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Development of a Criteria Set and a Structured Interview for Disorders of Extreme Stress (SIDES)

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Data regarding the development of a structured interview measuring alterations that may accompany extreme stress are presented. A list of 27 criteria often seen in response to extreme trauma and not addressed by DSM-IV criteria for posttraumatic stress disorder (PTSD) were generated based on a systematic review of the literature and a survey of 50 experts. A structured interview for disorders of extreme stress (SIDES) measuring the presence of these criteria was administered to 520 subjects as part of the DSM-IV PTSD field trials. Inter-rater reliability as measured by Kappa coefficients for lifetime Disorders of Extreme Stress was .81. Internal consistency using coefficient alpha ranged from .53 to .96. Results indicate that the SIDES is a useful tool for investigation of response to extremes stress.

KEY WORDS: posttraumatic stress; assessment; traumatic events; disorders of extreme stress; SIDES.

In recent years there has been growing recognition that there is a subset of individuals who, following exposure to traumatic events, manifest a

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constellation of symptoms not fully captured by the reexperiencing, arousal, and avoidance symptoms which comprise posttraumatic stress disorder (PTSD) (Corwin, 1988; Herman, 1992a; Janoff-Bulman, 1992; Krystal, 1968; Terr, 1991). Research during the past decade has shown that trauma has a different impact on psychological adaptation at different stages of development, and that earlier trauma affects subsequent maturational processes (e.g., Cole & Putnam, 1992). Traumatic experiences, particularly if they occur early in the life cycle, interfere with the development of self-regulatory processes and with the capacity to manage subsequent stresses (Herman & van der Kolk, 1987; Terr, 1991). Research on sexually and physically abused children has demonstrated that they experience extended periods of apprehension, guilt and fear (Briere & Runtz, 1988; Crittenden & Ainsworth, 1989), unmodulated aggression (Lewis & Shanok, 1981), and alterations in their relationships to caregivers, including anxious clinging (e.g., Schneider-Rosen Cicchetti, 1984) and difficulty with intimacy (e.g., Finkelhor, Hotaling, Lewis, & Smith, 1989). Research has also shown that age-appropriate psychological defenses utilized to cope with early traumatic experiences, such as denial and dissociation, are frequently utilized by traumatized individuals during periods of subsequent stress (e.g., Putnam, 1989).

Profound changes in affect regulation and self-identity have not only been observed in traumatized children. Research with rape victims (Burgess & Homstrom, 1974), battered women (Walker, 1984), and concentration camp survivors (Krystal, 1968) has shown the significant long term impact that trauma can have in the areas of self-regulation and personality development.

Specific diagnoses have been proposed to address the psychological sequelae of particular types of trauma. A "National Summit Conference on Diagnosing Child Sexual Abuse" convened in 1985 to propose a "sexually abused child's disorder" (Corwin, 1988). The primary features of this disorder included age-inappropriate sexual behavior or awareness, dissociation and/or difficulty discussing the abuse. Similarly, Burgess (1974) and Walker (1984) have described the "rape-trauma syndrome" and "battered woman syndrome" to delineate the constellation of symptoms frequently seen in victims of rape and spouse abuse. Other clinicians and researchers have taken a more global approach, suggesting that survivors of extremely stressful events may manifest similar changes in their functioning regardless of the type of trauma. Terr (1991) described two types of reactions to childhood trauma. Type I trauma is typically seen in response to single, sudden, or unexpected events. Symptoms usually include hypermnesia, "omens" and misperceptions. In contrast, Type II trauma, which is associated with long term physical or sexual abuse, is characterized by numbing, denial, rage and dissociation. Unlike Corwin, Terr did not propose a new diagnostic

category, nor did she describe a cluster of symptoms which is necessarily unique to only one type of trauma. Similarly, Janoff-Bulman (1992) described a variety of symptoms which are seen across trauma populations and are not part of PTSD symptomatology including feelings of despair, self-blame and alienation from others.

The ICD-10 (World Health Organization [WHO], 1992) recognizes the occurrence of such posttraumatic alterations and includes a diagnostic category of "lasting personality changes following catastrophic stress" which comprises "impairment in interpersonal, social and occupational functioning," including "a hostile or mistrustful attitude towards the world, social withdrawal, feelings of emptiness and hopelessness, a chronic feeling of being 'on edge' and constantly threatened and chronic sense of estrangement" (WHO, 1992). This formulation, however, relies on a variety of clinical reports describing various aspects of this syndrome, most of which utilize clinical observations or unstructured interviews. One of the goals of the DSM-IV Field Trials for PTSD was to determine empirically the prevalence of the range of trauma-related psychological problems mentioned in the research literature that are not currently captured in the PTSD definition. The Field Trials were designed, in part, to establish how the various trauma related psychiatric symptoms reported in the research literature are related to each other, as well as to the current diagnostic construct of PTSD.

Through use of a reliable and valid instrument which directly assesses the alterations in functioning which are the result of extreme stress a vehicle is provided which will allow systematic investigations of these changes across different trauma populations. To date, there have been no systematic efforts to measure these effects in a reliable and valid manner. The measure will also enable investigators to determine if there is empirical support for expanding the current PTSD DSM-IV diagnosis to include an additional category of "Disorders of Extreme Stress" (DES, Davidson, 1993). This paper will present data regarding the development of a structured interview measuring psychological alterations following exposure to extreme stress. The Structured Interview for Disorders of Extreme Stress (SIDES; van der Kolk et al., unpublished) was administered to 520 subjects as part of the DSM-IV PTSD field trials. Second, to facilitate research regarding the suitability of adding DES as a diagnosis in future versions of the DSM, a proposed criteria set for DES will be presented.

The trauma literature suggests that the profound impact of traumatic experiences on self-regulation, self-concept, and interpersonal functioning would be most pronounced in younger victims (Cole & Putnam, 1992; Pynoos, 1993), and when the source of the trauma is interpersonal assault as opposed to natural disasters such as earthquakes or hurricanes (Davidson & Smith, 1990; Green, 1990; Herman, 1992a). Since the primary ap-

proach we used for assessing the number of criteria necessary for scale endorsement was to compare victims of interpersonal trauma to victims of disasters, subjects were divided into three groups: early onset interpersonal abuse, late onset interpersonal abuse, and disaster.

Method

Item Construction

Spitzer, Kaplan, and Pelcovitz (1989) generated a list of symptoms which had been repeatedly described in the literature regarding individuals exposed to extreme trauma and which were not addressed by DSM-III-R criteria for PTSD. Symptoms were generated from a systematic review of the literature on the emotional and behavioral sequelae of childhood sexual abuse, physical abuse, crime, rape, incarceration in concentration camps, torture and spouse abuse (Pelcovitz et al., 1989). Feedback on the face validity of the criteria was obtained in two ways. Letters were sent to approximately 50 authorities on psychological reactions to extreme stress asking for feedback whether specific criteria should be included or deleted. They were asked to recommend other colleagues in their areas of expertise who in turn recommended further modification. At the end of this process a panel of 12 researchers in the area of PTSD, representing expertise in a range of traumatized populations, agreed on a final list of 27 symptoms.

Independently, in Boston, Herman and van der Kolk had started to delineate a similar cluster of symptoms in response to prolonged trauma (Herman & van der Kolk, 1987). Eventually, the 27 symptoms generated by the New York and Boston groups were arranged by Herman into seven categories: regulation of affect and impulses; attention or consciousness; self-perception; perception of the perpetrator; relations with others; somatization; and systems of meaning. Items were put in a structured interview format which was revised by the field trial coordinators prior to inclusion of the instrument in the field trials protocol. The measure consists of 48 items measuring lifetime and current alterations in the seven areas. Items are scored dichotomously, i.e., each question is answered with either a "yes" or "no."

Subjects and Procedures

Five hundred and twenty subjects were administered the SIDES interview as part of the larger PTSD Field Trial investigation which also included structured interviews for diagnosis of PTSD and systematic assessment of

the traumatic events the subjects were exposed to in the course of their lives.

The PTSD field trials were conducted at five sites: (1) Medical University of South Carolina/V.A. Medical Center, Crime Victims Research and Treatment Center, Charleston, SC, (2) Massachusetts General Hospital, Trauma Clinic, Boston, MA., (3) Duke University and Duke University Medical Center, Departments of Psychology and Psychiatry, Durham, NC, (4) North Shore University Hospital/Cornell University Medical College, Division of Child and Adolescent Psychiatry, Manhasset, NY, (5) University of Missouri, Community Psychological Services, St. Louis, MO.

Two types of subjects were recruited. The treatment seeking sample (n = 395) was obtained through the assessment of sequential admissions to the outpatient clinics at the five sites. The rationale for using referred samples in the DSM-IV Field Trials was to promote generalizability of findings to a population similar to that seen by mental health practitioners who use DSM-IV. To broaden generalizability of our findings beyond a treatment seeking sample, a community sample was recruited. Three hundred and eight residents of Charleston, South Carolina and St. Louis, MO, were screened by telephone using random digit dial methodology to determine if they would be willing to be interviewed for the study. Once interviewing began to be scheduled, the first 128 who agreed to be scheduled for in person interviews at the Charleston and St. Louis site comprised the community sample. These subjects completed the same assessment protocol as did participants in the Treatment Seeking sample. All subjects were interviewed in person by post-bachelors interviewers who were trained in administration of the interviews and attended periodic training meetings (number of meetings varied across sites) to insure that they adhered to the interviewing guidelines. Interviewers were blind as to the hypothesized differences between the trauma groups. However, they were not blind as to the type and number of traumas endured by the subjects. Inter-rater reliability of the interviewers is presented in the results section.

As noted earlier, scale endorsement was, in part determined by dividing the subjects into the following "trauma" groups:—early onset (age less than or equal to 13 years) interpersonal abuse (physical and/or sexual abuse) [n = 149], late onset interpersonal abuse [n = 87], disaster (witnessed a disaster) [n = 58], and other (all subjects not included above) [n = 226].

Trauma history was determined with the Potential Stressful Events Interview (Kilpatrick, Resnick, & Freedy, 1992) This measure is a structured interview designed to systematically assess whether the subject had been exposed to any traumatic incidents which would qualify as an event which would meet the DSMIII-R criterion A guidelines for PTSD (i.e., an event

which is "outside the range of usual human experience") (DSM-III-R, p. 247). This interview asked each subject specific behavioral screening questions to determine whether they were exposed to a lifetime history of the following "high magnitude" stressors: completed rape, other sexual assault, serious physical assault, other violent crime, homicide death of family members or close friends, serious accidents, natural or man-made disasters and military combat. A subject was considered physically abused or assaulted if they reported ever having been attacked with a weapon, or by an individual who harbored an intent to kill or seriously injure. Sexual assault was defined as genital sexual contact before they reached the age of 13 with anyone who was five or more years older, or coerced sexual contact after age 13. Disaster was defined as exposure to a natural disaster such as a "tornado, hurricane, flood, major earthquake or similar natural disaster." Subjects who experienced more than one high magnitude event were asked about the first high magnitude event they experienced, the most recent, and the worst. Assignment to the two interpersonal groups was determined by whether the first high magnitude event was an abuse experience which took place before or after the subject was 13. The disaster only group included survivors of disasters who had not experienced other high magnitude events.

Results

Chi square tests of proportion were used to compare the distributions of the demographic variables across the three groups: There was a significant difference in the proportion of females in the three groups. The early interpersonal (82%) and late interpersonal group (82%) had a significantly higher proportion of females than the disaster group (51%) ($p < .0001$). There was also a significant difference in the proportion of married subjects in the three groups. The disaster group had a significantly higher proportion of married subjects (42%) than the early (31%) and late interpersonal groups (23%) ($p < .0001$). There was also a significant difference in the proportion of race, and employment between the early interpersonal group and disaster group. The early interpersonal group had significantly more Whites (91%) than the disaster group (73%) ($p < .013$), and a higher proportion of students (20% vs. 5%) ($p < .007$). There were no differences in education level among the three groups. The percentage completing *less* than high school were: early interpersonal, 15%; late interpersonal, 16%; and disaster, 15%).

Scale Endorsement

Table 1 presents the criteria needed for endorsement of each of the subscales and seven major scales. Coefficient Alpha for the major scales

Table 1. Criteria for Endorsement and Coefficient Alpha for Subscales, Seven Major Scales and Diagnosis of Disorders of Extreme Stress[a]

I. Alteration in regulation of affect and impulses (α = .90)
A and (1) of B–F required.
- A. Affect regulation (2 of 3)
- B. Modulation of anger (2 of 4)
- C. Self-destructive (1 of 3)
- D. Suicidal preoccupation
- E. Difficulty modulating sexual involvement (1 of 7)
- F. Excessive risk taking

II. Alterations in attention or consciousness (α = .76)
A or B required.
- A. Amnesia
- B. Transient dissocative episodes and depersonalization (1 of 4)

III. Alterations in self-perception (α = .77)
Two of A–F required.
- A. Ineffectiveness
- B. Permanent damage
- C. Guilt and responsibility
- D. Shame
- E. Nobody can understand
- F. Minimizing

IV. Alterations in perception of the perpetrator (α = .53)
- A. Adopting distorted beliefs
- B. Idealization of the perpetrator
- C. Preoccupation with hurting perpetrator

Not required.

V. Alterations in relations with others (α = .77)
One of A–C required.
- A. Inability to trust ((1 of 3)
- B. Revictimization
- C. Victimizing others

VI. Somatization (α = .88)
Two of A–E required.
- A. Digestive system (1 of 5)
- B. Chronic pain (1 of 5)
- C. Cardiopulmonary symptoms (1 of 4)
- D. Conversion symptoms (1 of 9)
- E. Sexual symptoms 1 of 4)

VII. Alterations in systems of meaning (α = .78)
A or B required.
- A. Despair and hopelessness (1 of 3)
- B. Loss of previously sustaining beliefs (1 of 2)

Total disorders of extreme stress (α = .96)

[a]*Note.* Numbers in parentheses indicate number of subscale items required for endorsement of subscale based on at least 50% of subjects endorsing this number of subscale items-based on lifetime data only. Subscales not followed by numbers in parentheses are single item subscales.

and total DES is also presented. Each subcategory (e.g., IA, "affect regulation"), was examined separately to determine the minimum number of items needed in order to meet the criteria for endorsing that subscale. The criteria used were that at least 50% of subjects in the two interpersonal groups and the disaster group endorsed that many items or more based on "lifetime" rather than current data. "Current" was defined as within the past 6 months, and "lifetime" was defined as a symptom that was present at any point in a subject's lifetime. Current diagnoses are not reported in this paper, because, as a result of a communication error between the field trial sites, we were not confident that current was defined consistently across sites.

The criteria for scale endorsement were designed to maximize the differences between the disaster group and the interpersonal abuse groups. In order to insure that the interpersonal groups were significantly different from the disaster group pairwise chi-square statistics comparing the three groups were computed. The overall significance level used was .05. Table 2 shows the percent endorsement of the 27 subscales, the seven scales and disorders of extreme stress, grouped by the three types of trauma. As expected, the percent endorsement was most similar in the two groups which experienced interpersonal abuse (early onset and late onset), and least similar when comparing the early onset interpersonal abuse to the disaster group. The rate of endorsement is also dissimilar when comparing the late onset interpersonal abuse group to the disaster group. In fact, all but one subscale (33 out of 34 comparisons) showed a significant difference in the percentage of subjects who experienced early onset interpersonal abuse when compared to those who experienced disaster. Furthermore, there was a significant difference in 23 out of 34 comparisons between those who experienced late onset interpersonal abuse when compared to those who experienced disaster. These findings support establishing the criteria for scale endorsement by maximizing the differences between the disaster group and the two interpersonal abuse groups.

In order to determine where the cutpoint for scale endorsement would be set, the total number of subscale items endorsed were examined for the disaster group separately from the interpersonal violence groups. The median number of items endorsed by the interpersonal violence groups was used as the cutpoint as long as the median for the disaster group was less than that number, if this was not the case then an additional item was included until these two groups could be discriminated. Additionally, face validity helped determine which subscales were necessary for scale endorsement. This was accomplished by having three experts on trauma, each of whom had at least 15 years experience doing clinical and research work with traumatized patients (the first three authors), unanimously agree that

Table 2. Percent Endorsement by Type of Trauma

Scale	Early Onset Interpersonal Abuse	Late Onset Interpersonal Abuse	Disaster
Alterations in regulation of affect and impulses (Scale I)			
Affect (IA)	77	67	37[a,b]
Anger (IB)	76	60	32[a-c]
Self-destructive (IC)	62	37	22[a-c]
Suicidal (ID)	67	39	12[a-c]
Sexual Involvement (IE)	81	67	29[a,b]
Risk Taking (IF)	54	26	17[a-c]
Scale I	77	64	32[a,b]
Alterations in attention or consciousness (Scale II)			
Amnesia (IIA)	78	46	15[a-c]
Dissociative (IIB)	80	59	44[a-c]
Scale II	88	67	47[a-c]
Alterations in self-perception (Scale III)			
Ineffectiveness (IIIA)	53	41	36
Damage (IIIB)	72	52	25[a-c]
Guilt and responsibility (IIIC)	70	48	22[a-c]
Shame (IIID)	60	39	19[a-c]
Understand (IIIE)	80	57	37[a-c]
Minimize (IIIF)	28	23	5[a-c]
Scale III	82	64	34[a-c]
Alterations in perception of the perpetrator (Scale IV)[d]			
Distortion of beliefs (IVA)	30	11[b]	
Idealization of the perpetrator (IVB)	35	8[c]	
Hurt perpetrator (IVC)	13	8	
Alterations in relations with others (Scale V)			
Trust (VA)	85	84	46[a,b]
Revictimization (VB)	54	38	20[a]
Victimizing others (VC)	28	8	10[a-c]
Scale V	86	85	49[a,b]
Somatization (Scale VI)			
Digestive (VIA)	69	61	31[a,b]
Chronic pain (VIB)	55	43	24[a]
Cardiopulmonary (VIC)	71	60	29[a,b]
Conversion (VID)	54	30	14[a,c]
Sexual (VIE)	58	45	10[a,b]
Scale VI	76	69	29[a,b]
Alterations in systems of meaning (Scale VII)			
Hopelessness (VIIA)	75	64	39[a,b]
Beliefs (VIIB)	72	47	20[a-c]
Scale VII	82	74	41[a,b]
Disorders of extreme stress	63	38	10[a-c]

[a]Early vs. disaster.
[b]Late vs. disaster.
[c]Early vs. late. —Based on lifetime data only.
[d]Note: Scale 4, Alterations in perception of the perpetrator was not adminisred to subjects in the disaster group.

a subscale was a core component of trauma. Endorsement of the diagnosis of disorders of extreme stress is met when all scales, except Scale IV (Perception of the Perpetrator), are endorsed. Perception of the Perpetrator was dropped as a subscale since the endorsement was too sporadic in the interpersonal violence groups.

Reliability

Inter-rater reliability was established by having 10 raters (2 from each of the 5 sites) rate 5 tapes from each site; no rater listened to a tape from their own site. Thus, there were 20 ratings per site (4 × 5). Each rater determined whether or not disorders of extreme stress criteria were met for each subject. The kappa coefficient for lifetime disorders of extreme stress was .81.

Internal consistency was evaluated using coefficient alpha. Table 1 presents the coefficient alphas for each subscale and the total disorders of extreme stress diagnosis. Coefficient alpha ranged from .53 (Alterations in Perception of the Perpetrator) to .96 (DES Diagnosis). In light of the low coefficient alpha for the "Alterations in Perception of the Perpetrator" subscale, this subscale was dropped as a requirement for diagnosis. Table 3 shows the intercorrelation among the seven scales and correlation of the seven scales to the total.

Table 3. Inter-correlations Among Scales and Diagnosis of Disorders of Extreme Stress[a]

	Scale							
	1	2	3	4	5	6	7	DES
SCALE I								
SCALE II	.55							
SCALE III	.62	.57						
SCALE IV	.35	.33	.36					
SCALE V	.54	.46	.61	.32				
SCALE VI	.60	.52	.54	.34	.48			
SCALE VII	.57	.52	.59	.32	.54	.55		
DES	.68	.55	.61	.46	.50	.67	.56	

[a]Scales refer to alterations in: I = regulation of affect and impulses; II = attention or consciousness; III = self-perception; IV = perception of the perpetrator; V = relations with others; VI = somatization; and VII = systems of meaning.

Discussion

Results of this study suggest that SIDES can be a useful tool for investigation of alterations in response to extreme stress not currently captured by the PTSD diagnosis. Evidence of the reliability of the interview was supported by kappa coefficient and coefficient alphas which were in the acceptable range. In addition to use in research settings, we have found this measure to be a valuable clinical tool. For the past several years we have used the SIDES in clinical evaluations of traumatized populations. We find that this instrument has been helpful in eliciting information regarding the effects of trauma and has been particularly valuable in identifying areas of psychological impairment which were essential for effective treatment planning.

There are some limitations to this study which suggest that the generalizability of our results should be made with caution. Although this investigation yielded data in support of the reliability and content and face validity of the interview, the construct validity of the measure needs to be investigated. This can be done by comparing endorsement of DES symptoms across different types of trauma populations. We hypothesize that victims of interpersonal trauma would be particularly likely to present with the symptoms measured by this scale. A notable limitation of the study stems from our basing our findings on lifetime data which required that a symptom be present at any point during a person's lifetime. Symptoms may have been spread over a large time span in a manner which could overestimate the presence of the DES syndrome. Investigators and clinicians using this measure should therefore consider requiring that lifetime symptoms be present concurrently during a circumscribed period of time. The format of the SIDES could also be improved by exploration of conversion to a Likert style format with clearer behavioral descriptors of what is necessary to meet thresholds for endorsement of items.

The high internal consistency of the SIDES is not necessarily indicative of redundancy in the measure as evidenced by the moderate correlations among the seven scales (ranging from .32 to .60). Further research would be valuable to address the sensitivity and specificity of the measure. In determining if there is a need for a new diagnosis it is particularly important to insure that the SIDES is sufficiently specific, i.e., that it does not yield too high a rate of false positives. In a study of physically abused adolescents, Pelcovitz et al. (1994) reported that although adolescent abuse victims had high prevalence rates of depression, conduct disorder and behavioral difficulties, they did not show significantly more symptoms of PTSD than non-abused controls. Although not reported in that paper, evidence in support of the specificity of the SIDES was implied in the finding that none of the

abused adolescents in that sample received a disorders of extreme stress diagnosis when administered the SIDES. Data from a study of rape victims and anxiety and depressed controls bears further on the specificity issue (Spinazzola et al., 1994). While a high percentage of rape victims with chronic PTSD at some point in their lives also met criteria for disorders of extreme stress, there were no instances of disorders of extreme stress among the anxiety disorder and depressed controls. Additional information pertaining to the construct validity of the disorder is contained in related papers by van der Kolk et al. (1996) and Roth Newman, Pelcovitz, Van der Kolk, and Mandel (in press). These papers address the ability of Disorders of Extreme Stress to discriminate among different types of trauma, and different developmental stages.

Treatment of trauma patients can be facilitated by an improved understanding of the totality of the impact of trauma on the individual's psychological and interpersonal functioning. Furthermore, comparing endorsement of these symptoms across different trauma groups can enhance our understanding of the differential impact of various types of traumatic events. Results of this study suggest that the SIDES and the diagnosis of Disorders of Extreme Stress show promise in empirically capturing the essence of alterations seen in response to extreme stress.

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