DEPRESSION AND ANXIETY 8:104–111 (1998)

Research Articles

RORSCHACH PATTERNS OF RESPONSE IN VIETNAM VETERANS WITH POSTTRAUMATIC STRESS DISORDER VERSUS COMBAT AND NORMAL CONTROLS

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To further evaluate Rorschach indicators of posttraumatic stress disorder (PTSD), test protocols of 16 combat veterans so diagnosed were compared with those of 9 combat controls and 12 noncombat subjects. Results replicated Rorschach abnormalities previously associated with this disorder, including signs of low stress tolerance, poor affect modulation, perceptual distortion, and interpersonal disengagement. However, only two indicators,* EB (Erlebnistypus) *and* CC *(combat-related content), differentiated PTSD subjects from controls (P < .05). Examination of negative findings revealed that all three groups similarly deviated from Exner nonpatient norms (Exner, 1993: The Rorschach, Vol 1. New York: John Wiley and Sons) on many Rorschach variables. Possible explanations for these findings are considered, and the need for control subjects in Rorschach investigation is underscored. Depression and Anxiety 8:104–111, 1998.

Key words: *posttraumatic stress disorder, PTSD; Rorschach; assessment; combat veterans*

INTRODUCTION

In the last 15 years, Rorschach studies of posttraumatic stress disorder (PTSD) have converged on a characteristic response pattern associated with this diagnosis. This profile includes Rorschach indications of poor stress tolerance, inefficient problem-solving and coping, experienced tension and helplessness, affect dysregulation and avoidance, perceptual inaccuracy, interpersonal avoidance, and intrusive traumatic imagery (see Table 1). While early Rorschach studies of PTSD focused exclusively on Vietnam veterans with combat trauma, some of the same findings have been later replicated in a more diverse PTSD sample including both sexes, wider age distribution, and broader range of traumata (e.g., rape, assault, and accidental injury) [Levin, 1993]. [For a thoroughgoing review of the literature, see Levin, 1997]. The abnormal Rorschach patterns identified in these studies, however, were based largely on their contradistinction to a "generic" normative sample reported by Exner [1993], and not to an experimental control group.

Exner's nonpatient sample, while a helpful reference for general clinical purposes, cannot serve as an appropriate control group for empirical study. Inasmuch as Exner's sample is deliberately stratified on variables such as geographic region, age, and socioeconomic status, it is a poor match for a group such as Vietnam veterans with PTSD, who are far more demographically homogenous and who share common features beyond the PTSD diagnosis (e.g., age, gender, military history, combat exposure, and VA health coverage). Furthermore, because Exner's sample was tested over a period of 20 years, it is not contemporaneous (nor site-specific) with current data collection. Exner himself warns that the use of his published norms as a control sample for empirical study is a tactic that is "naïve at best, and invariably leads to faulty and misleading conclusions. Almost any group that is homogeneous for some features should differ from the published normative data" [Exner, 1991, Vol. 2, p. 460].

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Received for publication 22 June 1998; Accepted 13 July 1998

TABLE 1. Rorschach indications of PTSD symptoms

PTSD symptom	Rorschach indicator	References
Poor stress tolerance	Low D	2, 3, 4, 6, 8
	Low Adj D	3, 4, 6
Inefficient problem solving	Ambitent EB	2, 3, 4, 6
	High m	3, 4, 6, 7, 8, 9
Experienced tension helplessness	High Y	3, 4, 6, 8
	Low FC:CF + C	2, 3, 4, 7, 8, 9
Poor affect regulation	Low Afr	2, 3, 4, 6, 8
Affect avoidance	Low X + %	2, 3, 4, 8
Perceptual inaccuracy	Low F + %	2, 3, 4, 8
	High Xu%	4
	High X – %	2, 3, 4, 8
Interpersonal avoidance	Low H	2, 3, 4, 8
Intrusive traumatic imagery	High Bl & An	9
	High MOR	2, 3, 4, 7, 8
	High Bl + An + Hd + Ex + Fi	2
	Thematic Content	1, 4, 9

[1]*Bersoff, 1970;* [2]*Burch, 1993;* [3]*Hartman et al., 1990;* [4]*Levin, 1993;* [5]*Salley and Tieling, 1984;* [6]*Sloan et al., 1995, 1996;* [7]*Souffront, 1987;* [8]*Swanson et al., 1990;* [9]*van der Kolk and Ducey, 1984, 1989.*

To date, four studies examining PTSD-related abnormalities in the Rorschach have included matched control group data in their design. Van der Kolk and Ducey [1989] compared the archival Rorschach protocols of 13 PTSD Vietnam veterans with those of 11 Vietnam veterans whose combat exposure had not resulted in the disorder. The authors found that when compared with combat controls, the PTSD subjects exhibited differences with regard to both the inanimate movement response (*m*) and the *Erlebnistypus* (*EB*). Specifically, it was found that the mean *m* for PTSD protocols (3.64) exceeded that of combat controls (1.47). In order to compare groups on *EB*, the authors constructed a continuous variable, *M*/(*M* + Weighted Sum C), which yielded a single value between 0 and 1 for each record. On this variable, the mean for PTSD subjects (.23) fell beneath that of combat controls (.41), and the authors viewed this finding as evidence that PTSD sufferers lack the ego functions (*M*) necessary to symbolically integrate affective experience, and tend instead to become overwhelmed by emotional situations.

Sloan et al. [1996] used the Rorschach to assess 30 Marine reservists who reported experiencing PTSD symptoms (though not full-blown PTSD) after Operation Desert Storm (ODS). When compared with Marine reservist controls, the symptomatic group showed evidence of poor affect modulation (low *FC:CF + C*), low stress tolerance (low *D*, *Adj D;* elevated *m*, *Y*), poor reality testing (low *X*+%, elevated *Xu%*), and traumatic preoccupation (elevated *CC*). In a 3 year follow-up evaluation, the symptomatic group showed no significant differences from controls on any of the examined Rorschach indicators, suggesting that they had largely recovered from the symptomatic effects of ODS.

Two other unpublished Rorschach studies of PTSD have used matched control groups [Souffront, 1987; Burch, 1993]. In a study comparing 30 Vietnam veterans diagnosed with PTSD and 30 combat Vietnam veterans with other psychiatric diagnoses, Souffront [1987] examined the discriminatory power of six Rorschach indicators, including 1) the sum total of *Bl*, *An*, and *Ge*, 2) *EB*, 3) *FC:CF + C*, 4) *m*, 5) *X*+%, and 6) *MOR*. The author found that of these indicators, only one (*m*) yielded a significant difference between groups, and two (*m* and *FC:CF + C*) were useful in a stepwise discriminant analysis. Together these two indicators were able to correctly classify 71.67% of cases into their actual diagnostic categories, with only moderate specificity (70.0%) and sensitivitiy (73.3%). Burch [1993] compared the archival Rorschach protocols of 29 PTSD Vietnam veterans with those of 25 non-PTSD Vietnam veterans and 29 Vietnam era veterans who did not serve in the war. The author found that Rorschach variables related to perceptual-mediational processes (*X*+%), stress tolerance (*D*, *Adj D*, and *m*), affect regulation (*FC:CF + C* and *Afr*), and interpersonal interest (*H* and *Pure H*) did not differ between the three groups, while comparisons with Exner norms [Exner, 1986] indicated that all three groups were experiencing difficulties in these areas of psychological function. There was a significant elevation in combat-related content [(*Bl + An + Hd + Fi + Ex*)/*R*] and morbid content (*MOR*) in the PTSD group, suggesting that PTSD patients were more preoccupied with trauma-related imagery than their counterparts. Additionally, PTSD subjects were more frequently classified as extratensive or ambitent in *EB* style than controls. Three multivariate logistic regression models using *MOR*, *Pure H*, *FC:CF + C*, and *EB* style were able to correctly classify group membership at better than 70%, with limited sensitivity to identifying PTSD subjects.

In summary, differences in both the design and the findings of these five studies preclude one from drawing firm conclusions regarding the PTSD specific abnormalities reported. However, the overall emerging picture suggests that the Rorschach might be a useful tool to complement the standard assessment protocol for PTSD, typically restricted to a clinical interview and self-report psychometric scales. It has been argued that such complementary tools are needed, as the face validity of self-report measures makes them vulnerable to overreporting, especially given the external incentives which exist for carrying a PTSD diagnosis, including disability compensation, litigation award, and criminal acquittal [Orr and Pitman, 1993].

In order to better assess the utility of the Rorschach in evaluating PTSD, we conducted the present study comparing PTSD Vietnam veterans with combat and noncombat controls. We hypothesized that PTSD

subjects wanted to demonstrate greater difficulties than normal subjects in the areas of stress tolerance (decreased *D*, *Adj D*; increased *m*, *Y*), affect modulation and engagement (decreased *FC:CF + C* and *Afr*), perceptual accuracy (decreased *X+%* and *F+%*; increased *Xu%* and *X-%*), interpersonal relatedness (decreased *H*), and traumatic preoccupation [elevations in (a) *MOR*, (b) *(Bl + An + Hd + Fi + Ex)/R*, and (c) *CC*, defined in the Methods section].

METHODS

SUBJECTS

Participants of this study were 37 males between the ages of 37 and 57, including 16 Vietnam combat veterans with PTSD, 9 Vietnam combat controls, and 12 noncombat controls (see Table 2). The latter group included VA employees and family members of medical patients who responded to flyers posted in the VAMC hospital. Subjects in the combat and noncombat control groups had no psychiatric diagnoses and were not VA patients. All subjects were recruited through psychiatric outpatient services at the Ann Arbor VAMC and through advertisements in the local media. Exclusion criteria included active substance dependence, psychotic disorders, primary major depression, and organic mental disorders. PTSD was diagnosed using the Structured Interview for DSMIII-R (SCID, PTSD module). Additional self-report inventories were used to assess severity of symptoms, including the Dissociative Experiences Scale [DES; Bernstein and Putnam, 1986; Carlson and Putnam, 1993], the Impact of Events Scale [IOES; Horowitz et al., 1979], the Mississippi Scale for War Zone Personnel [Keane et al., 1988], and the MMPI-2 Subscale for PTSD [Keane et al., 1984]. All subjects gave written informed consent for participation in the study, approved by the local IRB.

PROCEDURE

Rorschachs were collected for these 37 subjects, using Exner's [1993] Comprehensive Rorschach System, by a clinician trained in the Comprehensive System. The following modifications were made in Rorschach administration in order to accommodate the simultaneous collection of electrophysiologic data reported elsewhere. After the subject was oriented, electrodes were attached to his dominant hand, on digits two through four, for the purposes of recording heart rate and skin conductance. After a 3 min baseline period, during which the subject was instructed to relax, the Rorschach was presented in slide form on a Kodak Ektagraphic Viewer with a built-in 12" viewing screen. This latter modification was imposed to eliminate the subject's handling of Rorschach cards, which was found to affect autonomic activity. Similarly, in order to minimize the contribution of motor activity to autonomic variance, the subject was instructed to remain as motionless as possible during the *response* phase of Rorschach administration. Electrodes were disconnected for the *inquiry* phase, at which point the subject was encouraged to move freely, and to point out percept locations. Verbal responses were recorded on cassette for verbatim transcription.

DATA ANALYSIS

Once transcribed, each protocol was independently scored by two Exner-trained doctoral candidates, using

TABLE 2. Demographic and psychometric data [ANOVA (F) or chi suare (χ^2)]

	PTSD subjects (n = 16)		Combat controls (n = 9)		Normal controls (n = 12)		
Variable	Mean	(SD)	Mean	(SD)	Mean	(SD)	Significance tests
Age in years	46.50	(2.53)	51.89	(3.98)	45.00	(5.89)	F(2,36) = 7.40**
Education in years	13.13	(1.26)	14.89	(2.47)	16.33	(1.83)	F (2,36) = 11.14***
Ethnicity[a]							
White	14 (88%)		8 (89%)		10 (83%)		$\chi^2(2, N = 37) = 2.50$
Black	2 (12%)		1 (11%)		1 (8%)		
Hispanic	—		—		1 (8%)		
Marital status[a]							
Married	14 (88%)		7 (78%)		7 (58%)		$\chi^2(2, N = 37) = 3.25$
Divorced	1 (6%)		1 (11%)		3 (25%)		
Never married	1 (6%)		1 (11%)		2 (17%)		
IOES							
Intrusion	25.57	(7.08)	.75	(.96)	2.56	(2.51)	F (2,36) = 63.96***
Avoidance	46.86	(30.24)	20.75	(19.93)	25.50	(17.60)	F (2,36) = 3.91*
Miss. PTSD scale	135.21	(19.38)	65.31	(13.71)	63.18	(14.12)	F (2,36) = 74.73***
MMPI-2 PTSD scale	49.00	(10.16)	9.00	(11.55)	7.83	(9.63)	F (2,36) = 64.19***
DES	26.75	(11.24)	7.25	(5.87)	9.50	(4.98)	F (2,36) = 19.68***

[a]*For Ethnicity and Marital Status, table cells include the number (and percentage) of subjects within each group.*
**P < .05; **P < .01; ***P < .001.*

the Rorschach Comprehensive System [Exner, 1993]. The two raters included the examiner and one scorer blinded to subject diagnosis and research hypothesis, as suggested by Exner [1991: p. 459]. Kappa coefficients of 80% or better were achieved between raters in each of the scoring categories (see Table 3), thereby meeting the reliability standards proposed by McDowell and Acklin [1996]. The scores of the blind rater were compiled into summary tables using the Rorschach Scoring Program, Version 2 software (Psychological Assessment Resources, Inc.) and were used in all analyses.

To index traumatic preoccupation, we used two variables proposed in previous Rorschach studies of PTSD. Following Sloan et al. [1995, 1996], we assigned Combat Content (*CC*) to responses that included one of the following criteria: 1) articles of war/weapons; 2) military apparel; 3) an object that has been shot, stabbed, or blown up; 4) personalized experience of combat operations; and 5) animals, vegetation, geographical features associated with the Vietnam War theater of operations. Additionally we used Burch's [1993] combat-related content index [(*Bl* + *An* + *Hd* + *Fi* + *Ex)/R*], a summary score calculated for each subject, derived from existing Exner variables. While these variables have yet to be definitively validated and may tap other characteristics such as aggressiveness, the results of preliminary investigations suggest their potential usefulness in evaluating PTSD.

One-way ANOVAs were used to compare diagnostic groups on discrete and continuous variables, including *D*, *Adj D*, *m*, *Y*, *FC*, *CF*, *C*, *Afr*, *X+%*, *F+%*, *Xu%*, *X-%*, *H*, *MOR*, and (*Bl* + *An* + *Hd* + *Fi* + *Ex)/R*. To compare groups on variables which are nominal (*EB*) or ordinal (*FC:CF* + *C*), likelihood ratio chi squares were used. To compare the results of our study with those of Exner's [1993] nonpatient sample and those of a PTSD study conducted by Hartman et al. [1990], we used pooled variance t tests or chi squares, depending on data type.

RESULTS

As predicted, Rorschach indicators of the PTSD subjects (*D*, *Adj D*, *m*, *Y*, *FC*, *CF*, *C*, *Afr*, *X+%*, *F+%*, *Xu%*, *X-%*, *H*, *MOR*, *FC:CF* + *C*, and *EB*) deviated from the nonpatient norms published by Exner [Exner, 1993]. The means for our group deviate from nonpatient adult male norms in identical directions and with similar magnitudes as those of previously studied PTSD samples [e.g., Hartman et al., 1990] (see Table 4). Furthermore, between-study comparisons reveal that the present sample does not differ from that of Hartman et al. [1990] on any of 15 indicators examined. The results of these comparisons indicate that the present study replicates the essential Rorschach profile previously established for PTSD.

When compared to the two control groups, significant differences for PTSD patients were found on two Rorschach indicators: *EB* style and *CC*, (see Table 5). The difference on *EB* style stems from the disproportionately high number of PTSD subjects classified as ambitent [$\chi^2(1, N = 37) = 6.04$, $P = .014$] and low number of PTSD subjects classified as introversive [$\chi^2(1, N = 37) = 5.51$, $P = .019$]. The likelihood ratio chi square for extratensive *EB* style showed no differences between groups.

A significantly larger percentage of PTSD subjects as compared with controls (62.5% vs. 22.22%, respectively) gave one or more *CC* responses, [$\chi^2(1, N = 37) = 5.73$, $P = .017$]. As predicted, the mean number of *CC* responses for PTSD subjects (1.25) also exceeded that of controls (.48), but with wide variability on this score, the difference did not reach statistical significance. Of the 20 *CC* responses given by PTSD subjects, 11 concerned trauma-specific imagery (e.g., "...a blackened body after I called in a napalm strike", "...a projectile exiting a portion of the anatomy, taking with it bone fragments and cartilage"), of which 8 were contributed by one subject. No other subject contributed more than one traumatic percept. The remaining nine *CC* response consisted of more contained, symbolized references to combat (e.g., "...a topographic map of Vietnam", "a machine gun"). When Burch's [1993] index of traumatic content (*Bl* + *An* + *Hd* + *Fi* + *Ex)/R* was examined, no significant difference between groups was found.

When measures of stress tolerance (*D*, *Adj D*, *m*, and *Y*), affect modulation and engagement (*FC: CF* + *C* and *Afr*), and perceptual mediation (*X+%*, *F+%*, *Xu%*, and *X-%*) were compared, no significant differences among diagnostic groups were found whether controls groups were kept independent or combined. To further explore this finding, we compared the mean scores for our control groups with those of Exner's sample of nonpatient male adults. The results of pooled variance t tests are presented in Table 6. Both combat and normal control groups deviated from Exner norms on most Rorschach variables associated with PTSD (*FC*, *Afr*, *m*, *X+%*, *F+%*, *Xu%*, *X-%*, *MOR*, and *FC:CF* + *C*) in directions consistent with what is found in the PTSD population. When control subjects were combined, characteristic deviations from Exner were additionally found on *CF*, *C*, *D*, *Adj D*, *Y*,

TABLE 3. Interrater agreement for Rorschach scoring categories

Scoring category	Cohen's kappa
Location	.90
Developmental quality	.86
Determinant(s)	.80
Form quality	.81
Pair	.93
Content(s)	.87
Popular	.92
Z Score	.90
Special scores	.81

TABLE 4. Means for Vietnam combat veterans with PTSD on selected Rorschach variables: A between-study comparison with Exner [1993] nonpatient adult males†

	Present study (n = 16)		Hartman et al., (1990) (n = 41)		Exner nonpatient males (1993) (n = 350)	
Variable	Mean	(SD)	Mean	(SD)	Mean	(SD)
FC	1.50***	(1.03)	1.24***	(1.30)	4.16	(1.76)
CF	1.81*	(1.22)	1.59***	(1.67)	2.55	(1.30)
C	.56	(1.03)	.20	(.46)	.08	(.30)
Afr	.45***	(.16)	.45***	(.18)	.70	(.15)
D	–1.19***	(1.42)	–.56***	(1.53)	.08	(.82)
Adj D	–.25*	(.77)	.10	(.89)	.24	(.69)
m	2.62*	(2.66)	2.07*	(2.53)	1.09	(.78)
Sum Y	2.25**	(2.08)	1.61**	(1.73)	.59	(.89)
X+%	.51***	(.14)	.56***	(.16)	.79	(.07)
F+%	.57*	(.25)	.50***	(.23)	.72	(.16)
Xu%	.27***	(.13)	—	—	.14	(.06)
X-%	.19***	(.10)	.22***	(.13)	.07	(.05)
Pure H	1.88***	(1.56)	1.76***	(1.77)	3.62	(1.89)
MOR	3.00**	(3.12)	2.46***	(2.71)	.75	(.85)
FC:CF + C[a]						
FC > (CF+C) + 1	1 (6%)***		—		169 (48%)	
FC ≤ (CF+C) + 1	16 (94%)		—		181 (52%)	
(CF+C) > FC + 1	6 (38%)**		—		16 (5%)	
(CF+C) ≤ FC + 1	10 (63%)		—		334 (95%)	
EB[a]						
Introversive	2 (13%)***		15 (37%)***		135 (39%)	
Extratensive	3 (19%)		8 (20%)		151 (43%)	
Ambitent	11 (69%)		18 (44%)		64 (18%)	

†Dashes indicate that data was not reported.

[a]For EB and FC:CF + C, table cells include the number (and percentage) of subjects within each group; significance levels for these variables represent the results of chi square analyses.

**P < .05, **P < .01, ***P < .001 when compared with Exner [1993] nonpatient adult males using pooled variance t tests.*

and *H*, leaving *EB* as the only variable yielding no such difference.

DISCUSSION

We found that a significantly larger percentage of PTSD subjects fell into the ambitent *EB* category, differentiating them from combat and normal controls. This finding is consistent with the results of other studies [Burch, 1992; Hartman, 1990; Levin, 1993; Sloan et al., 1995] and corroborates clinical observations of the PTSD population with regard to their difficulty in coping with psychological and interpersonal problems, especially under stressful circumstances. Ambitent *EB* indicates the use of an inconsistent coping strategy. Subjects characterized by ambitent *EB* style tend to oscillate inefficiently between ideational and trial-and-error approaches, making more mistakes and repeating more unsuccessful attempts than either introversive or extratensive subjects [Exner, 1993]. We additionally found that a significantly smaller percentage of PTSD subjects than controls fell into the introversive *EB* category. Introversive *EB* indicates an efficient problem solving and coping style based on logic and cautious consideration. Those with introversive *EB* tend to avoid trial-and-error and to keep feelings at the periphery when making decisions [Exner, 1993]. While the finding of few introversive records in our PTSD sample replicates that of van der Kolk and Ducey [1989], there is also a major difference in our results. While the majority of our PTSD subjects fell into the ambitent *EB* category, van der Kolk and Ducey's sample were "markedly extratensive." This discrepancy may stem

TABLE 5. Likelihood ratio chi square statistics for EB and CC on PTSD vs. controls combined

Variable	PTSD subjects (*n* = 16)	Controls combined (*n* = 21)	Chi square
EBStyle			
Introversive	2 (13%)	10 (48%)	$\chi^2(4, N = 37) = 7.14$*
Extratensive	3 (19%)	5 (24%)	
Ambitent	11 (69%)	6 (29%)	
CC			
CC ≥ 1	10 (63%)	5 (22%)	$\chi^2(2, N = 37) = 5.73$*
CC = 0	6 (37%)	16 (78%)	

**P < .05.*

TABLE 6. Means for control subjects compared with Exner norms for nonpatient adult males

	Combat controls (n = 9)		Noncombat controls (n = 12)		Controls combined (n = 21)		Exner nonpatient males, (n = 350)	
Variable	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
FC	1.67***	(1.87)	1.58***	(1.00)	1.62***	(1.40)	4.16	(1.76)
CF	1.44***	(.88)	1.92	(1.51)	1.71**	(1.27)	2.55	(1.30)
C	.33	(.71)	.42	(.67)	.38*	(.70)	.08	(.30)
Afr	.45***	(.16)	.48***	(.18)	.47***	(.17)	.70	(.15)
D	–.67	(1.87)	–1.42	(2.71)	–1.10*	(2.36)	.08	(.82)
Adj D	.11	(1.17)	–.17	(1.80)	–.05*	(1.53)	.24	(.69)
m	3.00*	(2.34)	2.91*	(2.54)	2.95***	(2.40)	1.09	(.78)
Sum Y	1.00	(1.94)	1.92*	(2.27)	1.52*	(2.14)	.59	(.89)
X + %	.47***	(.13)	.47***	(.12)	.47***	(.12)	.79	(.07)
F + %	.38***	(.26)	.39***	(.23)	.38***	(.24)	.72	(.16)
Xu %	.34***	(.14)	.28***	(.11)	.30***	(.12)	.14	(.06)
X-%	.17*	(.12)	.22***	(.12)	.19***	(.12)	.07	(.05)
H	2.56	(2.01)	2.33**	(1.56)	2.43**	(1.72)	3.62	(1.89)
MOR	2.33*	(1.94)	2.83*	(3.30)	2.62**	(2.75)	.75	(.85)
FC:CF + C[a]								
FC > (CF+C) + 1	2 (22%)		1 (8%)*		3 (14%)**		169 (48%)	
FC ≤ (CF+C) + 1	7 (78%)		11 (92%)		18 (86%)		181 (52%)	
(CF+C) > FC + 1	2 (22%)		4 (33%)***		6 (29%)***		16 (5%)	
(CF+C) ≤ FC + 1	7 (78%)		8 (67%)		15 (71%)		334 (95%)	
EB[a]								
Introversive	3 (33%)		7 (58%)		10 (48%)		135 (39%)	
Extratensive	3 (33%)		2 (17%)		5 (24%)		151 (43%)	
Ambitent	3 (33%)		3 (15%)		6 (29%)		64 (18%)	

[a]*For EB and FC:CF + C, table cells include the number (and percentage) of subjects within each group; significance levels for these variables represent the results of chi square analyses.*

**P < .05, **P < .01, ***P < .001 when compared with Exner [1993] nonpatient adult males using pooled variance t tests.*

from subject selection differences between the two studies. While our subjects were diagnosed by using the SCID, van der Kolk and Ducey's subjects were diagnosed through clinical examination and, importantly, selected on the basis of recent and frequent experiencing of intrusive nightmares. Given this latter criterion, it might be argued that van der Kolk and Ducey's sample informs us specifically about an intrusion phase or type of PTSD, whereas the present study concerns PTSD more generally. The extensive blood and anatomy content and uncensored references to traumatic scenes found in van der Kolk and Ducey's PTSD protocols would support this hypothesis.

In addition, the interpretative and structural handling of *EB* of van der Kolk and Ducey has been criticized on a number of grounds [Cohen and de Ruiter, 1991; Levin, 1993]. Van der Kolk and Ducey considered the extratensive *EB* style to be less cognitively adaptive than the introversive, though research has shown that these two styles are equally effective in problem-solving and coping. Of the three *EB* styles, only the ambitent shows a decreased efficiency in problem-solving and coping, as well as an increased vulnerability to intra- and inter-personal difficulties [Exner, 1993]. Structurally, collapsing *EB* into *M*/(*M* + Weighted Sum C) loses important information regarding the determination of *EB* style [Cohen and de Ruiter, 1991], producing a value of indeterminate meaning, especially when group results are averaged into a single score. For example the same value could be produced by a group that is uniformly ambitent in *EB* or equally divided into introversive and extratensive *EB*. In fact, it could be argued the mean for van der Kolk and Ducey's PTSD group (.23) could reflect better coping than that of the control group (.41), if the latter resulted from a greater percentage of ambitent protocols. In addition, since Exner's comprehensive system was not used, and no other Rorschach system was specified, it is difficult to compare the reported results with those of other studies.

We have found that PTSD subjects access combat-related imagery (*CC*) more readily than their counterparts, replicating the results of Sloan et al. [1996]. However, it is notable that few subjects appear to be overly distracted by these images. Only four of 16 PTSD subjects contributed *CC* responses containing personal references to trauma, and only one produced more than one such response. The relative infrequently of traumatic responses given by PTSD subjects is surprising when compared to similar studies. One possible explanation for this difference is that previous investigations have used subjects who either a) had recently suffered psychological trauma [Bersoff, 1970; Levin, 1993; Sloan et al., 1995], b) were actively seeking treatment, presumably due to symptom exacerbation [Burch, 1993; Hartman et al., 1990], or c)

were characterized by symptoms of extreme intrusion, such as dissociative flashbacks [Salley and Teiling, 1984] or intense, recurrent nightmares containing combat scenes [van der Kolk and Ducey, 1984, 1989]. In contrast, the present study recruited subjects with chronic rather than recently developed PTSD, who were neither actively seeking treatment nor selected on the basis of extreme intrusive symptoms. This could suggest that in the course of chronic PTSD, preoccupation with traumatic imagery may attenuate over time, with periodic reemergences during episodes of exacerbated symptomatology.

When Rorschach indicators of stress tolerance, affect regulation, perceptual mediation, and interpersonal relatedness were examined, all three diagnostic groups showed marked deviations from Exner's nonpatient norms but showed no statistical differences from each other. This is consistent with the findings of Burch's [1993] study comparing PTSD Vietnam veterans with combat controls and Vietnam era veterans. Burch suggested that common features between the groups (e.g., membership in the VA population) might account for similarities. Souffront [1987] also reported that both PTSD subjects and combat controls with other psychiatric diagnoses demonstrated similarly poor perceptual mediation (*X*+%) and affect modulation (*FC:CF* + *C*).

The finding of similarly deviating Rorschach scores in PTSD subjects and controls, both in the present study and those mentioned above [Burch, 1993; Souffront, 1987], argues against the possibility that sample size and statistical power precluded us from finding significant differences across diagnostic groups. Our sample size is in fact larger than that of the only other published study of its kind [van der Kolk and Ducey, 1989], which did find significant differences using tools of equal power. (A reverse power analysis shows that our sample of 37 subjects is large enough to detect *m* effect size with a power of .80 of van der Kolk and Ducey.) Rather the similar findings across diagnostic groups reflect meaningful commonalities among the groups on most of the Rorschach indicators examined. This strongly supports the notion that some Rorschach scores associated with the PTSD diagnosis may not be specific to PTSD but reflect other characteristics, such as regional specificity, socioeconomic status, use of VA health services, or some combination thereof.

We believe that the discrepant results of the five controlled studies (including the one we are reporting) are likely to reflect differences in group selection criteria, sampling, and measurement techniques. The control groups utilized are diverse, given that psychiatric illness was an *exclusion* criterion for one study (the present study), an *inclusion* criterion for another [Souffront, 1987], and neither an inclusion nor an exclusion criterion for a third [Burch, 1993]. (Van der Kolk and Ducey did not report their selection criterion for this variable.) As a result, for example, while Souffront [1987] found that the mean *m* score for her PTSD group (1.57) exceeded that of her psychiatrically diagnosed control group (.63), this score is significantly *lower* than the corresponding mean *m* value (3.00) of the present study's *psychiatrically undiagnosed* combat control group [$t(45) = 2.61$, $P < .02$]. These differences only underscore the need for study replication and meta-analysis that has been recognized in the behavioral sciences literature as a means for addressing sampling error and issues of statistical power [Rosnow and Rosenthal, 1989; Schmidt, 1992].

Certain limitations of the current study (created by the demands of the psychophysiological monitoring) should be acknowledged. Deviations from the standard procedure articulated in the Rorschach Comprehensive System [Exner, 1993] include a) the presentation of Rorschach images in slide form (precluding the subject's manipulation of the stimulus), b) the attachment of electrodes to three fingers of the subject's dominant hand, and c) the added instruction during the response phase to remain as motionless as possible (in order to eliminate physiological artifacts due to voluntary motor exertion). While these modifications might affect the subject's testing experience, the consequences for actual Rorschach scores do not appear large when PTSD and control group scores are compared with the results of other studies. Furthermore, since all subjects received identical treatment, it should have minimal impact on between-group comparisons. Our control subjects' low Weighted Sum C ($M = 3.10$) compared with that of Exner's nonpatient males ($M = 4.76$, $SD = 1.09$) raises the question of whether the immobilizing of our participants led to constricted or coarctated protocols. However, if this were the case, we would also expect to find low response totals (R) and low frequencies of the human movement responses (M). In fact, the R's for both our combat and noncombat control groups ($M = 22$ and 21.5, respectively) are similar to that of Exner's sample ($M = 23.20$, $SD = 4.44$), and the M values for our control groups ($M = 4.0$ and 4.5, respectively) are comparable with that of Exner's sample as well, ($M = 4.54$, $SD = 2.00$). An additional limitation, common to all Rorschach research, is the problem of rater subjectivity in scoring. While this problem cannot be totally eliminated, every available precaution was taken in the present study to minimize its influence. These included use of raters trained in the Rorschach Comprehensive System [Exner, 1993], and an interscorer reliability study, the results of which meet currently accepted standards [McDowell and Acklin, 1996]. Finally, while we found significant results for two of our analyses (*EB* and *CC*), it should be remembered that a number of such comparisons were made, leaving open the possibility that our positive findings could be the result of chance.

The present investigation is the first to use the Rorschach Comprehensive System to compare PTSD Vietnam veterans with psychiatrically healthy combat and noncombat controls. It was found that PTSD sub-

jects use a less efficient problem solving and coping style (ambitent *EB*) than controls, are less likely to use a more efficient coping style (introversive *EB*), and have more ready mental access to combat-related imagery than their counterparts, though few appear preoccupied with gory, traumatic scenes. The present findings, when taken together with those of similar studies, additionally suggest that although the PTSD diagnosis does correlate with Rorschach indications of poor stress tolerance, affect modulation, perceptual mediation, and interpersonal engagement, the meaning of these correlations may be more complicated than originally assumed. Given that few Rorschach indicators have distinguished PTSD subjects from controls, and that controls have shown similarly pathological Rorschach signs, it is possible that many of the so-called abnormalities detected in earlier studies may be psychological characteristics common to both PTSD and control subjects, due to socioeconomic status, age, geographic region, or some combination thereof. Current ambiguities in the association of PTSD to specific Rorschach scores will only be resolved through further control studies, preferably larger in scale and more diverse in demographics and traumatic history.

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