiphasic Personality Inventory-2 (MMPI-2). In assessing psychopathology, the MMPI-2 is one of the most widely used instruments. It is a standardized 567-item true-false questionnaire that elicits a range of self-descriptions to quantitatively measure an individual's emotional adjustment and test-taking attitude. There are 13 basic scales, of which 10 relate to clinical/personality and 3 to validity indices. Additionally, a variety of content and supplementary scales exist. Two separate bodies of literature have utilized the MMPI-2 to document long-term effects of trauma in combat veterans and adults reporting a history of sexual abuse.

Data Analyses

Analyses were conducted to assess for differences between trauma groups in demographic characteristics, using an alpha level of .01 to control for multiple comparisons. Chi-square analyses were implemented for categorical-scaled variables, with *t*-

tests used for interval-scaled variables. Table 1 lists chi-square analyses, and indicates that CSA survivors differed significantly from veterans in ethnicity. No between-groups difference existed in level of education ($t = -.14, p > .01, df = 180$). Groups did significantly differ in age ($t = -12.52, p < .01, df = 183$), with the veteran group (mean = 47.17, SD = 7.94) being significantly older than the CSA group (mean = 31.21, SD = 8.73).

Test-taking attitude was used to screen out data from either groups' participants who completed the MMPI-2 in an invalid manner. Data were excluded if a participant had a bias toward engaging in all-true or all-false responding (TRIN ≥ 100), random responding (VRIN ≥ 80), or missing responses (CS ≥ 30). These criteria resulted in the exclusion of 13 veterans and 4 CSA survivors. Thus, the remaining 109 combat veterans and 60 CSA survivors served as the overall sample for the present study.

Two separate one-way multivariate analyses of variance (MANOVAs) were implemented to compare the trauma groups on the MMPI-2. First, a MANOVA was run using the 3 validity and 10 MMPI-2 clinical scales as dependent variables. Second, a MANOVA was used with the 15 content scales as dependent variables. An alpha level of .025 was used to assess each multivariate test (to control for multiple multivariate tests), using the Wilks' Lambda test statistic. K-corrected T scores were used, because of the combination of men and women participants.

Because age and ethnicity significantly differentiated groups, two additional analyses were conducted. First, trauma groups were compared on the validity and clinical scales, with Ethnicity as an additional independent factor and Age as a covariate. Thus, a 3×2 multivariate analysis of covariance (MANCOVA) was conducted (Ethnicity \times Trauma Group), adjusting for age. Second, trauma groups were compared on the content scales in a MANCOVA, also with Ethnicity as a factor and Age as a covariate. To control for multiple comparisons, individual alpha levels of .025 were implemented for testing the interaction effect (Ethnicity \times Trauma Group), the main effect of Trauma Group, and the main effect of Ethnicity (for an overall familywise alpha level of .15 for these analyses). Significant multivariate effects were followed by univariate tests to assess which particular scales differentiate groups (alpha = .01).

Results

Mean profiles of the veteran and CSA groups are presented in Figure 1. First, the overall MANOVA

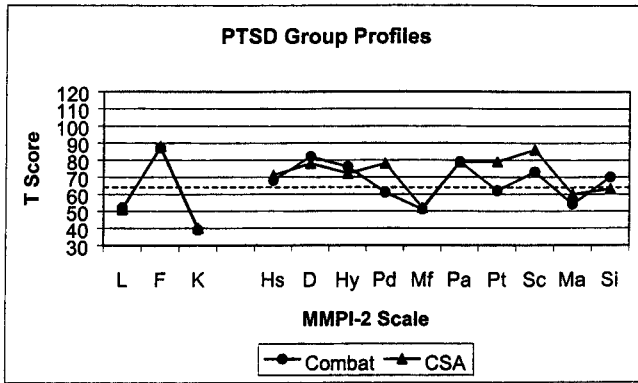


FIG. 1. PTSD group profiles.

TABLE 2

MANOVA and MANCOVA Findings: Mean T scores, Standard Deviations, and Univariate F Ratios for the Validity and Clinical Scales for the Two Groups

Scale	Combat Veterans		CSA Survivors		MANOVA F(1, 167)	MANCOVA F(6, 161)
	Mean	SD	Mean	SD		
L	52.06	10.06	50.98	9.86	.45	1.41
F	87.47	22.73	88.28	21.44	.05	.03
K	38.94	8.47	40.17	7.44	.88	.06
1	68.41	14.75	71.40	12.79	1.74	.00
2	81.72	13.55	78.27	13.17	2.56	.17
3	75.74	17.00	71.62	13.50	2.62	.52
4	61.04	13.57	78.17	13.64	61.45**	2.01
5	50.55	8.44	51.68	10.26	.60	1.05
6	79.17	19.37	79.25	17.21	.00	.03
7	62.32	16.71	78.95	14.91	41.29**	3.79
8	73.07	21.87	85.52	18.01	14.13**	2.37
9	53.95	12.24	59.92	13.86	8.35*	.04
0	70.13	12.64	63.30	10.74	12.55**	.32

*p < .01.
**p < .001.

examining the validity and clinical scales demonstrated a significant group difference ($F[13,155] = 23.79, p < .0001$). Mean T scores, standard deviations, and results of the univariate tests can be found in Table 2. Specifically, scales measuring hostility and impulsivity (scale 4), anxiety (scale 7), difficulty thinking and concentrating (scale 8), elevated mood and energy (scale 9), and social introversion (scale 0) all significantly discriminated groups ($p < .01$), with CSA survivors scoring higher on all of these but social introversion (scale 0).

Next, the MANOVA examining content scales demonstrated a significant difference between groups ($F[15,150] = 6.33, p < .001$). Table 3 displays mean T scores, standard deviations, and results of the univariate tests. Specifically, fears (FRS), health concerns (HEA), anger (ANG), and social discomfort (SOD) all significantly discriminated groups ($p < .01$), with combat veterans scoring higher.

A MANCOVA was utilized to control for demographic differences between groups on the validity

TABLE 3

MANOVA and MANCOVA Findings: Mean T scores, Standard Deviations, and Univariate F Ratios for the Content Scales for the Two Groups

Scale	Combat Veterans		CSA Survivors		MANOVA F(1, 164)	MANCOVA F(1, 158)
	Mean	SD	Mean	SD		
ANX	78.56	9.98	75.80	10.54	2.81	2.07
FRS	68.70	15.30	60.05	13.27	13.44*	.04
OBS	69.09	12.46	64.77	11.36	4.92	.32
DEP	80.09	12.20	76.10	11.37	4.50	3.02
HEA	82.68	13.31	72.70	12.44	22.55**	3.22
BIZ	78.00	18.94	70.73	15.99	6.31	.01
ANG	70.25	11.47	64.63	11.65	9.10*	9.47*
CYN	64.35	11.75	60.43	9.86	4.76	1.69
ASP	57.29	11.17	59.40	11.79	1.31	.50
TPA	61.25	11.76	57.03	11.93	4.89	1.69
LSE	69.54	15.17	70.33	13.01	.12	.30
SOD	70.85	12.81	61.33	13.83	19.96**	.00
FAM	67.94	12.60	71.43	12.14	3.02	1.36
WRK	75.91	12.86	73.23	12.63	1.68	.01
TRT	77.81	14.64	72.73	13.54	4.86	.27

*p < .01.
**p < .001.

and clinical scales. The interaction between Ethnicity and Trauma Group proved to be nonsignificant ($F[26, 298] = 1.10, p = .35$). There was no main effect for Ethnicity ($F[26, 298] = 1.62, p = .03$). There was a significant main effect for Trauma Group ($F[13, 149] = 2.95, p < .0001$). Results of the univariate tests from the MANCOVA can be found in Table 2. This table reveals that despite the significant multivariate effect of Trauma Group when adjusting for age, no univariate effects were significant for any scale.

Last, a MANCOVA was implemented to control for demographic differences between groups on content scales. The Ethnicity \times Trauma Group interaction proved to be nonsignificant ($F[30, 288] = 1.15, p = .27$), with no main effect for Ethnicity ($F[30, 288] = 1.60, p = .03$). There was a significant main effect for Trauma Group ($F[15, 144] = 2.19, p = .01$). Univariate test results from the MANCOVA can be found in Table 3 and demonstrate that when adjusting for age, the only difference found was for anger ($p < .01$).

Discussion

The present investigation demonstrated that several differences existed between the clinical presentations of combat veterans and CSA survivors. Results revealed that MMPI-2 validity, clinical, and content scales significantly differentiated groups. Specifically, groups scored differently on one anxiety subscale, anger and hostility, fears, health concerns, problems thinking and concentrating, elevated mood, and social discomfort and introversion

scales. In particular, while CSA survivors scored higher on average than veterans on scales measuring anger, anxiety, problems thinking, and expansive mood, veterans scored higher on fears, health concerns, and social discomfort scales. It is important to note that while these differences were statistically significant, data from Figure 1 suggests that these differences may not be clinically significant.

In terms of demographic differences, subsequent analyses used to compare the veteran and CSA groups found that when controlling for age, most group differences disappeared. In fact, the effect of age has been well documented in MMPI-2 research. The most prevalent finding is that as individuals become older, scores decrease on scales measuring anger and impulsivity, and expansive mood (Greene, 2000). This is consistent with the findings of the present study, in which veterans (*i.e.*, the older group) scored lower than the CSA group (*i.e.*, the younger group) on these scales.

Other demographic differences should be mentioned. Although ethnicity proved to differ between groups, results suggest that ethnicity did not contribute significantly to predicting MMPI-2 scores across groups. In fact, MMPI-2 scales are only negligibly affected by ethnic group status (Hall et al., 1999). Last, the CSA sample consisted of predominantly women, and the veteran sample consisted exclusively of men. Therefore, at first glance it is difficult to know if comparable samples of trauma survivors were contrasted. However, it has been noted that because of the use of standardized scores (T scores, in this case), gender has a negligible effect on MMPI-2 results (Greene, 2000).

Several limitations apply to the current investigation. First, whereas for the combat group a structured interview for PTSD was used to arrive at PTSD diagnosis, no such structured interview was implemented for the CSA group. Thus, it is possible that the two groups were not adequately matched for the presence of PTSD. Second, because of the current samples' axis I comorbidity, also documented previously (Keane and Wolfe, 1990), we cannot establish that our results reflect pure PTSD but can only reflect that of heterogeneous PTSD samples. Last, although age did account for differences in clinical presentations, an alternate explanation is that the amount of time elapsed since cessation of the trauma accounts for group differences.

Conclusions

Taken together, the distinctness of mean profiles among trauma groups in this study is generally consistent with previous literature on the MMPI-2s of

CSA survivors and combat veterans. However, demographic adjustment led to nearly identical symptom patterns, based on MANCOVA results of MMPI-2 validity, clinical, and content scales. Thus, it appears that when adjustments are made to take demographic differences into account, CSA survivors and combat veterans are much more similar than different in their clinical presentation. Future research should compare trauma samples, with careful attention to controlling for demographic variables such as ethnicity, age, and gender.

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