C1892

Dissociation and Posttraumatic Stress Disorder in Vietnam Combat Veterans

J. Douglas Bremner, M.D., Steven Southwick, M.D., Elizabeth Brett, Ph.D., Alan Fontana, Ph.D., Robert Rosenheck, M.D., and Dennis S. Charney, M.D.

Objective: *This study compared current dissociative symptoms and dissociation at the time of specific traumatic events in Vietnam combat veterans with posttraumatic stress disorder (PTSD) and Vietnam combat veterans without PTSD.* *Method:* *Vietnam combat veterans who sought treatment for PTSD (N=53) were compared to Vietnam combat veterans without PTSD (N=32) who sought treatment for medical problems. Dissociative symptoms were evaluated with the Dissociative Experiences Scale. Dissociation at the time of a combat-related traumatic event was evaluated retrospectively with the modified Dissociative Experiences Questionnaire. The Combat Exposure Scale was used to measure level of combat exposure.* *Results:* *There was a significantly higher level of dissociative symptoms, as measured by the Dissociative Experiences Scale, in patients with PTSD (mean=27.0, SD=18.0) than in patients without PTSD (mean=13.7, SD=16.0). This difference persisted when the difference in level of combat exposure was controlled with analysis of covariance. PTSD patients also reported more dissociative symptoms at the time of combat trauma, as measured retrospectively by the Dissociative Experiences Questionnaire (mean=11.5, SD=1.6) than non-PTSD patients (mean=1.8, SD=2.1).* *Conclusions:* *Dissociative symptoms are an important element of the long-term psychopathological response to trauma.*

(Am J Psychiatry 1992; 149:328–332)

A relationship between dissociation and symptoms of posttraumatic stress has been hypothesized since the time of Pierre Janet (1–4). Janet coined the term dissociation as the opposite of association—literally, the lack of connection between one piece of memory or consciousness and another (1). According to his theory, susceptible individuals who respond to traumatic events with dissociation develop long-term changes in neurobiological systems. These result in dissociative responses to subsequent stressful events, increased general dissociative symptoms, and an increased risk for stress-related psychiatric disorders such as what is known today as posttraumatic stress disorder (PTSD) (5).

There have been isolated reports of dissociative symptoms in veterans of World War I, World War II, and the Vietnam war (6–15). In addition, a study conducted by Spiegel et al. found a significantly higher rate of hypnotizability in Vietnam veterans with PTSD than in other patient groups or in normal control subjects (16). Spiegel et al. concluded that Vietnam veterans with PTSD may have more dissociative symptoms than other veterans.

The recent development of standardized instruments has made the measurement of dissociative symptoms possible. However, only one study has been published in which dissociative symptoms were measured in Vietnam veterans with PTSD (17). In that study, patients

Received April 9, 1991; revision received Sept. 18, 1991; accepted Oct. 10, 1991. From the National Center for Post-Traumatic Stress Disorder and the Northeast Program Evaluation Center, West Haven VA Medical Center; and the Department of Psychiatry, Yale University School of Medicine, New Haven, Conn. Address reprint requests to Dr. Bremner, 116A1 West Haven VA Medical Center, 950 Campbell Ave., West Haven, CT 06516.

Supported by a grant from the National Center for Post-Traumatic Stress Disorder.

with PTSD had levels of dissociative symptoms that were higher than those of patients with temporal lobe epilepsy and comparable to those of patients with multiple personality disorder (17). There have been no published reports thus far comparing patients with PTSD to a control group of combat veterans without PTSD. If Janet's theory is correct, certain susceptible individuals—those who develop PTSD—would be more likely to develop dissociative symptoms than other less susceptible individuals.

This study was undertaken, therefore, to determine if there are higher levels of dissociative symptoms, both currently and at the time of traumatic events, in combat veterans with PTSD than in combat veterans without PTSD. An effort was also made to determine whether dissociation is specific to PTSD symptoms or whether it is associated with nonspecific psychiatric distress.

METHOD

The subjects were 85 Vietnam combat veterans at the West Haven Veterans Administration (VA) Medical Center. The Vietnam combat veterans with PTSD (N=53) had sought treatment for PTSD and included patients consecutively admitted to the inpatient unit (N=34) of the National Center for Post-Traumatic Stress Disorder, Division of Clinical Neurosciences, West Haven VA Medical Center, during a 5-month period. Patients with PTSD were also from the outpatient clinic of the national center (N=19) and were selected from patients consecutively admitted during a 3-month period by clinicians who were willing to refer their patients to be interviewed. Vietnam combat veterans without PTSD (N=32) had sought treatment for medical problems and were patients consecutively admitted to the medical center's outpatient ambulatory care clinic during a 3-month period.

Patients included in the study were those with a history of combat exposure, defined as having received hostile or friendly fire or having received incoming artillery rounds. Patients were assigned to PTSD and non-PTSD groups on the basis of a diagnosis of current PTSD as measured by the Structured Clinical Interview for DSM-III (SCID) (18). Patients with a history of psychosis, organic brain syndrome, or a medical illness that would preclude participation were excluded from the study. Of the 89 Vietnam combat veterans contacted, 85 (97.4%) agreed to participate in the study.

Dissociative symptoms were evaluated with the Dissociative Experiences Scale (19). The scale is a 28-item, self-report instrument for the measurement of dissociative experiences; it has a test-retest reliability of 0.84 (20). The scale has been used in large population samples and has been shown to discriminate significantly between patients with dissociative disorders or other disorders and normal control subjects when a cutoff score of 30 is used (19–21). The scale is intended for use in screening for dissociative symptoms and is not a diagnostic instrument.

Higher levels of combat exposure were anticipated in the PTSD patient group than in the non-PTSD patient group. Level of combat exposure was assessed with the Combat Exposure Scale, a self-report measure that has been shown to have acceptable reliability and validity (22). High combat exposure is defined as a score of greater than 24 on the scale (T.M. Keane, personal communication, Oct. 15, 1990).

An additional component of the study involved a comparison of dissociative symptoms to PTSD symptoms and general psychiatric symptoms. For this purpose, patients were evaluated with the Mississippi Scale for Combat-Related Posttraumatic Stress Disorder, a validated measurement of current PTSD symptom severity (23). The Mississippi scale assesses the full range of PTSD symptoms and quantifies scope and severity of symptoms. General psychiatric symptoms were examined with the global scale of the Brief Symptom Inventory. The inventory is a validated self-report instrument that assesses a broad range of psychiatric symptoms (24).

Dissociation at the time of traumatic events was examined with the modified Dissociative Experiences Questionnaire, which was developed for the purposes of this study. The questionnaire is a clinician-administered instrument for the assessment of dissociative states at specific time points; it consists of six questions from the Dissociative Experiences Questionnaire (C. Marmar, unpublished) and seven questions from another dissociation scale in development at our center (J.D. Bremner et al., unpublished). The questionnaire assesses the areas of amnesia, depersonalization, and derealization. Score is determined by the total number of positive responses to the 13 questions about dissociative states. Patients were asked to relate their most traumatic combat-related event, and the questionnaire was used in the assessment of dissociative states at that time. Specifically, symptoms in the areas of amnesia, depersonalization, and derealization were assessed.

Data from the Dissociative Experiences Scale were analyzed with standard parametric statistical methods. Since we anticipated a higher level of combat exposure in the PTSD group than in the non-PTSD group, we used analysis of covariance to compare scores on the Dissociative Experiences Scale for the PTSD and non-PTSD groups while controlling for the difference in combat exposure. To assess the relationship between dissociation (Dissociative Experiences Scale), PTSD symptoms (Mississippi scale), and nonspecific psychiatric symptoms (Brief Symptom Inventory global score), bivariate correlations were performed between scores on the Mississippi scale, Dissociative Experiences Scale, and the Brief Symptom Inventory-global scale in a subgroup of 40 PTSD patients. In order to assess the relationship between PTSD symptoms and dissociative symptoms while controlling for nonspecific psychiatric symptoms, we performed multiple linear regression in this subgroup. Multiple linear regression was also used to assess the relationship between dissociation at the time of combat trauma (modified Dissociative Experiences Questionnaire) and current PTSD symptom se-

TABLE 1. Characteristics of Vietnam Combat Veterans With and Without PTSD Who Were Evaluated for Dissociative Symptoms

	PTSD Subjects (N=53)				Comparison Subjects (N=32)			
Item	N	%	Mean	SD	N	%	Mean	SD
Age (years)			42.4	2.7			43.0	2.2
Race/ethnicity								
Black	8	15			4	13		
Hispanic	1	2			2	6		
White	44	83			26	81		
Education (years)			12.9	1.8			12.9	1.9
Marital status								
Married	23	43			11	34		
Separated	4	8			1	3		
Divorced	17	32			9	28		
Never married	9	17			11	34		
Service branch								
Army	29	55			22	69		
Navy	2	4			2	6		
Air Force	3	6			1	3		
Marines	19	36			7	22		
Age at time of joining the military (years)			18.3	1.2			18.5	1.2
Time in Vietnam (months)			15.8	5.9			14.1	9.0

verity (Mississippi Scale for Posttraumatic Stress Disorder) in a subgroup of 51 patients with and without PTSD. Covariates adjusted for in the model were other combat-related variables including combat exposure, exposure to atrocities, and number of months spent in Vietnam. Two-tailed tests of significance were used in all the analyses, and significance was defined as $p<0.05$.

RESULTS

There were no significant differences in any of the demographic variables measured between combat veterans with and without PTSD (table 1).

Scores of the PTSD patients on the Dissociative Experiences Scale were almost double those of the non-PTSD patients: 27.0 versus 13.7 (table 2). Scores greater than 30 were present in 41.0% of patients with PTSD, compared with 10.7% of non-PTSD patients ($\chi^2=7.37$, df=1, $p<0.01$).

Combat exposure, as measured by the Combat Exposure Scale, was significantly greater in the PTSD patients than in the non-PTSD patients (table 2). However, a significant difference in Dissociative Experiences Scale scores between the PTSD and non-PTSD groups persisted when the difference in combat exposure between the groups was controlled for with analysis of covariance ($F=12.29$, df=2, 59, $p<0.05$).

PTSD patients had higher levels of nonspecific psychiatric distress, as measured by the Brief Symptom Inventory (table 2). The relationship among dissociative symptoms, PTSD symptoms, and nonspecific psychiatric symptoms was examined in a subgroup of Vietnam combat veterans with PTSD. Bivariate analysis showed a correlation between dissociative symptoms (Dissociative Experiences Scale) and PTSD symptoms (Mississippi scale) ($r=0.34$, df=39, $p=0.03$), as well as between dissociative symptoms and nonspecific psychiatric symptoms ($r=0.47$, df=39, $p=0.002$). When the relationship between dissociative symptoms and PTSD symptoms was examined while nonspecific psychiatric symptoms were controlled for in the PTSD patients by using multiple linear regression, scores on the Mississippi scale were more strongly associated with scores on the Brief Symptom Inventory (beta=0.75, df=1, 37, $p<0.05$) than with scores on the Dissociative Experiences Scale (beta=0.02, df=1, 37, $p=0.90$).

TABLE 2. Psychological Scale Scores and Number of Flashbacks for Vietnam Combat Veterans With and Without PTSD

	PTSD Subjects (N=53)		Comparison Subjects (N=32)	
Item	Mean	SD	Mean	SD
Dissociative Experiences Scale score	27.0	18.0	13.7[a]	16.0
Mississippi Scale score	130.2	16.0	82.5[a]	21.1
Combat Exposure Scale score	32.0	6.2	20.8[a]	9.8
Brief Symptom Inventory global score	2.24	0.73	0.92[a]	0.75
Number of flashbacks since Vietnam	15.76	7.81	0.73[a]	3.48

[a]$p<0.01$.

A significant difference was also observed between the PTSD and non-PTSD groups in the level of dissociation at the time of combat-related traumatic events. Scores on the modified Dissociative Experiences Questionnaire were significantly higher in the PTSD group than in the non-PTSD group (mean=11.5, SD=1.6 versus mean=1.8, SD=2.1) ($t=20.58$, df=60, $p<0.001$). Dissociation at the time of combat trauma in a subgroup of patients with and without PTSD was associated with current PTSD symptom severity (measured by the Mississippi scale), determined by multiple linear regression. Covariates adjusted for in the model included level of combat exposure, participation in atrocities, and number of months in Vietnam. Dissociation at the time of the combat trauma showed the strongest association (beta=0.53, df=1, 45, $p=0.0001$); of the other variables included in the model, only participation in atrocities showed a significant association (beta=0.26, df=1, 45, $p=0.02$).

DISCUSSION

In this study of Vietnam veterans there was a significantly higher level of dissociative symptoms in combat veterans with PTSD than in combat veterans without PTSD. The higher level of dissociative symptoms associated with PTSD persisted after the difference in combat exposure between the PTSD and non-PTSD groups was controlled for. In addition, level of dissociative symptoms was correlated with severity of PTSD symptoms as measured by the Mississippi scale.

These findings suggest that dissociation is associated with PTSD and that combat exposure alone does not explain the high levels of dissociative symptoms seen in veterans with PTSD. Certain individuals may be more susceptible than others to develop dissociative symptoms in response to the stress of combat. This may provide support for Janet's theory that susceptible individuals who respond to traumatic events with dissociation are at a higher risk of developing trauma-related psychiatric disorders such as PTSD.

The high rate of dissociative symptoms in patients with PTSD is consistent with other studies (17, 22, 25). PTSD patients' scores on the Dissociative Experiences Scale (mean=27.0, SD=18.0) were similar to those of a previously reported sample of Vietnam veterans with PTSD (mean=27.5) (17) and were higher than scores of a group of men between the ages of 41 and 50 who were selected from a general population sample (mean=8.7, SD=9.3) (28). Scores on the Dissociative Experiences Scale showed a wide range, as evidenced in the high standard deviations in both the PTSD and non-PTSD groups. It appears that there are subgroups of PTSD patients with high dissociative symptoms and other subgroups with low dissociative symptoms. In fact, inspection of individual Dissociative Experiences Scale scores in the PTSD patient group suggested that this was the case. There may be factors unrelated to combat that influence the level of dissociative symptoms in patients with combat-related PTSD. In addition, the non-PTSD patients in our study had higher scores on the Dissociative Experiences Scale (mean=13.7, SD=16.0) than men of the same age group from the general population sample. The wide range in scale scores in the non-PTSD group may be explained by the fact that there were some veterans in the non-PTSD group who suffered from partial PTSD. These veterans may have high levels of dissociative symptoms when compared to a cross-section of the general population, although not to the degree of patients who meet full criteria for PTSD.

Our findings also suggest a connection between dissociation at the time of combat trauma and the development of PTSD. There was a significant difference in dissociative response at the time of traumatic combat-related events between PTSD and non-PTSD patients, although the results should be interpreted with caution because of retrospective reporting. PTSD patients frequently reported experiences of amnesia at the time of traumatic events, such as one veteran who said, "After I saw my buddy hit, something inside of me died, and I don't remember anything that happened after that." Veterans also reported experiences of derealization, such as, "Everything seemed to be in slow motion," "Colors were blurred," "There was no sound," and "It seemed as if I were in a tunnel." Similarly, depersonalization was reported, as in the case of another veteran who said, "I felt myself separating from myself and looking down at the person who was in combat, and feeling sorry for him." Our findings are consistent with the literature, which suggests an association between trauma and dissociation (26–34).

What distinguishes individuals who are prone to dissociation at the time of combat trauma? One possibility is that discrete traumatic events may have a variable impact depending on the individual. PTSD patients in our study frequently reported dissociation after events that had personal significance for them, such as witnessing the death of a close friend. Another possibility is that degree of hypnotizability predisposes individuals to dissociation. Degree of hypnotizability has been associated with level of dissociative symptoms (35), and patients with PTSD have been found to have a higher degree of hypnotizability than other patient groups (16, 25). Variations in hypnotizability have been noted in the general population (36); these variations are stable over time (37). There is also some evidence which suggests that hypnotizability may have a genetic basis (38). Hypnosis has been advocated as a therapeutic treatment for posttraumatic stress disorder (39). Perhaps highly hypnotizable individuals are more likely to dissociate at the time of trauma and hence to develop trauma-related psychopathology.

It is important to note that dissociative symptoms do not appear to be uniquely associated with PTSD symptoms. Scores on the Mississippi scale were more strongly associated with scores on the Brief Symptom Inventory-global scale than with scores on the Dissociative Experiences Scale. It is possible that dissociation is associated with the higher level of nonspecific psychiatric symptoms seen in patients with PTSD and not with PTSD-specific symptoms that are measured by the Mississippi scale. Such conclusions should be made with caution, however, since the relationship between nonspecific psychiatric symptoms and specific PTSD symptoms in patients with PTSD is still under investigation. Future studies of combat veterans with psychiatric disorders other than PTSD are required in order to determine whether higher levels of dissociative symptoms are specific to PTSD.

REFERENCES

1. Janet P: The Major Symptoms of Hysteria. New York, Macmillan, 1920
2. Janet P: L'automatisme psychologique. Paris, Balliere, 1889
3. Nemiah JC: Janet redivivus: the centenary of *l'automatisme psychologique* (editorial). Am J Psychiatry 1989; 146:1527–1529
4. van der Kolk BA, van der Hart O: Pierre Janet and the breakdown of adaptation in psychological trauma. Am J Psychiatry 1989; 146:1530–1540
5. Kirshner LA: Dissociative reactions: an historical review and clinical study. Acta Psychiatr Scand 1973; 49:698–711
6. Grinker RR, Spiegel JP: War Neuroses in North Africa. New York, Josiah Macy Jr Foundation, 1943
7. Henderson JL, Moore M: The psychoneurosis of war. N Engl J Med 1944; 230:274–278
8. Torrie A: Psychosomatic casualties in the Middle East. Lancet 1944; 29:139–143
9. Sargent W, Slater E: Amnesic syndromes in war. Proc R Soc Med 1941; 34:757–764
10. Archibald HC, Tuddenham RD: Persistent stress reaction after combat. Arch Gen Psychiatry 1965; 12:475–481
11. Jaff R: Dissociative phenomena in concentration camp inmates. Int J Psychoanal 1968; 49:310–312
12. Krystal H: Massive Psychic Trauma. New York, International Universities Press, 1969

13. Dor-Shav KN: On the long-range effects of concentration camp internment on Nazi victims: 35 years later. J Consult Clin Psychol 1978; 46:1–11
14. Fisher C: Amnesic states in war neurosis: the psychogenesis of fugues. Psychoanal Q 1945; 14:437–458
15. McDougle CJ, Southwick SM: Emergence of an alternate personality in combat-related posttraumatic stress disorder. Hosp Community Psychiatry 1990; 41:555–556
16. Spiegel D, Hunt T, Dondershine HE: Dissociation and hypnotizability in posttraumatic stress disorder. Am J Psychiatry 1988; 145:301–305
17. Loewenstein R, Putnam F: A comparison study of dissociative symptoms in patients with complex partial seizures, MPD, and PTSD. Dissociation 1988; 1:17–23
18. Spitzer RL, Williams JBW, Gibbon M: Structured Clinical Interview for DSM-III-R (SCID). New York, New York State Psychiatric Institute, Biometrics Research Department, 1987
19. Bernstein E, Putnam T: Development, reliability, and validity of a dissociation scale. J Nerv Ment Dis 1986; 174:727–735
20. Ross CA, Norton GR, Anderson G: The Dissociative Experiences Scale: a replication study. Dissociation 1988; 1:21–22
21. Ross CA, Joshi S, Currie R: Dissociative experiences in the general population. Am J Psychiatry 1990; 147:1547–1552
22. Keane TM, Fairbank JA, Caddell JM: Clinical evaluation of a scale to measure combat exposure. Psychol Assessment 1989; 1:53–55
23. Keane TM, Caddell JM, Taylor KL: Mississippi Scale for Combat-Related Posttraumatic Stress Disorder: three studies in reliability and validity. J Consult Clin Psychol 1988; 56:85–90
24. Derogatis LR, Spencer PM: The Brief Symptom Inventory. Towson, Md, Clinical Psychometric Research
25. Stutman RK, Bliss EL: Posttraumatic stress disorder, hypnotizability, and imagery. Am J Psychiatry 1985; 142:741–743
26. Spiegel D: Multiple personality as a post-traumatic stress disorder. Psychiatr Clin North Am 1984; 7:101–110
27. Braun BG: Towards a theory of multiple personality and other dissociative phenomena. Psychiatr Clin North Am 1984; 7:171–193
28. Brett EA, Ostroff R: Imagery and posttraumatic stress disorder: an overview. Am J Psychiatry 1985; 142:417–424
29. Kluft RP: Treatment of multiple personality disorder: a study of 33 cases. Psychiatr Clin North Am 1984; 7:9–29
30. van der Kolk BA, Kadish W: Amnesia, dissociation, and the return of the repressed, in Psychological Trauma. Washington, DC, American Psychiatric Press, 1987
31. Chu JA, Dill DL: Dissociative symptoms in relation to childhood physical and sexual abuse. Am J Psychiatry 1990; 7:887–892
32. Noyes R: Depersonalization in response to life threatening danger. Psychiatry 1977; 18:375–384
33. Putnam FW, Guroff JJ, Silberman EK, Barban L, Post RM: The clinical phenomenology of multiple personality disorder: a review of 100 recent cases. J Clin Psychiatry 1986; 7:285–293
34. Brett EA, Spitzer RL, Williams JBW: DSM-III-R criteria for posttraumatic stress disorder. Am J Psychiatry 1988; 145:1232–1236
35. Bliss E: Multiple Personalities, Allied Disorders, and Hypnotizability. London, Oxford Press, 1986
36. Hilgard JR: Personality and Hypnosis: A Study of Imaginative Involvement. Chicago, University of Chicago Press, 1970
37. Morgan AH, Johnson DL, Hilgard ER: The stability of hypnotic susceptibility: a longitudinal study. Int J Clin Exp Hypn 1974; 22:249–257
38. Morgan AH: The heritability of hypnotic susceptibility in twins. J Abnorm Psychol 1973; 82:55–61
39. van der Hart O, Brown P, Turco RN: Hypnotherapy of traumatic grief: Janetian and modern approaches integrated. Am J Clin Hypn 1990; 32:263–271