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Delayed PTSD: Incidence, Course and Correlates -
A Longitudinal Study of Family Impact Mediation,
Stressful Life Events, Social Resources and Coping Style

Annual and Final Report

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Head, Research Branch
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Delayed onset PTSD (DPTSD), an inevitable consequence of wars, has been the focus of numerous clinical reports. Systematic investigations of DPTSD are practically nonexistent, however. Utilizing a unique psychiatric register developed by the IDF in the Lebanon War, Study 1 assessed the course and correlates of DPTSD two years after the war, and Study 2 examined its impact on the psychosocial status of these veterans' wives four years later.

Study 1: The sample consisted of three groups of veterans: (1) delayed PTSD casualties; (2) chronic PTSD casualties; and (3) soldiers who emerged from the 1982 war without any diagnosable psychiatric disorder (controls).

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Results showed significant differences among the study groups. Delayed PTSD cases exhibited significantly more disorder and distress than controls, but less than chronic cases. Both delayed and chronic PTSD subjects reported having experienced more threatening situations during battle than control subjects. In use of personal resources to mitigate stress, delayed PTSD subjects were more similar to controls than to chronic PTSD subjects. DPTSD subjects did not differ in their experience of negative life events from control subjects. However, both DPTSD and controls reported fewer negative life events than chronic PTSD cases. Social resources of DPTSD were less satisfactory than those of controls, yet more satisfactory than those of the chronic cases.

Study 2: The sample consisted of three groups of women married to combat veterans: (1) wives of DPTSD casualties; (2) wives of veterans with immediate onset PTSD; and (3) wives of non-PTSD combat veterans. Wives of PTSD casualties reported considerably more distress than wives of non-PTSD veterans. Wives of delayed onset PTSD veterans, however, reported the most severe distress in both themselves and their husbands.

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Foreword

For the protection of human subjects, the investigator(s) have adhered to policies of applicable Federal Law 45CFR56.

Study One

DELAYED PTSD: Course and Correlates

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Introduction

War, being an extreme form of stress, often results in post-traumatic stress disorder (PTSD) (e.g., Grinker & Spiegel, 1945; Mullin & Glass, 1973; Solomon, Schwarzwald, & Weisenberg, 1985). Studies demonstrate that war-induced post-traumatic disorder poses a serious public health problem. Not only is it highly prevalent; it also has far-reaching implications. PTSD symptoms put severe pressure on the afflicted veterans and have far-reaching implications for the social network in which they are involved. They impair the casualty's functioning in his family, work, and social life (Solomon et al., 1985). They are implicated in family disintegration, increased drug and alcohol consumption, and anti-social and criminal behavior (Figley, 1978).

Combat Stress and Trauma

Mental health experts agree that active participation in combat exposes a soldier to a surfeit of stress which may impair his health. The severest stress is undoubtedly the tangible risk of death, impairment or injury. Other stresses include loss of friends, exposure to ghastly scenes of death and injury, and intense physical discomfort due to lack of sleep, food or water, or extremes of weather. Also common are feelings of isolation, loneliness, lack of social support, social and sexual deprivation, and lack of privacy (Stouffer, 1949;

Titchner & Ross, 1974). Although people may encounter similar stresses in daily life, they do not experience them with the concentrated intensity as a soldier in combat.

Exposure to the stress of combat is recognized as pathogenic, causing illness and exacerbating existing somatic and emotional problems. The long-term consequences of exposure to stress may be expressed in a variety of ways, the most common and conspicuous of which is post-traumatic stress disorder (PTSD). According to the DSM-III (1980), PTSD is characterized by re-experiencing the traumatic event, numbing of responsiveness to or reduced involvement with the external world; and a variety of automatic, dysphoric, and cognitive symptoms. The DSM-III also delineates "associated features" of PTSD, consisting of psychiatric symptoms and difficulties in social functioning, which are frequently observed in conjunction with PTSD.

PTSD often appears in acute form, in which its onset is observed within six months of exposure to the traumatic event (DSM-III, 1980). Sometimes, however, the manifestations of the trauma are, or seem to be, delayed. Delayed onset of PTSD can be said to occur when an individual at first appears to respond adaptively to traumatic stress, but then develops psychopathology after an asymptomatic latency period of at least six months (DSM-III, 1980). According to Horowitz & Solomon (1975), delayed onset PTSD develops when the safety and security of home allows the relaxation of defensive and coping mechanisms, which were later overcome by intrusive recollections of the traumatic events or by an event that symbolically echoes the trauma (Figley, 1978a, 1978b; Christenson, Walker, Ross, et al., 1981; Van Dyke, Zilberg, & McKinnion, 1985).

Delayed onset of PTSD has been found among concentration camp survivors, Japanese atomic bomb survivors, survivors of natural disasters, and World War II and Vietnam combat veterans (Archibald & Tuddenham, 1965; Chodoff, 1962; Figley, 1978a). Studies of these groups have indicated that in many cases the consequences of trauma are not readily apparent. Many survivors of these catastrophic events appeared to have adjusted well, though later, sometimes many years later, substantial numbers developed stress-related symptoms (Hendin & Haas, 1984). The delayed onset of psychopathology following a symptom-free latency period has also been extensively observed with regard to grief reactions. Lindenman (1944), in his classic writing, noted that unresolved brief reactions may be reactivated when the bereaved are reminded of their loss, by deliberate recall of circumstances surrounding the death or a spontaneous occurrence in the person's life.

Delayed onset of war-related PTSD has been described among World War II and Vietnam veterans. Following the Vietnam War delayed onset PTSD became a major issue in the literature dealing with PTSD. While American military psychiatrists in Vietnam (eg., Bourne, 1970) consistently found lower rates of acute PTSD than the rates observed in World War II, an alarming large number of Vietnam veterans were discovered with a wide range of PTSD symptoms after they came home (Boulanger, 1985; Laufer, 1984; Van Putten & Emory, 1973).

Despite the considerable number of diagnosed delayed onset PTSD in Vietnam and despite clinicians' estimates that even more veterans will seek treatment (Hendin & Haas, 1984; Horowitz & Solomon, 1975), little empirical research has been conducted on this issue. The literature

consists of a small number of case presentations and reports of clinical impressions. In view of the considerable practical and theoretical significances of delayed PTSD, it is surprising that so little is known about its incidence and correlates.

One reason for the small number of empirical studies of delayed onset PTSD is the lack of validity of its diagnosis. There are clinicians who claim that malingering in pursuit of disability compensation, factitious symptoms, drug abuse and precombat psychopathology were mistakenly diagnosed as delayed PTSD (e.g. Atkinson, Henderson, Sparr, et al., 1982; Sparr & Pankratz, 1983). Other clinicians (Pary, Turns, & Tobias, 1986) argue that the time lapse was not a true latency period, since there were usually unacknowledged and untreated residual symptoms. They claim that only the identification, not the onset, was delayed.

The many difficulties of carrying out retrospective research with a large and emotionally vulnerable population have also reduced the number of empirical studies of delayed onset PTSD. In the United States the problem is compounded by the relative mobility and wide dispersion of the population, which makes subjects extremely difficult to locate, and by the Vietnam veteran's reluctance to cooperate with research activities conducted by the government and other establishment agencies.

Israel's 1982 Lebanon War provides a unique opportunity to carry out an empirical study free of many of the methodological limitations of earlier investigations. Israel's small size in both area and population, along with the fact that most Israeli men continue to serve in active reserves after the war, greatly facilitate locating subjects and obtaining their cooperation. Moreover, our empirical research is further

facilitated by the establishment of a central computerized data bank which contains the military, somatic, and psychiatric history of all Israeli soldiers who were referred or requested treatment for war-induced emotional injuries during or following the Lebanon War. It contains files both of acute and delayed PTSD casualties as well as of matched controls who participated in the Lebanon War but did not evidenced PTSD.

The availability of comprehensive, detailed, and regularly updated computerized files allows for the systematic investigation of a large number of issues involved in delayed onset PTSD. Using this data bank, the present study investigated the following:

1. The psychosocial status of delayed onset PTSD;
2. the contribution of battle-related variables (e.g., social support, perceived stress) to delayed onset PTSD;
3. the contribution of non-military stressful life-events after discharge to delayed onset PTSD;
4. the role of social resources in the genesis of delayed onset PTSD;
5. the role of personal resources in delayed onset PTSD.

Three groups of Lebanon War veterans were compared. (a) Soldiers who participated in the Lebanon war without any diagnozed emotional breakdown, but developed PTSD six months or more after the war (delayed onset PTSD); (b) soldiers who developed PTSD during or immediately after the Lebanon war and continued to suffer from it for the two following years (chronic PTSD); (c) soldiers who suffered from PTSD neither during the war nor in the two years after homecoming. These group were

compared on psychosocial status, battle-related experiences, personality resources, life events at homecoming, and social resources. These comparisons allow us (a) to delineate the psychosocial manifestations of delayed onset PTSD; (b) to characterize the factors that delay the onset of the PTSD (battle-events and personality factors); and (c) to characterize the factors that promoted the onset of PTSD after the end of the war (i.e., negative life events, social resources).

Method

Subjects

Three groups of male subjects participated in this study: (1) delayed PTSD group; (2) chronic PTSD group; and (3) control group. Both the delayed and chronic PTSD groups consist of subjects who had PTSD after the war. However, whereas the chronic PTSD subjects sustained a breakdown in battle, delayed PTSD did not, and sought psychiatric help only at least six months after the end of the war.

Delayed PTSD and control subjects both participated in the Lebanon War without recognizable psychiatric breakdown, but differ in psychiatric status at the time of the testing. Control subjects did not have PTSD at any time during the two years following the end of the war, delayed PTSD did.

Delayed PTSD group. This group consists of 71 subjects who participated in the Lebanon war without any recognizable psychological breakdown, but suffer from diagnozable PTSD two years after the end of the war.

Criteria for inclusion in this group were: a) participation in front-line battles during the Lebanon War; b) no indication of combat stress reaction during the war; (c) no indication of serious physical injury; d) no indication of other combat-related disorders, such as brief reactive psychosis or fictitious disorders; (e) a voluntary request for psychiatric treatment in an IDF Mental health clinic during the two years after the war; (f) complaints of psychiatric problems related to their participation in the War; and (g) fulfillment of the

DSM-III criteria for PTSD (reactivation of the trauma, emotional numbing, and two additional symptoms involving cognitive difficulties). All the criteria, with the exception of the last one, were checked from official records made on the battlefield and in the IDF Mental Health clinics. The last criteria was checked by asking subjects to answer the PTSD inventory (See Solomon et al., 1985), based on the three DSM-III criteria.

Chronic PTSD group. This group comprises 73 subjects who were pairwise matched for age, education, military rank and assignment to soldiers of the delayed PTSD group. They were sampled from the population of soldiers who fought on the front during the Lebanon War (1982). They were identified by Israel Defense Forces (IDF) mental health personnel as combat stress reaction casualties and suffered from diagnozable PTSD when the measurements were taken, two years after the end of the war.

Criteria for inclusion in this group were: a) participation in front-line battles during the Lebanon War; b) a referal for psychiatric intervention made by the soldier's battalion surgeon during the war; c) a diagnosis of combat stress reaction made on the battlefield by an IDF clinician trained and experienced in the diagnosis of combat-related reactions; d) no indication in the clinician's report of serious physical injury; e) no indication in the clinician's report of other combat-related disorders, such as brief reactive psychosis or fictitious disorders; and (f) fulfillment of the DSM-III criteria for PTSD two years after the war. The research staff determined eligibility by using records of clinicians' diagnoses made on the battlefield. PTSD was assessed by using the PTSD inventory (Solomon et al., 1985).

Control group. This group consists of 73 subjects who were pairwisely matched for age, education, military rank and assignment to the soldiers in the delayed and chronic PTSD groups. Although they fought in the Lebanon war, members of this group were neither treated for combat stress reaction during the war nor diagnosed or treated for PTSD during the two years following the war. While it is difficult to control for subjective combat stress, the sampling procedure here was chosen to ensure that soldiers in the three study groups were exposed to a similar amount and type of objective stress.

Sociodemographic characteristics. The majority of the subjects (65%) were were married. Sixty-six percent ranged in age from 18 to 33; 34% were above age 33. Twenty-three percent had completed eighth grade, 24% had had at least some high school, 32% had completed high school, and 20% had studied beyond high school. Chi square tests indicated that the study groups did not differ significantly in any sociodemographic or military variable.

Procedure

Subjects in the three study groups were asked to report to the headquarters of the Surgeon General of the IDF approximately 24 months following their participation in battle. The request was accompanied by a personal letter explaining that they had been selected at random to participate in a routine, periodical, health assessment conducted as part of the Medical Corps' concern for the well-being of its regular and reserve soldiers.

Prior to their filling out the questionnaires, the subjects were assured that the data would remain confidential and would in no way affect their status in military or civilian life. Subjects were seated in groups of 7 to 19, where they individuallv filled out the battery of questionnaires.

Although secondary gain considerations may have led subjects to overly endorse emotional reactions, this is partially negated by the fact that the subjects in the three groups completed the inventory simultaneously and were clearly informed that no military health profile would be changed on the basis of their reports. Moreover, soldiers were aware of the fact that a different administrative unit was responsible for claims for physical or mental injuries.

Psychosocial status of delayed onset PTSD casualties'

Post-traumatic stress disorder (PTSD) is the term for the residuals of combat stress that crystallize after the actual battles have ended. Combat-related PTSD is characterized by compulsive reexperiencing of the traumatic event in nightmares or in waking scenes and recollections. In extreme dissociative circumstances, the victim acts as if he were reexperiencing the event concretely in the present. Other expressions of PTSD include rigidity, emotional numbing, feelings of alienation, inhibited relations with others, and lack of interest in previously enjoyed activities. PTSD sometimes becomes aggravated by or erupts after exposure to stimuli which recall the traumatic event, such as the sight of blood or loud noises.

The intrapsychic processes of PTSD have been summarized by Horowitz (1982), who claims that PTSD includes two different oscillating tendencies: intrusion and avoidance. Intrusion refers to the penetration of thoughts, images, feelings, and dreams into the individual's consciousness and to a variety of obsessively repetitive behaviors. Avoidance reflects psychic numbing, denial of meanings and consequences, and counterphobic activities related to the stressful life event. The relative salience of intrusion or avoidance is not conceived as constant, but rather as alternating phases in the course of the post-traumatic experience (Horowitz, 1982). Intrusion is considered the initial phase, followed by avoidance. Intrusion and avoidance may then alternate according to the individual's idiosyncratic pattern until working through occurs. Prior research (Schwarzwald, Solomon, Weisenberg, & Mikulincer, 1987) has shown that subjects suffering from

PTSD following the Lebanon War reported suffering from more intrusive thoughts and avoidance tendencies one year following war than non-PTSD veterans.

The PTSD syndrome also includes other psychiatric features that are not essential to diagnosis, but that may appear following certain traumatic situations and in particular populations. The DSM-III labels these symptoms as "frequently associated features". They include anxiety, depression, and symptoms that are highly prevalent among Vietnam veterans, such as irritability accompanied by explosive outburst of anger. Prior research (Solomon, Mikulincer, & Bleich, in press) has shown that combat-related PTSD casualties reported suffering from more depression, anxiety, and hostility that non-PTSD veterans.

Combat-related PTSD can also be reflected in the casualty's military and civilian functioning. Militarly, combat-related PTSD can impair a man's physical and mental fitness, reduce his motivation and undermine his reliability in security assignments and his ability to fully participate in future wars. In civilian life, combat-related PTSD may be expressed in functional disturbances in the family and at work. As the DSM-III points out, "PTSD may result in occupational or recreational impairment and psychiatric numbing may interfere with interpersonal relationships." Research findings indicate that social dysfunctioning is an important correlate of PTSD among concentration camp survivors (Chodoff, 1962), survivors of natural disasters (Glesser, Green, & Winget, 1978; Titchner & Kapp, 1976), rape victims (Burgess & Holmstrom, 1974), and among Lebanon War PTSD casualties (Solomon & Mikulincer, 1987). In addition, Solomon, Schwarzwald, Weisenberg, & Mikulincer (in

press) found that PTSD casualties of the Lebanon War reported lower perceived self-efficacy (Bandura, 1982) in dealing with stressful battle events than veterans without PTSD.

The first aim of the current study is to assess the psychosocial status of the delayed onset PTSD sufferers. Delayed onset PTSD sufferers were compared with chronic PTSD sufferers and non-PTSD matched control subjects. The comparison was performed on measures of PTSD-related intrapsychic processes (intrusion and avoidance), associated psychiatric features, and problems in social and military functioning. The comparison allows us to differentiate the psychosocial status of the delayed onset PTSD casualty from that of the better known chronic PTSD casualty.

Questionnaires

Psychiatric symptomatology - SCL-90. Psychiatric symptomatology was assessed using the self-report checklist-90 (SCL-90). This checklist inquiries about symptoms during the two weeks preceding the interview. The SCL-90 is composed of 90 self-report items rated on a 5-point distress scale. The scale has been factor analyzed and nine symptom dimensions have been identified (Derogatis, 1979). The SCL-90 has been found to be highly correlated with similar scales in the MMPI (Derogatis, Rickels, & Rock, 1976). The scale construct validity has been investigated, and all nine symptom dimensions display moderate to high theoretical-empirical agreement and stability across variation in subject sample (Derogatis & Clearly, 1977). A number of test-retest and inter-rater reliability studies are available for the precursor of the

SCL-90, the Hopkins Symptom Checklist, which includes five of the nine dimensions of the SCL-90 (Derogatis, 1979).

Subjects were compared on three measures of global symptoms which gauge the extent and severity of psychiatric symptomatology. The Global Severity Index (GSI) was computed by averaging subjects' answers on all ninety symptoms. This index, as its name suggests, is an indication of the overall severity of the symptomatology. The Positive Symptom Total (PST) is the total number of positively endorsed symptoms. This gives an indication of the scope of the symptoms -- how many as opposed to how troublesome. The Positive Symptom Distress Index (PSDI) is the mean of intensity for only positively endorsed symptoms. This indicates both scope and severity of symptomatology.

Scores were also calculated for each of the nine SCL-90 scales:

1. Somatization: deficiency in somatic functioning, consisting of either functional disorders or physical limitations.
2. Obsessive-compulsive disorder: ego-dystonic, repetitive, and intrusive thoughts, impulses, and actions.
3. Interpersonal sensitivity: feelings of inferiority, humiliation, and discomfort in interpersonal relations.
4. Depression: disinterest, lack of motivation, withdrawal from activity, lethargy, depressive moods, suicidal thoughts, and hopelessness about the future.
5. Overt anxiety: nervousness, tremors, fearful thoughts, apprehension about the future, and panic states.
6. Hostility: anger, aggression, rage, and resentment.

7. Phobic anxiety: irrational, exaggerated, chronic fear of particular persons, places, objects or situations, leading to avoidance of or flight from the specific stimulus.
8. Paranoid Ideation: true paranoia, suspicion, and hostility.
9. Psychoticism: a continuum ranging from mild detachment to severe psychosis characterized by withdrawal, self-isolation, schizoid style, and hallucinations.

Scores for each subscale were computed by averaging each subject's answers on the symptoms corresponding to that subscale.

Problems in Social Functioning. The instrument for measuring problems in social functioning consisted of a self-report questionnaire about problems in different facets of social life. The following three areas of social functioning problems (SFP) were examined:

1. Work performance: 5 items assessed how well subjects functioned on the job.
2. Familial Functioning: 4 items assessed subjects' problems with their families.
3. Social Functioning: 12 items assessed subjects' functioning with their acquaintances, their motivation in initiating social relationships, and their satisfaction with their social lives.

Soldiers were asked to read each item and to answer whether or not they experienced the mentioned problem in the last year. Crombach Alpha coefficients for each SFP scale ranged from .63 to .81, indicating high internal consistency. These scales were administered to a small group of 20 soldiers twice within a one-week interval. Percentage of agreement ranged from 76% to 91%, indicating high test-retest reliability.

Intercorrelations among the three SFP scales ranged from .48 to .72, all of them positive and significant. This implies that the measures of functioning in different areas of social life are correlated at least to some extent and suggests that there is an underlying dimension of social functioning disability.

The presence of this latent dimension was corroborated by the high correlation between each SFP scale and concurrent clinical evaluation of soldiers' functioning. Clinicians interviewed a sample of 114 soldiers and assessed their general functioning on a 9-point scale ranging from "very poor" to "very good". The correlations between the clinical evaluations and each SFP scale ranged from .62 to .73, reflecting a high concordance between the self-reports and clinical impressions.

Perceived Self-Efficacy in Combat (PSE). The PSE questionnaire was constructed using Bandura's (1982) microanalysis construct. That is, rather than inquiring about an overall feeling of perceived ability to function in combat, specific battle events were identified. The 17 items chosen were based on the literature on combat related stress. The respondent was asked to indicate to what extent he believed he would be able to function appropriately at the time of answering if the selected incidents were to occur. Examples of items are: "A shell explodes near where you are standing", "You see the body of a dead soldier", "It looks like the battle is lost." The respondent was asked to answer on a 5-point scale ranging from "to a very great extent" to "not at all."

Following Bandura (1982), two scores were computed for each respondent: (1) Strength of perceived self-efficacy, which is the average rating for all the 17 items. The higher the score, the greater

the perceived self-efficacy. (2) Breadth of self-efficacy, consisting of the number of situations in which the respondent indicated that he could function appropriately at least to some extent. Here, too, a higher score indicated greater perceived self-efficacy in combat.

A Crombach alpha of .91 was obtained for the 17 items indicating high internal consistency. Split-half reliability corrected by the Spearman-Brown formula was .94.

Impact of Event Scale (IES). The IES is a continuous measure (Horowitz et al., 1979) that assesses intrusive and avoidance tendencies, as expressed in thoughts, images, and actions related to the stressful event. For purposes of the present study, the IES was translated into Hebrew independently by three highly experienced bilingual psychologists. It was further pre-tested on a small sample of soldiers with favorable results. Only then was a final version reached. Horowitz et al. (1979) suggest that the IES can be tailored to any specific stressor. In the present study, it was adapted for combat exposure and all items queried about reactions to war experiences.

The questionnaire describes fifteen emotional reactions related to war. The respondent is asked to indicate on a 4-point scale ranging from "not at all" to "often" how frequently he has experienced each reaction during the previous week. Frequency scores were computed by assigning the following weights to each item: zero for negative endorsement ("not at all") and values of 1, 3, and 5 for the three degrees of positive endorsement ("rarely", "sometimes", and "often").

The Hebrew version of IES was administered twice within a one-week interval to a small group of 20 soldiers. Percentage of agreement was 73.8%, indicating high test-retest reliability.

A principal factor analysis followed by a Varimax rotation was performed on a sample of several hundred front-line soldiers who participated in the Lebanon War (See Solomon et al., 1985). The resulting factor matrix yielded three factors with eigenvalues > 1.000: (a) Factor I, 7.05 (47.4% total explained variance); (b) Factor II, 1.54 (10.3% total explained variance); and (c) Factor III, 1.13 (7.6% total explained variance). Since the third factor accounted for only 7% of the total variance and its eigenvalue was close to 1, we decided to adopt Zilberg et al.'s (1982) procedure and to exclude this factor from further analyses. Principal factor analysis followed by a Varimax rotation was then performed with a two-factor forced solution. This solution yielded nine items comprising an intrusion factor (e.g, "I thought about the war when I didn't mean to", "I had trouble falling asleep or staying asleep", "I had strong feelings about the war") and four items comprising an avoidance factor (e.g., "I tried to forget the war", "I tried not to talk about the war").

Loadings of Factor I on intrusion items ranged from .50 to .84. In contrast, on these same items, the loadings for Factor II ranged from .18 to .42. Loadings of Factor II on avoidance items ranged from .58 to .75, while for the same items the loadings for Factor I ranged from .22 to .47. Coefficients of internal consistency for the nine items (loading>.50) of the intrusion factor (Alpha=.91) and for the four items of the avoidance factor (Alpha=.84) reached a high level of reliability.

Two factor scores were then calculated for each subject. Each factor score consisted of the mean of the items loading higher than .40 on the factor. In addition, a general distress score was computed by averaging subjects' answers on all the items.

Results

In order to examine the psychosocial status of delayed stress casualties, we assessed: (a) severity and profile of psychiatric symptomatology (SCl-90 measures), (b) social functioning (SFP scale), (c) perceived self efficacy in combat situations, and (d) patterns of intrusion and avoidance (IES). These comparisons were performed through one-way analyses of variance (ANOVAs).

Patterns of intrusion and avoidance. Table 1 presents means, standard deviations, and F-ratios of the total IES score and the IES intrusion and avoidance scores in each of the three study groups.

Table 1

Means, SD, and F-ratios of the Impact of Event Scale in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Total distress score					119.62**
	Mean	2.62	0.45	2.40	
	SD	0.99	0.60	1.10	
Intrusion					118.22**
	Mean	2.93	0.44	2.72	
	SD	1.15	0.59	1.33	
Avoidance					55.86**
	Mean	2.65	0.53	2.40	
	SD	1.45	0.92	1.44	

Notes: ** $p<.01$

The ANOVAs yielded significant differences among the study groups in the three IES scores. Scheffe tests demonstrated that both chronic PTSD and delayed PTSD subjects reported more general distress, more intrusion, and more avoidance of war-related thoughts and actions than control subjects. Moreover, the strength of intrusion and avoidance tendencies was similar in delayed and chronic PTSD subjects.

Severity of psychiatric symptomatology. Table 2 presents means, standard deviations, and F-ratios of the three global scores of the SCL-90 (GSI, PST, PSDI) according to the three study groups. Higher scores reflect a large number of and more severe psychiatric symptoms.

Table 2

Means, SD, and F-ratios of global SCL-90 scores in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
GSI					58.21**
	Mean	1.64	0.39	1.29	
	SD	0.79	0.48	0.83	
PST					61.10**
	Mean	60.40	20.84	49.92	
	SD	20.51	23.08	23.49	
PSDI					22.90**
	Mean	2.28	1.53	2.06	
	SD	0.65	0.60	0.68	

Notes: ** $p<.01$

As can be seen in Table 2, the ANOVAs yielded significant group differences in each of the three global SCL-90 scores. Scheffe tests demonstrated that the pattern of group differences was similar on the three global SCL-90 scores. Delayed PTSD subjects showed significantly more severe and widespread psychiatric symptomatology than control subjects, while chronic PTSD casualties exhibited significantly more severe and widespread psychiatric symptomatology than delayed PTSD casualties. That is, the statistical analysis yielded that delayed PTSD subjects had severe psychiatric symptomatology, but not so severe as that of chronic PTSD casualties.

Psychiatric profile. Table 3 presents means, standard deviations, and F-ratios of the nine SCL-90 subscales in each of the three study groups. Higher scores reflect higher symptom severity.

Table 3

Means, SD, and F-ratios of the nine SCL-90 subscales in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Somatization					34.37**
	Mean	1.52	0.49	1.21	
	SD	0.84	0.59	0.85	
Depression					50.96**
	Mean	1.71	0.36	1.37	
	SD	0.92	0.56	0.95	
Anxiety					67.56**
	Mean	2.08	0.41	1.69	
	SD	1.01	0.55	1.05	
Obsession-compulsion					49.85**
	Mean	1.94	0.54	1.62	
	SD	0.90	0.71	0.99	
Phobic anxiety					43.30**
	Mean	1.37	0.17	1.02	
	SD	0.99	0.32	0.90	
Interpersonal insecurity					29.91**
	Mean	1.44	0.38	1.12	
	SD	1.00	0.50	0.94	
Hostility					57.59**
	Mean	1.82	0.33	1.19	
	SD	0.97	0.46	0.95	
Paranoic ideation					27.29**
	Mean	1.49	0.43	1.05	
	SD	1.02	0.69	0.84	
Psychosis					32.68**
	Mean	1.25	0.29	1.03	
	SD	0.83	0.40	0.90	

Note: ** $p<.01$

The ANOVAs yielded significant group differences in each of the nine SCL-90 subscales. Scheffe tests indicated that the pattern of group differences was similar on all the subscales. Delayed PTSD subjects showed significantly more severe psychiatric symptomatology than control subjects, but less severe symptomatology than chronic PTSD subjects.

Table 3 also shows that not all SCL-90 subscales are equally endorsed. Four general symptoms clusters can be delineated. The first, containing the most strongly endorsed symptoms, includes obsessive-compulsive disorders and anxiety. The second group, containing more moderately endorsed symptoms, consist of hostility and depression. The third, with yet even more moderately endorsed symptoms, includes interpersonal sensitivity, paranoia, and somatization. The fourth group, containing the least endorsed symptoms, includes phobic anxiety and psychosis. As can be seen, both chronic and delayed PTSD subjects suffer most from obsession compulsion and anxiety, but address all the other psychiatric symptoms as well.

Table 3 further indicates that the overall clinical picture is similar in the three study groups. Whether psychiatric symptoms were highly endorsed or less endorsed, they received relatively proportional endorsement in all three study groups. However, Table 3 also depicts an interesting difference between delayed PTSD and chronic PTSD subjects. Whereas hostility was the third most endorsed symptom among chronic PTSD cases, it occupied fifth place among delayed PTSD subjects. That is, delayed PTSD subjects, as compared to chronic PTSD subjects, were characterized by relatively less hostility.

Social functioning. Table 4 presents means, standard deviations, and F-ratios of the three SFP scores (functioning problems in work, family, and social life) in each of the three study groups. Higher scores indicate higher frequency of reported problems.

Table 4

Means, SD, and F-ratios of the social functioning scales in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Problems at work					34.07**
	Mean	0.62	0.20	0.56	
	SD	0.34	0.27	0.36	
Familial problems					44.04**
	Mean	0.60	0.14	0.59	
	SD	0.35	0.26	0.36	
Social problems					50.05**
	Mean	0.59	0.13	0.47	
	SD	0.28	0.23	0.33	
MANOVA (6,410)					18.34**

The MANOVA yielded a significant difference among the study groups in the report of social functioning problems. This difference reached significance in all three spheres. Scheffe tests demonstrated that both chronic and delayed PTSD subjects reported more problems in work, family, and social life than control subjects. Chronic and delayed PTSD casualties reported a similar level of marital and work problems; but chronic PTSD casualties reported more social problems than delayed PTSD subjects. That is, chronic PTSD casualties exhibited poorer functioning

than delayed PTSD casualties only in the social sphere, but not in work and family life.

Perceived self-efficacy in combat. Table 5 presents means, standard deviations, and F-ratios of the strength and breadth of combat-related perceived self-efficacy in each of the three study groups. Higher scores reflect higher perceived self efficacy in combat situations.

Table 5

Means, SD, and F-ratios of the self-efficacy scores in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Strength					14.01**
	Mean	1.25	2.15	1.39	
	SD	1.14	1.00	1.09	
Breadth					18.81**
	Mean	8.93	14.60	10.48	
	SD	6.25	4.41	5.98	

Notes: ** $p<.01$

As can be seen in Table 5, the ANOVAs yielded significant differences among the study groups in the two self efficacy measures. Scheffe tests demonstrated that the pattern of group differences was similar on both measures. Both chronic and delayed PTSD subjects reported lower perceived self efficacy than control subjects. Delayed PTSD subjects were similar to chronic PTSD subjects in the strength and breadth of their perceived self efficacy.

Summary

Our results indicate that delayed PTSD casualties show significantly more trauma-related intrusion and avoidance responses, more severe psychiatric symptomatology, more problems in social functioning, and lower perceived self efficacy in combat than non-PTSD controls. This means that even though, like the control group, they withstood the immediate stress of battle without a visible breakdown, their PTSD has impaired their psychiatric health, their social functioning and their view of themselves. Moreover, they are still absorbed in dealing with their wartime experiences.

More distressed than the non-PTSD controls, the delayed PTSD casualties are quite similar to our chronic PTSD subjects in the number of social functioning problems they report, in their low perception of their self efficacy in combat, and in their struggle with the intrusion and avoidance of wartime memories. However, their disorder seems to be somewhat more contained than that of the chronic PTSD casualties in that they report significantly less psychiatric symptomatology.

Battle-related events and delayed onset PTSD

Stress is a powerful pathogenic agent, yet considerable individual variability is noted in response to what appears to be similar stressful experiences (Rabkin & Streuning, 1976). Research has illustrated that some individuals will react to stress maladaptatively or develop psychopathology. Others will perceive stress as a challenge and as a means for psychological growth. An unanswered question is: what accounts for this variability: One of the many possible answers is the characteristics of the stressful event.

Battle stress and delayed onset PTSD. A basic factor that might contribute to the development of PTSD is the amount of objective and subjective stress the soldier experienced during battle. Recent research has demonstrated that many Vietnam veterans who exhibited PTSD 10 years and more after the war experienced more prolonged and stressful combat situations than non-PTSD veterans (Egendorf, Kadushin, Laufer, Rotbarth, & Sloan, 1981; Figley, 1978). Studies on long term adjustment to natural catastrophes have found continued impairment among a sizable proportion of catastrophe victims (Baum, Flemming, & Singer, 1983; Gleser, Green, & Winget, 1978). Prolonged severe PTSD is most common among those whose direct experience during the disaster was objectively most traumatic (e.g., handling corpses, witnessing mutilation) (Green, Grace, & Gleser, 1985; Taylor & Frazer, 1982).

On this basis, we hypothesize that battle stress may trigger a psychiatric breakdown during combat, and thus may be an important factor for differentiating between chronic and delayed onset PTSD. Our hypothesis is that chronic PTSD sufferers would report more stress

during battle than either delayed PTSD or non-PTSD control subjects. On the other hand, we expect no difference in subjective reports of battle stress of delayed PTSD and non-PTSD control subjects. For we believe that PTSD is less likely to surface in account of battle-related factors than on account of events that occur closer to its onset.

Military unit environment in battle. Another battle-related factor that might be associated with the onset of acute PTSD is the environment of the military unit. In the first century A.D. the Greek general Anasander advised military commanders to station "brothers in rank beside brothers, friends beside friends, and lovers beside their favorites." The belief that troop cohesion -- the feeling of mutual supportiveness within a combat unit which exists among enlisted men and between these men and their officers -- would enhance combat performance and prevent breakdown is evidenced in military writing over the centuries. Observations of military performance during the first and second World Wars provided confirmation of this belief (Shils & Janowitz, 1948). More recent support is found in reports from Vietnam and the Israeli Yom Kippur War (Bellenky, 1978, cited in Kellet, 1982), which suggest that units that are characterized by group cohesion are more psychologically resistant to the stressors they confront.

Troop cohesion and officer and buddy support in combat may aid stress-resistance by supplying people information that they are loved, appreciated, and part of a network of caring individuals (Caplan, 1974; Cobb, 1976). This information enhances feelings of mastery, which Bowlby (1982) relates to our earliest attachment experiences. In the threat of combat, troop cohesion with the support of buddies and officers might

lead to the desperately sense of mastery needed. This sense of mastery would be expected to follow both from the emotional component of such support and the instrumental components (e.g., providing supplies, covering fire). Soldiers without social support would have the compounded stress of feeling not only threatened, but alone too.

This line of thinking suggests that poor troop cohesion may result in loneliness. The lonely individual feels socially isolated and without anyone to turn to. Lonely soldiers would feel cut-off from the group and lacking the physical protection that a buddy might provide. In addition, they might experience their loneliness as stressful, compounding the stress of combat. Loneliness might thus increase the likelihood of a soldier developing PTSD. In contrast, those who feel good troop cohesion would be less likely to feel lonely and/or to develop PTSD (Dasberg, 1976).

As in the case of battle stress, it is hypothesized that troop cohesion and officer and buddy support would prevent the onset of acute PTSD, and thus be another factor differentiating between chronic and delayed onset PTSD. Our hypothesis is that chronic PTSD sufferers would report less unit cohesion and less instrumental and emotional support of officers and buddies than delayed onset PTSD and non-PTSD control subjects. As for delayed onset PTSD and non-PTSD control subjects, we expect no difference in unit environment.

Questionnaires

Military Company Environment. Social support during the Lebanon war was assessed by 39 yes/no questions. The questions were constructed on the basis of the Military Company Environment Inventory (MCEI; Moos, 1973) and adapted to the characteristics of the Israeli army. Soldiers were required to answer each question in relation to their military company during the Lebanon War (1982).

This scale is composed of four different factors (Moos, 1973). The first factor comprises nine items which assess the extent to which soldiers emotionally support each other. The second factor comprises 16 items which assess the extent to which soldiers felt their officer are supportive. The third factor comprises 9 items which assess the extent to which soldiers are involved in company activities. Finally, the last factor comprises 5 items which are related to keeping the company functioning in an orderly, organized, and coherent way. Alpha coefficients for the Moos' factors ranged between .71 and .83, indicating high internal consistency. Four scores were computed averaging items belonging to the the respective factors.

Perceived Stress. Subjective stress was assessed by asking soldiers to indicate how threatening they felt their battle experiences were. Responses were made on a 5-point scale ranging from "very low threat" to "very high threat". This item reflects the subjective appraisal of threat in battle and was similar to that used by Green, Grace, and Gleser (1985).

Feelings and thoughts during battle. This questionnaire was designed to examine soldiers' wartime feelings and opinions about battle conditions, the army as a whole, and their units. In the absence of any ready made questionnaire, one was constructed for the study.

The questionnaire contains 29 statements. The respondent is asked to indicate whether or not each item accurately reflects his feelings about his war experiences. The questionnaire includes items such as "Tactical errors were made in the battles in which I fought", "The battles in which I fought were essential to the outcome of the war", as well as items as to the justness of the war, such as "During the war, I believed that the war was necessary for the security of the country".

The questionnaire also assesses the soldier's opinions of the Israeli Defense Forces by means of items such as, "The backup units performed effectively", and "We were equipped for the battles in which I fought"; and by means of items on the readiness of the units, such as "My unit was well prepared for the battles it fought".

The stressfulness of the combats was examined by items such as, "Acquaintances or close friends of mine were wounded in battle". Feelings during and about the war were ascertained by items such as "I felt very lonely during the war", and "I feel guilty that friends of mine were killed or wounded"

Results

In order to examine the association between battle-related variables and delayed PTSD, we compared (a) the perceived intensity of stress during battle, (b) the perceived environment of the military company during the Lebanon War (Moos scale), and (c) the feelings and thoughts during battles of the three study groups (control, chronic PTSD, and delayed PTSD). These comparisons were performed through one-way analyses of variance (ANOVAs).

Perceived Battle Stress. Table 6 presents means, standard deviations, and F-ratios of the perceived stress during battle in each study group. Higher scores reflect more perceived stress.

Table 6

Means, SD, and F-ratios of Perceived stress in battle in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Perceived stress					21.14**
	Mean	3.18	2.40	3.27	
	SD	0.76	0.97	0.87	

Notes: ** $p<.01$

The ANOVA yielded significant differences among the study groups in perceived stress during battle. A Scheffe test yielded that delayed and chronic PTSD subjects perceived a similar level of stress during battle.

Both delayed PTSD subjects and chonic PTSD subjects reported having experienced more threatening situations during battles than control subjects. That is, delayed PTSD was associated with high perceived stress in battle, which was similar to that experienced by chronic PTSD cases.

Company environment. Table 7 presents means, standard deviations, and F-ratios of the four factors of the Military Company Environment Inventory: peer cohesion, officer support, personal involvement, order and organization. Higher scores reflect more peer cohesion, more officer support, more involvement, and more order and organization.

Table 7

Means, SD, and F-ratios of the Military Company Environment scales in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Peer Cohesion					1.74
	Mean	0.71	0.79	0.74	
	SD	0.26	0.21	0.28	
Officer Support					3.62*
	Mean	0.74	0.84	0.77	
	SD	0.22	0.21	0.27	
Involvement					0.49
	Mean	0.67	0.71	0.69	
	SD	0.26	0.26	0.26	
Order and organization					1.13
	Mean	0.69	0.76	0.69	
	SD	0.31	0.31	0.31	
MANOVA					1.09

Notes: * $p<.05$

The ANOVA yielded significant differences among the study groups in the officer support factor. A Scheffe test yielded that delayed and chronic PTSD subjects perceived similar officer support during battle. Both delayed PTSD subjects and chonic PTSD subjects reported having

received less officer support during battle than control subjects. That is, delayed PTSD was associated with low officer support in battle, which was similar to that experienced by chronic PTSD subjects.

Battle-related feelings and thoughts. Table 8 presents means and F-ratios of the feelings that reached statistical significance in the ANOVAs. Higher scores reflect more soldiers reporting that feeling or thought.

Table 8

Means and F-ratios of battle-related feelings and thoughts in each study group

	Study groups			
	Chronic PTSD	Control	Delayed PTSD	F
The army is caring of me	0.10	0.07	0.28	4.18*
Loneliness	0.54	0.15	0.48	10.70**
Guilt feelings	0.17	0.04	0.15	3.33*
The army is in control	0.72	0.67	0.90	3.95*
Thought about dead buddies	0.70	0.42	0.66	4.26*
MANOVA (58,212)				1.63**

Notes: * $p<.05$; ** $p<.01$

The MANOVA yielded significant differences among the study groups in battle-related feelings and thoughts. The univariate ANOVAs revealed that this multivariate effect was significant in the following items: the army is caring of me, loneliness, guilt feelings, thoughts about dead buddies, and feelings of having control over the events.

Scheffe tests for loneliness, guilt feelings, and thoughts about death of buddies found the same pattern of differences among the study groups. It was found that delayed and chronic PTSD subjects reported similar loneliness, guilt feelings, and thoughts about dead of buddies. Both delayed and chronic PTSD subjects reported having experienced more loneliness, guilt feelings, and thoughts about dead buddies during battle than control subjects. That is, delayed PTSD was associated with frequent experiences of loneliness and survivor guilt, a pattern of battle-related feelings similar to that exhibited by chronic PTSD cases.

The Scheffe tests for "the army is caring of me" and "I feel the army is in control over the sequence of events" yielded a somewhat different pattern of group differences. Chronic PTSD and control subjects were similar in these feelings. However, more delayed PTSD subjects reported these feelings than control and chronic PTSD subjects. That is, delayed PTSD was associated with more frequent feelings that the army cares and is in control.

Summary

Contrary to expectations, results showed that the delayed PTSD casualties were similar to the chronic PTSD casualties and different from the controls in their report of battle related variables. Both delayed and chronic PTSD subjects reported more stressful battle events, less social support and more feelings of loneliness and guilt on the battlefield than the non-PTSD controls. Apparently, combat experiences cannot explain why the onset of the traumatic response is delayed. Indeed, the fact that delayed PTSD subjects reported external and

internal battle stresses similar to those reported by chronic PTSD subjects suggests that the seeds for their PTSD were already planted in combat.

There were, however, two connected battle related experiences that did distinguished the delayed PTSD group. More delayed PTSD subjects than either chronic or control subjects reported feelings the the army cared about them and that the army was in control. The feeling that a stronger power was concerned with them and able to protect them seem to have helped delayed PTSD subjects to deal with the stress of combat. Their PTSD developed only after they were discharged and could no longer rest on the assurance provided by their being part of a powerful and supportive military establishment.

Personal resources and delayed onset PTSD

Personality resources may also contribute to whether PTSD develops around the time of combat or after a latency period. These resources involve the way subjects perceive, explain, and deal with stressful events that can induce emotional imbalance. The current chapter assesses the relationship of three personal resources to delayed onset PTSD: coping strategies, locus of control, and attributional style. These personality resources might help determine whether or not subjects exposed to the stress of combat break down immediately, and thus differentiate between chronic and delayed PTSD cases. Moreover, it is possible that these personality resources help determine whether or not subjects exposed to the stress of combat break down after homecoming, and thus differentiate between delayed PTSD cases and non-PTSD subjects.

Coping styles. Coping style may help mediate the detrimental effect of stress (Pearlin & Schooler, 1978). Coping consists of the cognitions and behaviors that a person uses to assess and reduce stress and to moderate the tension that accompanies it (Billings, Cronkite & Moos, 1983). In other words, coping is behavior designed to fill two functions: a. a problem-focused function -- channeling resources to solve the stress creating problem; b. an emotion-focused function -- easing the tension aroused by the threat by means of intrapsychic activity, such as denying or changing one's attitude towards the threatening circumstances (Lazarus & Lounier, 1978). People tend to combine these two types of coping in keeping with their personalities (Folkman & Lazarus, 1980) and in accordance with the context and the specific problem with which they are dealing (Folkman & Lazarus, 1985; Pearlin & Schooler, 1978).

Numerous studies have documented the importance of individual coping efforts in helping adults maintain reasonable levels of emotional well-being in the face of adversity (e.g., Cohen & Lazarus, 1979; Moos, 1982; Pearlin, Morton, Menagham, & Mullin, 1981). Specific types of coping strategies are more or less effective depending on the type of stress being faced. Pearlin and Schooler (1978) found that coping strategies involving commitment and engagement with others were most effective in dealing with stress arising in close interpersonal relations. In contrast, cognitive manipulations that distanced the person from the problem were more effective for stresses in the occupational and economic areas, domains more impersonal and less amenable to control (Pearlin et al., 1981). Folkman and Lazarus (1980) found that emotion-focused coping was more likely to be used than problem-focused coping for health problems, especially when the problem was appraised as uncontrollable. In stressful situations that are uncontrollable, strategies that involve compromise with or temporary distortions of reality, which might be considered inferior by traditional psychological theories (e.g., Vaillant, 1977), might well be effective adaptations (Lazarus, Kanner, & Folkman, 1980). On the other hand, according to Folkman (1984) and Mitchell, Cronkite & Moos (1983), the optimal coping style for dealing with controllable life events, like those that the soldier might encounter after he returns from the war, consists of problem focused coping.

Differential coping capabilities may explain why stress reactions are delayed in many veterans. Combatants who employ problem-focused coping may, in fact, react effectively to the immediate stress of combat. They

may not break down as long as there is something concrete "to do." Similarly, they would react effectively upon homecoming, when reintegration to social and family life requires active and instrumental coping. In contrast, combatants who rely excessively on emotion-focused coping strategies may have less free énergy for dealing with the problems raised by combat and by the requirements of social reintegration following war.

On this basis, we hypothesize that the use of more problem-focused coping and less emotion-focused coping may prevent the development of PTSD. Chronic PTSD sufferers would report using more emotion-focused coping and less problem-focused coping than delayed PTSD and non-PTSD control subjects. However, the fact that delayed PTSD cases break down after homecoming may reflect the insufficient use of problem-focused strategies. Thus, we hypothesize that delayed PTSD subjects would report more emotion-focused coping and less problem-focused coping than non-PTSD control subjects. That is, the coping strategies of delayed PTSD sufferers may be sufficient for delaying the onset of PTSD but not for preventing it totally.

Locus of control. Locus of control is defined as internal when the person tends to attribute environmental events to himself, and as external when the person attributes them to things outside his power (Rotter, 1966; Lefcourt, 1976; Strickland, 1978). Strickland suggests that internal locus of control, as compared to external, improves health because it is associated with preventive behavior and greater resistance to psychological dysfunctions. Most of the research support Strickland's view: In contrast to people with external locus of

control, people with internal locus of control express greater motivation to take anti-flue inoculations (Debbs and Kirscht, 1971), tend more to use safety belts when driving (Williams, 1972a), are more likely to have regular dental examinations (Williams, 1972b), are more successful in weight reduction programs (Balch & Ross, 1975), and obey doctors' orders and persist in required medical treatment more (Strickland, 1978).

In the area of mental health, it was found that people with internal locus of control suffered less from severe psychiatric disorders (Lefcourt, 1976), especially from chronic depression (Abramson, Seligman & Teasdale, 1978). In light of these findings, it may be hypothesized that internal locus of control may delay and/or prevent the onset of PTSD following combat.

We hypothesize that (a) chronic PTSD sufferers would report less internal locus of control -- which may contribute to the immediate onset of PTSD -- than delayed PTSD and non-PTSD control subjects; (b) delayed PTSD sufferers would report less internal locus of control than non-PTSD control subjects. This pattern might indicates that the internal locus of control of delayed PTSD sufferers is sufficient for delaying the onset of PTSD but not for preventing it entirely.

<u>Attributional style</u>. Another personality factor that may play a significant role in the development of combat-related PTSD is the way subjects explain the occurrence of good and bad events. Recent research suggests an intriguing link between attributional style and psychological adjustment following trauma (Abramson, Seligman, & teasdale, 1978; Anderson & Arnoult, 1985; Bulman & Wortman, 1977; Janoff-Bulman, 1979).

According to Weiner's attributional theory (1979; 1985), people usually ask themselves why events they experience occur. Their causal explanations have been suggested to vary along three dimensions. On the locus dimension, internal causes are personal characteristics and external causes are environmental factors. On the stability dimension, stable causes remain the same over time, whereas unstable causes may change with time. The location of a cause on the controllability dimension indicates the extent to which a cause is perceived as subject to personal control.

The various attributional dimensions proposed by Weiner may be associated with the development of PTSD. combat. More specifically, the attribution of good events to uncontrollable, external and unstable causes, and bad events to uncontrollable, internal and stable causes may be associated with important features of the PTSD syndrome. The attribution of events to uncontrollable causes has been found to lead to reduced involvement with the external world (Langer & Rodin, 1976), which is one the DSM-III criteria for diagnosis of PTSD. External attribution for good events combined with internal attribution for bad events has been found to wear down the individual's self esteem (Metalsky, Abramson, Seligman, Semmel, & Peterson, 1982); and lowered self-esteem is a feature our research team has found to be prevalent among PTSD veterans (Solomon, Schwarzwald, & Weisenberg, 1985). The attribution of good events to unstable causes and bad events to stable causes has been shown to promote depressive cognitions (Peterson & Seligman, 1984), a DSM-III associated feature of PTSD.

Research has consistently shown that this self-defeating attributional style is associated with psychopathology. Janoff-Bulman (1979) found that rape victims who develop depression attribute bad events to more characterological (internal, stable, and uncontrollable) causes than those who do not. Metalsky, et al. (1982) provide support for a diathesis-stress model, where failure in a midterm exam (stress) produces a subsequent depressive mood only among students who have a self-defeating attributional style (diathesis). Affleck, Allen, McGrade & McQueeney (1982) found that mothers who explain their infant's complications in terms of uncontrollable causes reported more mood disturbances than did mothers who explained the same complications in terms of controllable causes. Similarly, Tennen, Affleck, Allen, McGrade, & Ratzan (1983) found that among children with diabetes, those who explained their illness in terms of uncontrollable causes were rated by their physicians as coping worse with it than children who explained it in terms of controllable causes.

On this basis, we hypothesize that (a) chronic PTSD sufferers would make more maladaptative causal attributions for good and bad events than delayed PTSD and non-PTSD control subjects; an attributional style which might contribute to the immediate onset of PTSD. (b) Delayed onset PTSD sufferers would make more maladaptative causal attribution for good and bad events than non-PTSD control subjects; an attributional style which is efficient for delaying the onset of PTSD but not for preventing it.

Questionnaires

Coping Strategies. Coping was assessed with a 44-item scale which is a shortened version of the Way of Coping Checklist formulated by Folkman & Lazarus (1980). The 44-item self-report measure retains the broad range of cognitive and behavioral strategies people use to deal with stressful events. In the present study, the 44-item scale was translated into Hebrew by three highly experienced bilingual psychologists and pre-tested in a small sample of soldiers.

In this study, the respondent was asked to recall stressful episodes that had taken place in the previous three months. Then, the subject was presented with the 44-item scale. For each item, he was asked to indicate on a 4-point Likert scale (1=not used; 4= used a great deal) the extent which he tends to act in the way described when confronted with the stressful event.

To determine the factor structure of the instrument, factor analyses with Varimax rotation were performed on a sample of several hundred front-line soldiers who participated in the Lebanon War. A four-factor solution yielded the most conceptually interpretable set of factors (66% of explained variance). Based on this analysis, we computed four scores by averaging items which load higher than .40 in a factor. These four factors, similar to those reported by Folkman & Lazarus (1985), were characterized as follows:

1. Problem-focused coping: This factor explained 37% of the variance and included 15 items, such as " I try to analyze the problem in order to understand it better". Crombach Alphas for the 15 items were .88.

2. Emotion-focused coping: This factor explained 10% of the variance and included 12 items, such as "I wish I could change how I feel", "I try to look in the bright side of things". Crombach Alphas for the 12 items were .82.
3. Help seeking: This factor explained 8.7% of the variance and included 8 items, such as "I talk to someone to find out more about the situation". Crombach Alphas for the 8 items were .86.
4. Distancing: This factor explained 6.8% of the variance and included 5 items, such as "I try to forget the whole thing". Crombach Alphas were .74.

Locus of Control. Control expectancies were assessed by a shortened version of the classic Rotter Locus of Control Scale (1966). The present Hebrew version consisted of the most reliable fifteen items. Internal consistency among these items was high (Crombach Alpha= .74). The I-E expectancy score reflected the number of internal answers on the 15 items.

Attributional style. Attributional style was measured by an 8-item self report questionnaire similar to that used by Arkin & Maruyama (1979). The questionnaire was divided into two sets of four questions each. In each set, subjects were asked to recall a failure (bad event) or successful experience (good event) that had occurred in the last three months and to rate the influence of each of four presented attributional factors on the occurrence of the event. For failure, the four factors were lack of ability, lack of effort, bad luck, and the objective difficulty of the situation. For success, the four items were ability, good luck, effort, and low difficulty. The four attribution

items for each type of event were rated on a 7-point scale from 1 (not at all important as a cause) to 7 (very important as a cause).

To compute scores on the stability, locus, and controllability dimensions, it was necessary to place each attribution item in each dimension. This task was carried out by asking a sample of sixty undergraduate Psychology students to judge whether each of the four factors was stable or unstable, internal or external, and controllable or uncontrollable. Most of the subjects (above 70%) judged ability as internal, stable and uncontrollable; effort as internal, unstable, and controllable; luck as external, unstable, and uncontrollable; and difficulty as external, stable, and uncontrollable.

The attribution items were then combined to create three distinct dimensions -- stability, locus, and controllability -- separately for the attribution of good and bad events. The internal-external measure was formed by subtracting the average of difficulty and luck attributions from the average of ability and effort attributions. The stable-unstable measure was formed by subtracting the average of difficulty and ability attributions from the average of luck and effort attributions. The controllable-uncontrollable measure was formed by subtracting effort attribution from the average of ability, luck, and difficulty attributions. Positive scores (between 0 and +6) for these measures reflect predominantly internal, stable, and uncontrollable attributions, whereas negative scores (between 0 and -6) reflect predominantly external, unstable, and controllable attributions. Following this, we created six new scores which we will refer to by the following labels: internality, stability, and controllability

attributions for good events, and internality, stability, and controllability attributions for bad events.

Results

In order to examine the association between personal resources and delayed PTSD, we compared (a) locus of control (Rotter' scale), (b) coping strategies (Ways of coping factors), and (c) attributional style for good and bad events of the three study groups (control, chronic PTSD, and delayed PTSD). These comparisons were performed through one-way analyses of variance (ANOVAs).

Coping strategies. Table 10 presents means, standard deviations, and F-ratios of the four coping strategies (problem-focused, emotion-focused, denial, and help-seeking) in each study group. Higher scores reflect more frequent use of a particular coping strategy.

Table 9

Means, SD, and F-ratios of Ways of Coping factors in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Problem-focused coping					3.02*
	Mean	2.90	3.16	3.06	
	SD	0.68	0.61	0.57	
Emotion-focused coping					31.68**
	Mean	2.96	2.20	2.65	
	SD	0.53	0.59	0.59	
Distancing coping					8.02**
	Mean	2.71	2.24	2.49	
	SD	0.59	0.80	0.68	
Help-seeking					0.21
	Mean	2.97	2.90	2.95	
	SD	0.69	0.71	0.68	
MANOVA (8,410)					9.43**

Notes: * $p<.05$; ** $p<.01$

As can be seen in Table 9, the MANOVA yielded significant group differences in the coping strategies. The univariate ANOVAs revealed that the significant multivariate effect was derived from significant differences in the use of problem-focused, emotion-focused, and

distancing strategies. No significant difference was found in the use of help-seeking.

A Scheffe test for emotion-focused and distancing coping revealed that delayed PTSD subjects reported significantly more frequent use of emotion-focused and distancing coping than control subjects. However, chronic PTSD casualties reported significantly more frequent use of emotion-focused and distancing coping than delayed PTSD and control subjects.

A Scheffe test for problem-focused coping revealed that delayed PTSD subjects did not differ from control subjects in the use of this strategy. Both delayed PTSD and control subjects reported significantly more frequent use of problem-focused coping than chronic PTSD subjects.

Taken as a whole, delayed PTSD subjets used more emotion-focused and distancing coping than the controls, but not more problem-focused coping. On the other hand, the delayed PTSD subjects used less emotion-focused coping and distancing coping and more problem-focused strategies than chronic PTSD subjects.

Locus of control. Table 10 presents means, standard deviations, and F-ratios of the locus of control score in each study group. Higher scores reflect a more internal locus of control.

Table 10

Means, SD, and F-ratios of Rotter's locus of control in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Internal locus of control					14.74**
	Mean	4.48	6.54	6.54	
	SD	2.14	2.37	2.51	

Notes: ** $p<.01$

The ANOVA yielded significant differences among the study groups on the Rotter's locus of control score. A Scheffe test demonstrated that the locus of control of delayed PTSD subjects was similar to that of control subjects. Both delayed PTSD subjects and control subjects reported having more internal locus of control than chronic PTSD cases. That is, whereas chronic PTSD subjects showed more external locus of control, delayed PTSD subjects believed that their actions could control the environment.

Attributional style for negative events. Table 11 presents means, standard deviations, and F-ratios of the three dimensions of causal attribution for negative events (internality, stability, controllability) in each study group. Higher scores reflect a more internal, stable, and uncontrollable attribution for negative events.

Table 11

Means, SD, and F-ratios of causal attributions for negative events in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Internality dimension					2.13
	Mean	0.39	0.66	0.67	
	SD	1.01	0.90	0.82	
Stability dimension					10.63**
	Mean	0.06	-0.43	0.09	
	SD	0.77	0.65	0.73	
Controllability dimension					9.26**
	Mean	-0.15	-0.89	-0.49	
	SD	0.96	1.08	0.97	
MANOVA (6,388)					4.96**

Notes: ** $p<.01$

The MANOVA yielded significant differences among the study groups in the set of attributional dimensions for negative events. The univariate ANOVAs revealed that this significant multivariate effect was derived from significant differences in the stability and controllability dimensions. No significant difference was found in the analysis of the internality dimension.

A Scheffe test for the stability dimension revealed that delayed PTSD subjects did not differ in their attribution of negative events to stable/unstable causes from chronic PTSD subjects. However, both delayed PTSD subjects and chonic PTSD subjects attributed negative events to more stable causes than control subjects.

A Scheffe test for the controllability dimension yielded that delayed PTSD cases attributed negative events to more uncontrollable causes than control subjects. However, chronic PTSD casualties attributed them to more uncontrollable causes than both delayed PTSD cases and control subjects. That is, delayed PTSD subjects attributed negative events to uncontrollable causes more than non-PTSD subjects, but less than chronic PTSD casualties.

Taken as a whole, delayed PTSD cases attributed negative events to more stable and uncontrollable causes than control subjects. However, chronic PTSD subjects attributed negative events to still more uncontrollable causes than delayed PTSD subjects. Delayed PTSD casualties did not differ from chronic casualties in their attribution of bad events along the stability dimension.

Attributional style for positive events. Table 12 presents means, standard deviations, and F-ratios of the three dimensions of causal attribution for positive events (internality, stability, controllability) in each study group. Higher scores reflect the attribution of positive events to more internal, stable, and uncontrollable cause.

Table 12

Means, SD, and F-ratios of causal attributions for positive events in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Internality dimension					3.35*
	Mean	1.04	1.51	1.42	
	SD	1.19	0.99	1.17	
Stability dimension					0.10
	Mean	0.02	0.04	0.08	
	SD	0.83	0.56	0.67	
Controllability dimension					5.96**
	Mean	-0.66	-1.18	-1.01	
	SD	0.99	0.70	0.97	
MANOVA (6,388)					2.36*

The MANOVA yielded significant differences among the study groups in the set of attributional dimensions for positive events. The univariate ANOVAs revealed that this significant multivariate effect was derived from significant differences in the internality and controllability dimensions. No significant difference was found in the stability dimension.

A Scheffe test revealed a similar pattern of group differences for both the internality and controllability dimensions. It was found that

delayed PTSD subjects did not differ in their attribution of positive events along the internality and controllability dimensions from control subjects. However, both delayed PTSD subjects and control subjects attributed positive events to more internal and controllable causes than chronic PTSD cases. That is, whereas chronic PTSD was associated with an attribution of positive events to more external and uncontrollable causes, delayed PTSD was associated with more internal and controllable attributions.

Summary

Taken as a whole, the results were in line with our hypotheses. First, delayed PTSD subjects appear to deal with stress in more active and problem-solving ways than chronic PTSD subjects. Delayed PTSD casualties showed a more internal locus of control, used more problem-focused strategies as opposed to intrapsychic strategies, and adopted a more adaptative attributional style than chronic PTSD casualties. Second, delayed PTSD casualties showed less internal locus of control, less frequent use of problem-focused coping, more frequent use of emotion-focused coping, and a less adaptative attributional style than control subjects. That is, although delayed PTSD casualties had a more effective way of dealing with stress than the chronic PTSD subjects, their attitudes and coping strategies were less effective than those of the controls. control subjects. That is, the personality resources of the delayed PTSD subjects appear to be sufficient for delaying the onset of PTSD but not for preventing it entirely.

Stressful life events at homecoming and PTSD

Both battle-related factors and personality resources help explain why, unlike chronic PTSD casualties, delayed PTSD casualties did not develop acute PTSD during combat. However, these factors, particularly the battle-related ones, do not explain why, unlike the non-PTSD control subjects, the delayed PTSD subjects did develop PTSD at homecoming. In this chapter, we present a factor that may differentiate between delayed onset PTSD and control subjects: stressful life events at homecoming.

All people experience life events or life changes to a certain extent during the natural course of life. Research has demonstrated a temporal association between increase of life changes and the onset of a variety of illness. A number of clinical studies (Brown et al., 1973, 1975, 1977, 1978; Mueller et al., 1978; Paykel, 1978) comparing life events experienced by psychiatric patients and normal controls reported that an excess of stressful life events was associated with patienthood.

A number of community studies (Brown et al., 1975; Dohrenwend & Dohrenwend, 1978; Mueller et al., 1977; Myers et al., 1971, 1972) reported an association between the magnitude of stressful life events and a variety of distinct psychiatric symptoms and disease entities (e.g., Brown & Harris, 1978).

The detrimental effects of life events on mental health can be explained with the help of Selye's (1976) theory of adaptation. Selye contends that the experience of numerous significant life changes within a short period of time requires the expenditure of high levels of emotional energy for readjustment. Such expenditure depletes peoples' energy reserves, weakening their resilience and rendering them more

vulnerable to future adversity. Silver and Wortman (1980), in an extensive review article, contend that traumatic experiences often render the afflicted individual psychologically vulnerable in face of future adversity, even where they appear to have overcome the trauma.

Life events, especially those that remind people of their earlier stressful experience, may activate and unmask latent psychopathology (Weinman, Gerber, Baltim, & Askin, 1975). Such processes have been recognized to operate in delayed PTSD as well. Recently, Christenson and his colleagues (Christenson, Walker, Ross, & Allan, 1981) reported that losses associated with involutional age, including parental loss, children leaving home, pending retirement and increasing medical disability, served as triggers that activated and unmasked dormant war-related traumatic stress disorders, even though latent PTSD symptoms, such as nightmares about World War II, that were dormant in their patients for many years. This observation is consistent with a 20-year follow-up study of World War II veterans in which symptoms of war-related PTSD became evident during the aging process (Archibald & Tuddenham, 1965).

Clinical impressions suggest that homecoming presents the returning veteran with considerable demands for readjustment and reintegration into his family, social and economic networks. For example, a veteran who had engaged in actions against women and children may find the transition to the role of husband and father particularly difficult. Clinical observations have found stress reactions activated or exacerbated by a wife's pregnancy, a birth of a child, or even the performance of common social chores such as caring for young children

(Haley, 1975). Thus, the vulnerable veteran who had exhausted his coping resources in war is unable to withstand the added pressures, and might develop delayed PTSD.

On this basis, it is hypothesized that veterans who experience a high magnitude of life events in the post-war period will be more likely to develop delayed onset PTSD. More specifically, subjects who developed delayed PTSD following the war are expected to report more negative life events in the post-war period than subjects who participated in the war but did not develop post-war PTSD (control subjects). Delayed PTSD are not expected to differ from chronic PTSD subjects in the number of negative life events they report since the experience of negative life events at homecoming may trigger delayed PTSD as well as may prevent recovery from chronic PTSD.

Questionnaire

Life events were assessed by a short questionnaire especially devised for the present study. Since this study is part of a larger health assessment project in which subjects were required to fill out a large battery of questionnaires, it was deemed necessary to employ a brief inventory here. Three experienced researchers familiar with life in Israel reviewed a number of life events inventories and compiled a list of 36 life events. The 36 events selected cover six areas: family, work, health, education, and personal and social life.

Subjects were asked to indicate whether or not they experienced each event during the last twelve months. For each positively endorsed event, subjects were asked to indicate whether the event was negative or positive for them.

The following scores were computed for each subject: (a) the total number of self-defined negative events, (b) the number of negative events reported in each of the six areas of life covered, (c) the total number of self-defined positive events, (b) the number of positive events reported in each of the six areas of life covered.

Results

In order to examine the association between life events after the war and the onset of delayed PTSD, we compared the three study groups in (a) the reported frequency of negative life events, and (b) the reported frequency of positive life events. These comparisons were performed through one-way analyses of variance (ANOVAs).

Negative life events. Table 13 presents means, standard deviations, and F-ratios of the total number of negative events and the number of negative events reported by each study group in each are of life. Higher scores reflect higher frequency of experienced negative events.

Table 13

Means, SD, and F-ratios of negative life events in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Total negative events					35.43**
	Mean	3.85	1.15	0.85	
	SD	3.47	1.45	1.61	
Family events					13.52**
	Mean	0.70	0.38	0.14	
	SD	0.86	0.59	0.39	
Work events					15.75**
	Mean	0.73	0.11	0.24	
	SD	0.96	0.36	0.64	
Health events					9.94**
	Mean	0.48	0.18	0.08	
	SD	0.73	0.48	0.41	
Personal events					9.13**
	Mean	0.56	0.22	0.14	
	SD	0.87	0.51	0.42	
Social events					26.93**
	Mean	1.07	0.18	0.21	
	SD	1.21	0.51	0.58	
Study events					7.32**
	Mean	0.32	0.08	0.03	
	SD	0.76	0.28	0.17	
MANOVA (12,418)					6.69**

Notes: ** $p<.01$

The ANOVAs yielded significant differences among the study groups in the total number of negative events and in the number of negative events reported in each are of life. Scheffe tests demonstrated that in general delayed PTSD subjects experienced about the same magnitude of negative life events as control subjects. Both delayed PTSD subjects and control subjects reported fewer negative events during the previous year than chronic PTSD cases. That is, whereas chronic PTSD was associated with an increase in negative events in all areas of life, delayed PTSD was not.

Positive life events. Table 14 presents means, standard deviations, and F-ratios of the total number of reported positive events and the number of reported positive events in each area of life in each study group.

Table 14

Means, SD, and F-ratios of positive life events in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Total positive events					0.70
	Mean	1.53	1.34	1.23	
	SD	1.59	1.35	1.77	
Familial events					1.79
	Mean	0.33	0.27	0.15	
	SD	0.65	0.56	0.47	
Work events					0.37
	Mean	0.41	0.42	0.51	
	SD	0.72	0.64	0.79	
Health events					0.30
	Mean	0.04	0.01	0.03	
	SD	0.26	0.12	0.24	
Personal events					0.45
	Mean	0.45	0.42	0.35	
	SD	0.67	0.69	0.59	
Social events					1.33
	Mean	0.19	0.08	0.14	
	SD	0.46	0.36	0.39	
Study events					1.45
	Mean	0.11	0.12	0.04	
	SD	0.31	0.37	0.20	
MANOVA (12,418)					0.99

As can be seen in Table 14, the ANOVAs yielded nonsignificant differences among the study groups on all the positive life events scores. This lack of differences implies that positive life events after the war are not associated with either chronic or delayed PTSD.

Summary

Contrary to expectations, the data showed that the delayed PTSD subjects were similar to non-PTSD controls in the magnitude of life events they reported. Both groups endorsed fewer life events than the chronic PTSD subjects. This tells us that stress after the war is probably not a major component in the development of delayed PTSD. At most, life events may retard the recovery of chronic PTSD casualties.

Social Resources and delayed onset PTSD

Another post-war factor that may be relevant for explaining the development of delayed-onset PTSD, and thus for differentiating between delayed PTSD and non-PTSD control subjects, is the social support the soldier receives after the war. Social support, it has been suggested, may attenuate the noxious effects of stress (Cassel, 1976; Cobb, 1976) by making subjects feel that they are loved and esteemed (Caplan, 1974; Cobb, 1976). By fostering these feelings, social support gives individuals the sense that they can better cope with stressful circumstances. The protective role of social support has also been substantiated with regard to numerous psychiatric disorders (Brown & Harris, 1978; Mueller, 1978; Paykel, 1978).

Social support may be especially important during a crisis (Hobfoll & Lieberman, in press; Hobfoll & Walfisch, 1984). Hendin and Haas (1984) noted that combat adaptation and resistance to post-combat stress disorder are strongly linked to family environment. They found that veterans with a stable, supportive family were less likely to develop PTSD than veterans who came from markedly disturbed family situations. The presence of an integrated, supportive family protected Vietnam veterans against the development of combat-related PTSD.

Delayed PTSD may be related to soldiers' interaction with the home environments. Grinker and Spiegel (1945), in the classic book Men Under Stress, suggest that illusions about the utopia which awaits the soldiers at home are often shattered, and became a source of stress when this happens. Reintegration was particularly distressing for many Vietnam veterans. who experienced many social and psychological

difficulties at homecoming. Unlike veterans of other wars, returning Vietnam veterans did not receive a "heroe's welcome," but were met with anger and rejection. Faced with a hostile society and limited support for reintegration, men became increasingly distressed and large numbers subsequently exhibited psychiatric and social impairments.

Since intimate ties are thought to temper the pathogenic affects of stress, we hypothesize that the onset of delayed PTSD will be negatively related to the soldier's: (1) satisfaction with his the social network; (2) feelings of social acceptance and integration by intimates and community agencies; and (3) a cohesive, expressive and flexible family environment.

More specifically, it is expected that subjects who developed delayed PTSD following the war would report fewer social resources than subjects who participated in the war but did not develop PTSD. On the other hand, delayed PTSD and chronic PTSD subjects are expected to report similar social resources, since the lack of social support acts not only as a trigger for delayed PTSD but also as a maintainance agency of chronic PTSD. Both types of PTSD subjects are expected to report fewer social resources than non-PTSD control subjects.

Questionnaires

Social Reintegration. The Social Reintegration Scale was devised by Laufer, Yager, Frey-Wouters, & Donellan (1981) to assess soldiers' difficulties in readjustment following homecoming. The questionnaire presents eight statements to which the respondent is asked to indicate, on a 5-point scale ranging from "disagree strongly" to "agree strongly",

to what extent he agrees or disagrees with each. In the present study, the scale was translated into Hebrew by three highly experienced bilingual psychologists and further pre-tested on a small sample of soldiers with favorable results.

Following Laufer et al. (1981), the following two scores were computed:

1. Feelings of alienation at homecoming. This score was the mean of the following three items: 1. People at home just didn't understand what you had been through in the armed forces. 2. Having been away for a while you felt left out of everything that was going on at home. 3. Readjusting to civilian life was more difficult than most people imagine. The internal consistency among those items was high (Alpha= .92).
2. Belief that people and government support veterans. This score was the mean of the following five items: 1. Our administration have done and are doing all they can to help veterans return to civilian life. 2. The Israeli people have done everything they can to make veterans feel at home again. 3. Most people at home respect you for having served your country in the armed forces. 4. When you got home, you didn't want any thanks for what you did for your country. 5. People at home made you feel proud to have served your country in the army. Internal consistency among the items was high (Alpha=.88).

<u>UCLA Loneliness scale</u>. The revised UCLA loneliness scale (Russell, Peplau, & Cutrona, 1980) consists of 20 items, half reflecting satisfaction with social relationships and half reflecting

dissatisfaction. Subjects were asked to indicate how often they experience the feelings in each item on a 4-point Likert scale (1=not at all, 4=very often). The total score is the mean of all twenty items after the positive worded items were reversed. Higher scores reflect more loneliness. Crombach Alpha for the UCLA scale in the current sample was .86, reflecting high internal consistency.

Social Network Scale. The current social network questionnaire was devised in our laboratory based on Mueller's (1980) Social Network Interview. Subjects received seven questions regarding expressive and instrumental support (e.g., emotional help, financial support) from their network members (e.g., family, friends, acquaintances), and were asked to indicate in a 4-point Likert scale (1=not at all, 4=very much) how much support their network gave them. The total score of social network support was calculated by averaging answers subjects gave to the seven questions. Crombach Alpha for the 7 items was .84, indicating high internal consistency.

Family Environment. The Moos Family Environment Scale was used to assess family atmosphere (Moos & Moos, 1981). This scale is composed of 10 subscales covering three dimensions: Family relations, growth and maintainance. The present study employed only three subscales (each with 9 items) all in the family relationship dimension: cohesiveness, expressiveness, and conflict. Cohesiveness is the degree to which family members feel commited to and help and support each other. Expressiveness reflects the degree of openeness of expression, self-revelation, and the sharing of feelings and upsetting experiences. Conflict relates to the degree to which anger, violence and struggle characterizes the family.

The subjects are presented with one sentence describing families and are asked to indicate whether or not each fits his family. Using the Moos method, three scores, one each for cohesiveness, expressiveness, and conflict, were calculated. Each score represents the average of the items in its category.

The Family Environmental scale has been widely used in research. This multidimensional psychometric scale has a high level of reliability ((7, 19)). The present Hebrew version of the scale also has high levels of reliability (Crombach Alphas= .82, .89, .78 for cohesiveness, expressiveness and conflict, respectively).

Results

To examine the association between social resources and delayed PTSD, we compared (a) the feelings of social alienation at homecoming (Social Reintegration Scale), (b) the feelings of loneliness (UCLA Loneliness Scale), (c) the satisfaction of social networks (Mueller's scale), and (d) the family environment at homecoming (Moos scale) of the three study groups. These comparisons were performed through one-way analyses of variance (ANOVAs).

Social reintegration. Table 15 presents means, standard deviations, and F-ratios of the two factors of the Social Reintegration Scale (social alienation and social disregard) in each study group. Higher scores reflect more social alienation and more social disregard at homecoming.

Table 15

Means, SD, and F-ratios of Social Reintegration Scale in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Social Alienation					26.55**
	Mean	3.22	2.39	3.14	
	SD	0.73	0.76	0.67	
Social disregard					5.08**
	Mean	2.40	2.01	2.36	
	SD	0.85	0.67	0.78	
MANOVA (4,386)					15.27**

Notes: ** $p<.01$

The MANOVA yielded significant differences in the two social reintegration scores of the study groups. The univariate ANOVAs revealed that this multivariate effect was significant in each score. Scheffe tests yielded that delayed PTSD and chronic PTSD subjects had similar feelings of social alienation and social disregard, and more of these feelings than the control subjects. That is, delayed and chronic PTSD were both associated with feelings of social alienation and social disregard upon homecoming from the Lebanon War.

Feelings of loneliness. Table 16 presents means, standard deviations, and F-ratios of the UCLA loneliness score in each study group. The higher the score, the more loneliness.

Table 16

Means, SD, and F-ratios of the UCLA loneliness scale in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Loneliness					22.71**
	Mean	2.44	1.84	2.24	
	SD	0.51	0.52	0.53	

The ANOVA yielded significant group differences in the feeling of loneliness. A Scheffe test yielded that delayed and chronic PTSD subjects felt similar amounts of loneliness, and that both reported stronger feelings of loneliness than control subjects. That is, the statistical analysis demonstrated that both chronic and delayed PTSD were associated with the feeling of loneliness.

Social network. Table 17 presents means, standard deviations, and F-ratios of the social network score in each study group. Higher scores reflect less satisfaction with one's social network.

Table 17

Means, SD, and F-ratios of the Social Network score in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Social Network					12.75**
	Mean	2.50	1.87	2.15	
	SD	0.74	0.75	0.67	

Notes: ** $p<.01$

The ANOVA yielded significant group differences in the social network score. A Scheffe test revealed that delayed PTSD cases reported less satisfaction with their social network than control subjects, and that chronic PTSD casualties reported lesser satisfaction with social network than delayed PTSD subjects. That is, delayed PTSD was associated with dissatisfaction with the social network, but less so than the chronic PTSD.

Family environment. Table 18 presents means, standard deviations, and F-ratios of the three subscales of the Family Environment Scale (cohesion, expressiveness, and conflict) in each study group. Higher scores reflect more cohesion, more expressiveness, and more conflict in the family.

Table 18

Means, SD, and F-ratios of Family Environment Scale in each study group

		Study groups			
		Chronic PTSD	Control	Delayed PTSD	F
Cohesion					11.60**
	Mean	0.66	0.92	0.73	
	SD	0.32	0.16	0.31	
Expressiveness					8.16**
	Mean	0.56	0.76	0.63	
	SD	0.25	0.23	0.27	
Conflict					8.68**
	Mean	0.37	0.22	0.29	
	SD	0.20	0.14	0.18	
MANOVA (6,282)					4.78**

Notes: ** $p<.01$

The MANOVA yielded significant group differences in the family environment. The univariate ANOVAs revealed that the multivariate effect was significant in each of the three scales.

Scheffe tests in the cohesion and expressiveness scores revealed the same pattern of differences. Delayed and chronic PTSD perceived similar amounts of family cohesion and expressiveness, and both perceived less cohesion and expressiveness in their families than control subjects.

That is, delayed PTSD was associated with low family cohesion and expressiveness, just as chronic PTSD was.

As for conflict, a Scheffe test yielded that delayed PTSD and non-PTSD control subjects reported similar levels of family conflict, and that both perceived less conflict in their families than chronic PTSD subjects. That is, unlike chronic PTSD, delayed PTSD was not associated with high levels of family conflict.

Taken as a whole, delayed PTSD cases reported less family cohesion and expressiveness than control subjects. However, these groups did not differ in the family conflict scale. Furthermore, delayed PTSD cases reported less family conflict than chronic PTSD subjects. These two groups did not differ in their family cohesion and expressiveness.

Summary

The data show that delayed PTSD subjects indeed endured more loneliness, less satisfaction with their social networks and more feelings of alienations than the controls. Moreover, their family environments were less cohesive than the controls'. These findings indicate that lack of social support at homecoming plays a role in fostering the delayed onset of PTSD.

General Discussion

The statistical analyses yielded an interesting pattern of results. First, in most of the outcome measures delayed PTSD casualties fill between the chronic PTSD casualties and the controls. Delayed PTSD casualties showed more severe psychiatric symptomatology, more problems in social functioning, less combat-related self efficacy, and stronger intrusion and avoidance of war-related thoughts and images than control subjects. However, their psychosocial status was generally better than that of chronic PTSD casualties. Second, compared to chronic PTSD casualties, delayed PTSD casualties reported more internal locus of control, more frequent use of problem-focused and less frequent use of emotion-focused coping strategies, and a more adaptative attributional style (external-unstable-controllable attributions for failure and internal-stable-controllable attributions for success). Third, compared to control subjects, delayed PTSD casualties reported having experienced more intense battle stress, less social support in battle, and more distressing thoughts and emotions during combat. They also reported less internal locus of control, less frequent use of problem-focused coping, more frequent use of emotion-focused coping, a less adaptative attributional style, and less perceived social support at homecoming than control subjects.

This pattern of findings allows us to answer two important questions. The first is what variables can explain the difference in the time of onset of the PTSD of the chronic and delayed PTSD casualties? In other words, what kepts the delayed casualties from having a stress reaction in combat or soon thereafter? The results rule out both perceived battle

intensity and social support during battle as factors that affect the time of onset, since both chronic and delayed PTSD casualties reported similar levels of battle stress, similar levels of social support, and similar levels of distressing thoughts and emotions during battle.

In contrast, our findings indicate that differences in the personality resources of these two groups may help to explain why the disorder surfaced immediately in one but considerably later in the other. It is possible that while chronic and delayed PTSD casualties were exposed to similarly disturbing battle events, they differ in how they deal with stress. Delayed PTSD subjects appear to deal with stress in more active and problem-solving ways than chronic PTSD subjects. Delayed PTSD casualties search for control, use problem-focused strategies as opposed to intrapsychic strategies, and adopt an optimistic and active attitude toward stressful events (attributing failure to unstable and controllable causes). Chronic PTSD casualties, on the other hand, ruminate about their emotional state at the expense of problem-solving activities, and exhibit a pessimistic and passive attitude toward stressful events. These different ways of dealing with stress have both been found to have distinctive impacts on a variety of psychopathologies (Abramson, Seligman, & Teasdale, 1978; Lazarus & Folkman, 1984; Strickland, 1978) and it seems likely that they would affect the development of PTSD too. It seems that the adaptative manner with which delayed PTSD casualties deal with the stress of combat allowed them to function through the war, while the maladaptative approach of the chronic PTSD casualties did not do.

The second question is what variables can explain why though both the the delayed PTSD and control subjects dealt effectively with the stress of combat, the delayed PTSD casualties broke down upon homecoming? The current findings point to several possibilities. One, delayed PTSD casualties reported having experienced more intense fighting and less social support during battle than control subjects. Although their attitudes and coping style may have enabled them to cope on the battlefield, the stress may have been compounded by events after homecoming, which triggered the onset of the disorder. Two, delayed PTSD casualties showed less internal locus of control, less frequent use of problem-focused coping, more frequent use of emotion-focused coping, and a less adaptative attributional style than control subjects. That is, although delayed PTSD casualties had a more effective way of dealing with stress than the chronic PTSD subjects, their attitudes and coping strategies were less effective than those of the controls. While their way of dealing with stress may have helped them in the short time, in the battlefield, it could not sustain them in the long run. Three, delayed PTSD casualties reported less satisfaction with their social support networks than control subjects. The distress produced by the absence of a satisfactory social network may have contributed to the onset of the disorder.

The data do not provide any evidence regarding the relative contribution of each of these alternatives to explaining the development of delayed PTSD. However, we can speculate the following development: Delayed PTSD subjects seem to have been exposed to high levels of combat stress that they could satisfactorily deal through their personal

resources. At homecoming, they experienced an alienating social environment which compounded the stress of battle. At this point, their coping resources, which had probably been depleted by the high stress of battle, seem to have been inadequate. That is, the onset of delayed PTSD can be explained by the combination of war and civilian stress, with which the veteran's depleted coping resources were unable to deal.

It is important to underscore the tentative nature of our results. All the measures were retrospective recollections taken in a cross-sectional design. All the measures were based on veterans' recollections of combat events and of inner experiences during and after combat. It is not impossible that the recollections were coloured by the veterans' current condition (Brown & Harris, 1978).

In summary, the current study provides important information about the nature and development of delayed PTSD. It brings some tentative explanations for understanding (a) why these casualties did not break down during combat, and (b) why they developed PTSD following the war. However, one should be cautious in interpreting the current findings, since the design is cross-sectional and retrospective in nature. More systematic research is needed to delineate the conditions and factors that lead to delayed PTSD.

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Study Two

DELAYED PTSD: Family Impact Mediation

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Introduction

The Lebanon War, Israel's longest and most controversial war, broke out on June 6, 1982. Following continuous bombardment of Israeli towns in the north, Israeli soldiers crossed the Lebanese border and fought against PLO and Syrian troops. Although the heavy fighting lasted only through several weeks of the summer of 1982, the ceasefire signed in August of that year did not put an end to all hostilities. Israeli soldiers remained in Lebanon, where periodic flareups continued to occur. Soldiers remained at high risk; many lost their lives and others were wounded.

Just as soldiers in other wars, the fighters in Lebanon were exposed to an extremely traumatic experience. The palpable threat to life and limb was doubtless the single most stressful component, but other stresses included the injury and death of fellow fighters, exposure to the horrible sights sounds and smells of war, and lack of food, sleep, drink and other basic physical amenities. These stresses were aggravated by loneliness, lack of social support, social and sexual deprivation, and lack of privacy (Stauffer et al., 1949; Titchener & Ross, 1974).

In the Lebanon War there were also additional stressors. A major one was the confusion engendered by the inability, in many cases, to clearly distinguish between friend and foe. Guerrilla tactics in which fire

could come at any time, from any direction, and by non-uniformed men frequently made it difficult for Israeli troops to identify the enemy, who sometimes included women and children.

These uncertainties were compounded by the fact that the identity of the enemy changed in mid-course. When Israeli troops first crossed into Lebanon, the farmers in the south welcomed them as liberators from the oppressive domination of the Palestinians, whom they saw as alien intruders. As the war dragged on, however, the same farmers became hostile, and before very long they too were shooting at Israeli forces.

Criticism of the war at home also created stress, not unlike that created by the anti-Vietnam movement. The Lebanon War was the first Israeli war that many people considered a war of choice. While certain segments of the population believed that the war was necessary and justified to rid Israel of the constant threat of Palestinian aggression, others regarded it as uncalled for and wasteful of human life and effort.

All this created an extremely anxiety-provoking ambience, which compounded the stress of combat and increased the risk for psychological breakdown.

The psychological impact of combat stress

The massive pressures of war have both immediate and long-term psychiatric consequences (Grinker & Spiegel, 1945; Figley, 1978). The most common response is labeled posttraumatic stress disorder (PTSD). According to the DSM-III (1980), PTSD is characterized by re-experiencing the traumatic event, numbing of responsiveness to or

reduced involvement with the external world; and a variety of autonomic, dysphoric, and cognitive symptoms.

Combat-related PTSD is characterized by compulsive reexperiencing of the traumatic event in nightmares or in waking scenes and recollections. In extreme dissociative circumstances, the victim acts as if he were reexperiencing the event concretely in the present. Other expressions of PTSD include rigidity, emotional numbing, feelings of alienation, inhibited relations with others, and lack of interest in previously enjoyed activities. PTSD sometimes becomes aggravated by or erupts after exposure to stimuli which recall the traumatic event, such as the sight of blood or loud noises.

The intrapsychic processes of PTSD have been summarized by Horowitz (1982), who claims that PTSD includes two different oscillating tendencies: intrusion and avoidance. Intrusion refers to the penetration of thoughts, images, feelings, and dreams into the individual's consciousness and to a variety of obsessively repetitive behaviors. Avoidance reflects psychic numbing, denial of meanings and consequences, and counterphobic activities related to the stressful life event. The relative salience of intrusion or avoidance is not conceived as constant, but rather as alternating phases in the course of the post-traumatic experience (Horowitz, 1982). Intrusion is considered the initial phase, followed by avoidance. Intrusion and avoidance may then alternate according to the individual's idiosyncretic pattern until working through occurs. Prior research (Schwarzwald, Solomon, Weisenberg, & Mikulincer, 1987) has shown that subjects suffering from PTSD following the Lebanon War reported suffering from more intrusive

thoughts and avoidance tendencies one year following war than non-PTSD veterans.

The PTSD syndrome also includes other psychiatric features that are not essential to diagnosis, but which may appear following certain traumatic situations and in particular populations. The DSM-III labels these symptoms as "frequently associated features". They include anxiety, depression, and symptoms that are highly prevalent among Vietnam veterans, such as irritability accompanied by explosive outbursts of anger. Prior research (Solomon, Mikulincer, & Bleich, in press) has shown that combat-related PTSD casualties reported suffering from more depression, anxiety, and hostility that non-PTSD veterans.

Combat stress can also have long term effects on a person's functioning, in both military and civilian life. Militarily, combat stress residuals can impair a man's physical and mental fitness, reduce his motivation and undermine his reliability in security assignments and ability to fully participate in future wars. In civilian life, combat stress residuals may be expressed in functional disturbances in the family and at work. Research findings indicate that social dysfunctioning is an important correlate of PTSD among concentration camp survivors (Chodoff, 1962), survivors of natural disasters (Glesser, Green, & Winget, 1978; Titchner & Kapp, 1976), rape victims (Burgess & Holmstrom, 1974), and Lebanon War PTSD casualties (Solomon & Mikulincer, 1987). In addition, Solomon, Schwarzwald, Weisenberg, & Mikulincer (1988) found that PTSD casualties of the Lebanon War reported lower perceived self-efficacy (Bandura, 1982) in dealing with stressful battle events than veterans without PTSD.

Post-traumatic reactions also have somatic components. By exacerbating subclinical disease processes, they can accelerate the clinical onset of such disorders as diabetes, ulcer, and hypertension. By disrupting biological homeostasis and weakening the immune system, they can also impair the body's natural immunity to somatic disease.

PTSD often appears in the immediate form, in which case its onset is observed during the traumatic event or within six months after the exposure to the traumatic event (DSM-III, 1980). Sometimes, however, the manifestations of the trauma are, or seem to be, delayed. Delayed onset of PTSD can be said to occur when an individual at first appears to respond adaptively to traumatic stress, but then develops psychopathology after an asymptomatic latency period of at least six months (DSM-III, 1980). According to Horowitz & Solomon (1975, 1978), delayed onset PTSD develops when the safety and security of home allows the relaxation of defensive and coping mechanisms, which were later overcome by intrusive recollections of the traumatic events or by an event that symbolically echoes the trauma (Figley, 1978a; 1978b; Christenson, Walker, Ross, et al., 1981; Van Dyke, Zilberg, & McKinnion, 1985).

Delayed onset of PTSD has been found among concentration camp survivors, Japanese atomic bomb survivors, survivors of natural disasters, and World War II and Vietnam combat veterans (Archibald & Tuddenham, 1965; Chodoff, 1962; Figley, 1978a). Studies of these groups have indicated that in many cases the consequences of trauma are not readily apparent. Many survivors of these catastrophic events appeared to have adjusted well, though later, sometimes many years later,

substantial numbers developed stress-related symptoms (Hendin & Haas, 1984).

PTSD and the family

Of the host of PTSD symptoms, of special importance are the specific symptoms that have direct negative effects on social relations, particularly within the family. These symptoms include numbing of responsiveness and reduced involvement with the external world, as seen by diminished interest in significant activities, feelings of detachment from others, or alienation and constricted affect.

Consequently, these veterans encounter numerous severe problems as they attempt to reintegrate themselves into society (Figley, 1978). Of considerable difficulty is the task of resuming the more demanding, intimate social roles of husband and father. Polner (1971) reports that in all his interviews, family members perceived significant impairment in the Vietnam veteran's emotional stability. In a study of 200 treated Vietnam veterans, Lumry, Cederlear, Wright, & Braatz (1970) found that a high percentage of their sample suffered from severe interpersonal problems, especially in their marital relationships. Based on her extensive experience with Vietnam veterans, Haley (1975) concludes that veterans who continue to mourn the death of close friends or to suffer survivor guilt often are unable to involve themselves in or maintain close relationships (Haley, 1978; Lifton, 1968, Figley, 1976).

Difficulties veterans have in maintaining intimate relationships with their wives may often be compounded by the frequent sexual problems they experience. Loss of interest in previously enjoyed activities such as

sex results in diminished sexual drive and drastic curtailment of sexual activity (Haley, 1978). Wives, in turn, may feel rejected and unloved, suffering from severe frustration (Williams, 1980).

The psychological repercussions of the veteran's elevated level of hostility, leading to frequent outbursts of violence, can be extremely severe and debilitating not only for the veteran, but also for his wife and children. Combat veterans, especially those who were involved in atrocities, suffer from guilt and fear of their violent impulses (Haley, 1974). Horowitz and Solomon (1978) suggest that many veterans are well aware that violence is a viable alternative which can be both pleasurable and guilt-provoking.

Conflicts between aggressive impulses and aggression control may affect the veteran's functioning in his role as both father and husband. Fatherhood may overtax his ability to resolve this conflict. Many points during his children's development can impinge on conflicts over aggression. The natural activity and aggressiveness of a growing child, especially a son, may re-awaken painful memories of combat aggression and guilt about sadism. Attempts to control aggressiveness in a chid may lead to overreaction in the father (Haley, 1975). Intensification of these conflicts hinders the veterans ability to provide an environment facilitating growth and proper development for his children.

Elevated levels of anger and increased vulnerability also result in violent outbursts within the marital relationship. In one study on wives of veterans, 50% of those who sought professional help reported wife battering (Williams, 1980). Williams' clinical report indicates that aggression breeds aggression. Unfortunately, however, such clinical observations have not yet been validated by systematic research.

Family impact mediation

Veterans' wives who seek professional help often complain that their husbands have returned home "a changed man" (Williams, 1980). What are the psychosocial sequelae of the reunion of this "changed man" and his family? How do war-related changes in veterans effect family life? How do they effect the mental status of his wife and children?

Nace, Meyers, O'Brien, Ream, & Mintz (1977) report high rates of separation and divorce attributed by subjects to factors intrinsic to military service, such as prolonged separation and the use of drugs. Based on therapy with spouses of Vietnam veterans, Williams (1980) concluded that most have unstable or unsatisfactory relationships attributable in part to war-related problems. The divorce rate for Vietnam veterans is higher than for the general U.S. population (Center for Policy Research, 1979). An estimated thirty-eight percent of the marriages of Vietnam veterans broke up within six months after their return from Southeast Asia (President's Commission on Mental Health, 1978).

Obviously, the war does not end for many veterans when the shooting stops. The soldier's homecoming may not only affect family structure and function, but also may have detrimental effects on the wife's well-being. In many instances, his personality seems different, but there is no drastic change in his physical appearance. This may lead the wife to expect the family to resume its pre-war level of functioning, but this expectation is rarely realized. Homecoming of the PTSD veterans imposes a severe burden on his family. His wife expects the family to resume its pre-war division of labour; instead, household routines are

reset and the wife becomes primarily responsible for all child care, the family's emotional well-being, and also often for the family finances. In addition, the burden of caring for the afflicted husband rests with her.

The wife and the entire family are required to make drastic changes to adjust to the post-war situation. These circumstances, over which the woman has no control and for which she feels responsible, are very frustrating. She may find herself caught in a "compassion trap", were she must maintain a precarious balance between supporting others and not sacrificing her own needs. Clinical evidence indicates that often women find it difficult to overtly express their aggression. In this case, expression is especially difficult as it clashes with internalized social norms (Bar-Tor, 1977). Because overt expression of aggression toward her husband is blocked, she displaces it. Within the family, two avenues for expression of aggression are available. Aggression can be directed towards alternative targets that are perceived as less threatening. She may direct her aggression towards he children or towards herself. In the latter instance, it usually takes the form of depression and guilt feelings. Although there have been no systematic investigations, clinical observations have shown that the wives of veterans with PTSD suffer from guilt, anger, alienation and mistrust, similar symptoms to those displayed by their husbands (Williams, 1980).

Rationale, aims, and design of the study

The distress of veterans' wives is especially striking in Israel. Here, the army is generally respected and viewed as a necessary tool for survival. Israel society, in general, consciously feels in debt to those wounded in action. These norms impose a heavy burden, on the woman who sacrifice many of her own needs, without sharing her conflicts with others. Such binds can have devastating consequences, including lowered self-esteem, loss of identity, demoralization, severe depression and child abuse. The detrimental impact of PTSD on the family may further serve as an amplifier of already existing PTSD related difficulties in the veteran. A vicious circle that increases the vulnerability of all family members is of particular significance for the veteran. Tensions in the family increase the likelihood that a latent disturbance will surface and that overt disorder will become chronic.

In Israel, where large segments of society participate in war these detrimental sequelae may, in fact, have a disintegrating effect on the entire society. Although a considerable body of research has documented the long term effects of war on combatants, only scant acknowledgment has been given to the repercussions it carries for their families and the role the family plays in determining the course of PTSD. Israel presents unique opportunities for research into consequences of war. It is regretful, however, that in Israel, where wars are frequent, this issue has not been investigated. This is the major aim of the current study.

Israel's 1982 Lebanon War provides a unique opportunity to carry out an empirical study of the impact of combat stress on wives of

combatants. Israel's small size in both area and population, along with the fact that most Israeli men continue to serve in active reserves after the war, greatly facilitate locating subjects and obtaining their cooperation. Moreover, our empirical research is further facilitated by the establishment of a central computerized data bank which contains the military, somatic, and psychiatric history of all Israeli soldiers who were referred or requested treatment for war-induced emotional injuries during or following the Lebanon War. It contains files both of immediate and delayed PTSD casualties as well as of matched controls who participated in the Lebanon War but did not evidenced PTSD.

The availability of comprehensive, detailed, and regularly updated computerized files allows for the systematic investigation of a large number of issues involved in the impact of combat stress on family life, and for locating wives of the combatants. Using this data bank, the present study investigated the following:

1. The impact of PTSD (immediate or delayed onset) during the Lebanon war on the psychosocial status of veterans' wives and on their perception of family interaction.
2. The differential impact of immediate and delayed onset PTSD on the psychosocial status of veterans' wives and on their perception of family interaction.
3. the contribution of the current mental health of the veteran on the psychosocial status of veterans' wives and on their perception of family interaction.

Three groups of wives of Lebanon War veterans were compared. (a) Wives of soldiers who participated in the Lebanon war without any

diagnozed emotional breakdown, but were diagnozed as suffering from PTSD six months or more after the war (delayed onset PTSD); (b) wives of soldiers who were diagnozed as suffering PTSD during or immediately after the Lebanon war (immediate onset PTSD); and (c) wives of soldiers who did not seek psychiatric help during the war or after homecoming. These groups of wives were compared on their psychiatric status, somatic complaints, social problems, perceptions of family and couple interaction, and perceptions of husband's current mental status.

Method

Subjects

Three groups of female subjects participated in this study (1) wives of delayed onset PTSD veterans; (2) wives of immediate onset PTSD veterans; and (3) wives of control group non-PTSD veterans. All the subjects were married prior to the beginning of the war. The groups were matched in terms of socio-demographic variables. Names of potential subjects were retrieved from the Israel Defence Forces computerized data banks.

Both the delayed and immediate onset PTSD groups consist of subjects whose husbands had PTSD after the war. However, whereas husbands of the immediate onset PTSD group sustained a breakdown in battle, husbands of the delayed PTSD did not, and sought psychiatric help only at least six months after the end of the war.

Husbands of the delayed PTSD and control groups both participated in the Lebanon War without recognizable psychiatric breakdown, but differ in their psychiatric status during the two years following the war. Husbands of the control group did not have PTSD at any time during the two years following the end of the war, husbands of the delayed PTSD did.

Delayed PTSD group. This group consists of 16 women whose husbands participated in the Lebanon war without any recognizable psychological breakdown, but suffered from diagnozable PTSD two years after the end of the war.

Women were included in this group based on the following husband's criteria: (a) husband's participation in front-line battles during the Lebanon War; b) no indication of PTSD during the war or during six months after the war; (c) no indication of serious physical injury; d) no indication of other combat-related disorders, such as brief reactive psychosis or fictitious disorders; (e) a voluntary request for psychiatric treatment in an IDF Mental health clinic during the two years after the war; (f) complaints of psychiatric problems related to their participation in the War; and (g) fulfillment of the DSM-III criteria for PTSD (reactivation of the trauma, emotional numbing, and two additional symptoms involving cognitive difficulties). All the criteria, with the exception of the last one, were checked from official records made on the battlefield and in the IDF Mental·Health clinics. The last criteria was assessed by asking husbands to answer the PTSD inventory (See Solomon et al., 1985), based on the three DSM-III criteria, two years after war.

Immediate PTSD group. This group comprises 112 women whose husbands fought on the front during the Lebanon War (1982) and were identified by Israel Defense Forces (IDF) mental health personnel as suffering from PTSD on the battlefield or at any point during the first six months after the end of the war.

Women were included in this group based on the following criteria relating to their husbands: (a) husband's participation in front-line battles during the Lebanon War; b) a referal for psychiatric intervention made by the soldier's battalion surgeon during the war; c) a diagnosis of immediate onset PTSD made on the battlefield by an IDF

clinician trained and experienced in the diagnosis of combat-related reactions; d) no indication in the clinician's report of serious physical injury; e) no indication in the clinician's report of other combat-related disorders, such as brief reactive psychosis or fictitious disorders. The research staff determined eligibility by using records of clinicians' diagnoses made on the battlefield.

Control group. This group consists of 85 women whose husbands fought in the Lebanon war and were neither treated for immediate onset PTSD during the war nor diagnosed or treated for PTSD during the two years following the war. While it is difficult to control for subjective combat stress, the sampling procedure here was chosen to ensure that husbands in the three study groups were exposed to a similar amount and type of objective stress.

Sociodemographic characteristics. The average age of the sample was 34.21 with SD of 5.09. The average number of children was 2.76 with SD of 1.00. Ten percent had completed eighth grade, 22% had had at least some high school, 43% had completed high school, and 25% had studied beyond high school. Statistical analyses (analyses of variance and Chi Square tests) indicated that the study groups did not differ significantly in any sociodemographic variables that were assessed.

Measures

Psychiatric symptomatology - SCL-90. Wive's psychiatric symptomatology was assessed using the self-report checklist-90 (SCL-90). This checklist inquiries about symptoms during the two weeks preceding the interview. The SCL-90 is composed of 90 self-report items rated on a

5-point distress scale. The scale has been factor analyzed and nine symptom dimensions have been identified (Derogatis, 1979). The SCL-90 has been found to be highly correlated with similar scales in the MMPI (Derogatis, Rickels, & Rock, 1976). The scale construct validity has been investigated, and all nine symptom dimensions display moderate to high theoretical-empirical agreement and stability across variation in subject sample (Derogatis & Clearly, 1977). A number of test-retest and inter-rater reliability studies are available for the precursor of the SCL-90, the Hopkins Symptom Checklist, which includes five of the nine dimensions of the SCL-90 (Derogatis, 1979).

Subjects were compared on a measure of global symptoms which gauge the severity of psychiatric symptomatology. The Global Severity Index (GSI) was computed by averaging subjects' answers on all ninety symptoms. This index, as its name suggests, is an indication of the overall severity of the symptomatology.

Scores were also calculated for each of the nine SCL-90 scales:

1. Somatization: deficiency in somatic functioning, consisting of either functional disorders or physical limitations.
2. Obsessive-compulsive disorder: ego-dystonic, repetitive, and intrusive thoughts, impulses, and actions.
3. Interpersonal sensitivity: feelings of inferiority, humiliation, and discomfort in interpersonal relations.
4. Depression: disinterest, lack of motivation, withdrawal from activity, lethargy, depressive moods, suicidal thoughts, and hopelessness about the future.

5. Overt anxiety: nervousness, tremors, fearful thoughts, apprehension about the future, and panic states.
6. Hostility: anger, aggression, rage, and resentment.
7. Phobic anxiety: irrational, exaggerated, chronic fear of particular persons, places, objects or situations, leading to avoidance of or flight from the specific stimulus.
8. Paranoid Ideation: true paranoia, suspicion, and hostility.
9. Psychoticism: a continuum ranging from mild detachment to severe psychosis characterized by withdrawal, self-isolation, schizoid style, and hallucinations.

Scores for each subscale were computed by averaging each subject's answers on the symptoms corresponding to that subscale.

Social relations. The Wives' social relations were assessed by two different instruments, UCLA loneliness scale and a perceived social support scale.

The revised UCLA loneliness scale (Russell, Peplau, & Cutrona, 1980) consists of 20 items, half reflecting satisfaction with social relationships and half reflecting dissatisfaction. Subjects were asked to indicate how often they experience the feelings in each item on a 4-point Likert scale (1=not at all, 4=very often). The total score is the mean of all twenty items after the positive worded items were reversed. Higher scores reflect more loneliness. Crombach Alpha for the UCLA scale in the current sample was .86, reflecting high internal consistency.

The current social network questionnaire was devised in our laboratory based on Mueller's (1980) Social Network Interview. Subjects

received seven questions regarding expressive and instrumental support (e.g., emotional help, financial support) from their network members (e.g., family, friends, acquaintances), and were asked to indicate on a 4-point Likert scale (1=not at all, 4=very much) how much support their network gave them. The total score of social network support was calculated by averaging answers subjects gave to the seven questions. Crombach Alpha for the 7 items was .84, indicating high internal consistency.

Somatic complaints. A self-report questionnaire was especially designed to evaluate the wives' physical health. Subjects were asked to rate their health status on a 5-point scale, ranging from "very good" (1) to "very bad" (5). In addition, they were asked whether they developed any form of allergy, hypertension, ulcers, digestive problems, heart disease, chest pains, diabetes, stroke, or back pains during the last year. The number of reported illnesses was counted and used in the further statistical analyses. This questionnaire was an adaptation of the somatic complaints inventory which was used in assessing the PTSD veterans. Full details on its psychometric properties are reported in Solomon and Mikulincer (1987).

Family Environment. The Moos Family Environment Scale was used to assess family atmosphere (Moos & Moos, 1981). This scale is composed of 10 subscales covering three dimensions: Family relations, growth and maintainance. The present study employed only three subscales (each with 9 items) all in the family relationship dimension: cohesiveness, expressiveness, and conflict. Cohesiveness is the degree to which family members feel commited to and help and support each other.

Expressiveness reflects the degree of openeness of expression, self-revelation, and the sharing of feelings and upsetting experiences. Conflict relates to the degree to which anger, violence and struggle characterizes the family.

The subjects are presented with one sentence describing families and are asked to indicate whether or not each fits his family. Using the Moos method, three scores, one each for cohesiveness, expressiveness, and conflict, were calculated. Each score represents the average of the items in its category.

The Family Environmental scale has been widely used in research. This multidimensional psychometric scale has a high level of reliability (Moos & Moos, 1981). The present Hebrew version of the scale also has high levels of reliability (Crombach Alphas= .82, .89, .78 for cohesiveness, expressiveness and conflict, respectively).

Dyadic interaction. Wives' perception of their marital interaction was assessed by the Dyadic adjustment scale (Spanier, 1976). This scale is composed of 32 items assessing marital consensus, cohesion, and satisfaction. Subjects were asked to read each item and to rate on a 6-point scale, ranging from "very low" (1) to "very high" (6), the extent to which the item describes their current marital interaction.

A factor analysis with Varimax rotation was performed in order to examine the construct validity of the questionnaire. This analysis yielded three main factors (eigenvalue higher than 1) explaining 51% of the variance. The first factor explained 34% of the variance and included 13 items (loading higher than .40) regarding the extent of marital consensus (e.g., how much wives and husbands agree in different

areas of marital life). The second factor explained 11% of the variance and included 6 items regarding the extent of marital satisfaction. The third factor explained 6% of the variance and included 10 items regarding the extent of marital cohesion. On this basis, we computed three factor scores by averaging the items loading high on each factor. Higher scores reflect more consensus, satisfaction, and cohesion in marital life.

Perception of husband's PTSD. In order to assess subjects' perceptions of their husbands' current PTSD, the present study employs a 13-item PTSD inventory based on DSM-III criteria. Each item describes a DSM-III PTSD symptom, adapted for war trauma. The respondent was asked to indicate whether or not her husband experienced the described disturbance in the past month.

The 13 statements were divided into three categories of symptoms corresponding to the following three DSM-III criteria for the diagnosis of PTSD:

I. Reexperiencing of the trauma (3 items), as evidenced by recurrent and intensive recollections of the traumatic event, recurrent dreams, and/or sudden acting or feeling as if the event were recurring.

II. Numbing of responsiveness to or reduced involvement with the external world (3 items), as evidenced by diminished interest in significant activities, a feeling of detachment from others, and/or constricted affect.

III. Additional symptoms (7 items), including hyperalertness, sleep disturbance, survivor guilt or guilt feelings about

behavior during the war, memory or concentration difficulties, avoidance of activities which trigger recall of the event, and/or intensification of symptoms with exposure to events which symbolize the trauma.

To be diagnosed with PTSD a subject must report that her husband had experienced at least one of the symptoms in each of categories I and II and at least two symptoms in category III.

Procedure

Letters were sent to potential subjects explaining the aims of the study and inviting them to participate. The study was presented as an investigation of the impact of the war on families of combat veterans aimed at expanding the IDF's knowledge of these families' needs for the purposes of planning appropriate services. The letter also emphasized the confidentiality of all information. Initial consent to participate in the study was secured via telephone interview.

All the subjects were administered the battery of self-report questionnaires. The interviewers gave instructions and answered questions regarding the self report questionnaires, and also assisted in reading or writing in the cases where the women had difficulty doing so on their own. The questionnaires took about an hour to complete. The interviewers were instructed not to communicate expectations regarding the appropriate responses to questions, verbally or non-verbally, in order to reduce experimental bias.

Results

Combat-related PTSD and wives

In order to assess the relationship between the veteran's combat-related PTSD and his wife's psychosocial status six years after war, one-way multivariate and univariate analyses of variance (MANOVAs and ANOVAs) for study groups (control, immediate PTSD, delayed PTSD) were performed on the SCL-90 global score, SCL-90 subscales, the report of loneliness and social support, and the report of health status and number of somatic illnesses. Table 1 presents means, SD, and F-ratios of the psychosocial status measures in each study group.

The ANOVA performed on the SCL-90 global score revealed significant differences among the three study groups (See Table 1). Duncan post hoc tests (alpha=0.01) yielded that wives of delayed PTSD veterans suffered from more severe general psychopathology than wives of immediate PTSD veterans, which in turn suffered from more severe psychopathology than wives of control veterans.

Table 1

Means, SD, and F-ratios of psychopathology measures in each study group

	Control		Immediate PTSD		Delayed PTSD		F
	M	SD	M	SD	M	SD	
SCL-90 - GSI	0.47	0.40	0.78	0.62	1.08	0.93	11.38**
SCL-90 - Subscales							
Somatization	0.46	0.49	0.84	0.74	1.00	0.99	9.21**
depression	0.49	0.48	0.94	0.86	1.20	1.08	11.12**
phobia	0.30	0.57	0.44	0.69	0.93	1.20	5.63**
obsession	0.57	0.56	0.91	0.83	1.28	1.05	8.30**
anxiety	0.54	0.54	0.88	0.75	1.28	1.09	10.06**
paranoid ideation	0.53	0.67	0.77	0.78	0.82	0.96	2.77
interpersonal	0.47	0.39	0.69	0.62	1.05	0.97	8.18**
hostility	0.64	0.76	1.01	0.98	1.24	1.02	5.42**
psychoticism	0.21	0.33	0.38	0.53	0.72	0.93	7.75**
MANOVA (18,402)							2.63**
Social relations							
Loneliness	2.69	0.50	2.87	0.52	2.81	0.29	3.41*
Social Network	3.35	0.66	3.12	0.76	3.27	0.44	2.50
MANOVA (4,410)							1.77
Somatic problems							
Health status	1.67	0.61	2.06	0.78	2.06	1.12	6.64**
illnesses	0.48	0.84	1.03	1.19	0.69	1.13	6.43**
MANOVA (4,410)							4.55**

Notes: * $p<.05$; ** $p<.01$

The MANOVA for the nine SCL-90 scales yielded a significant difference among the study groups (See Table 1). Univariate ANOVAs revealed that this effect reached significance for most of the nine SCL-90 subscales, with the exception of the paranoid ideation subscale. Duncan post hoc tests yielded the following pattern of differences:

1. Wives of delayed PTSD veterans suffered from more severe obsessive thoughts, anxiety, and hostility than wives of immediate PTSD veterans, which in turn suffered from more severe symptomatology in those scales than wives of control veterans.
2. Wives of both delayed PTSD and immediate PTSD veterans suffered from more severe somatization and depression than wives of control veterans. No significant differences in somatization and depression were found between wives of delayed PTSD and immediate PTSD veterans.
3. Wives of delayed PTSD veterans suffered from more severe psychoticism, phobia, and interpersonal sensitivity than wives of either immediate PTSD or control veterans. No significant differences in those scales were found between wives of immediate PTSD and control veterans.

The MANOVA performed on the two scales assessing social functioning (loneliness and social support) revealed that the effect of study group did not reach significance. However, the ANOVA for the UCLA loneliness scale revealed a significant difference among study groups (See Table 1). Duncan post hoc tests yielded that wives of both delayed PTSD and immediate PTSD veterans reported having suffered from more loneliness than wives of control veterans. No significant differences in subjective

feelings of loneliness were found between wives of delayed PTSD and immediate PTSD veterans.

The MANOVA performed on the two scales assessing somatic complaints (health status and number of reported illnesses) revealed a significant difference among the study groups. The univariate ANOVAs indicated that this effect reached significance in all two scores (See Table 1). Duncan post hoc tests yielded that wives of both delayed PTSD and immediate PTSD veterans reported poorer health status during the last year than wives of control veterans. In addition, wives of immediate PTSD veterans reported more somatic illnesses than wives of delayed PTSD veterans, which in turn reported more somatic problems than wives of control veterans.

In summary, wives of immediate PTSD and delayed PTSD veterans had a poorer psychosocial status than wives of control veterans. This poorer status is manifested in more severe psychiatric symptomatology, stronger feelings of loneliness, and more frequent somatic complaints. In addition, the psychiatric status of wives of delayed PTSD veterans was poorer than the status of wives of immediate PTSD veterans. That is, wives of delayed PTSD veterans suffered from more severe psychiatric symptomatology (GSI) than wives of immediate PTSD veterans.

Combat-related PTSD and family interaction

In order to assess the relationship between the veteran's combat-related PTSD and his wife's perception of family interaction six years after war, one-way multivariate and univariate analyses of variance (MANOVAs and ANOVAs) for study groups (control, immediate PTSD,

delayed PTSD) were performed on the Family environment scales and dyadic interaction scales. Table 2 presents means, SD, and F-ratios of the family interaction measures in each study group.

Table 2

Means, SD, and F-ratios of family relations according to study groups

	Control		Immediate PTSD		Delayed PTSD		F
	M	SD	M	SD	M	SD	
Family Environment Scale							
Cohesion	7.37	1.66	6.58	2.28	7.00	2.33	3.62*
Expressiveness	6.56	1.55	6.10	1.89	6.60	1.84	1.90
Conflict	2.20	1.56	2.67	1.75	2.80	1.37	2.23
MANOVA (6,414)							1.59
Dyadic interaction							
Consensus	5.11	0.81	4.87	0.91	4.59	1.10	3.16*
Satisfaction	5.12	0.78	4.58	1.12	4.57	0.94	7.47**
Cohesion	4.56	0.97	4.03	1.25	4.02	1.06	5.40**
MANOVA (6,414)							3.35**

Notes: * $p<.05$; ** $p<.01$

The MANOVA for the family environment revealed that group differences did not reach significance (See Table 2). However, the univariate ANOVA for the cohesion scale yielded a significant effect for study group. Duncan post hoc tests yielded that wives of immediate PTSD veterans perceived less cohesion than wives of delayed PTSD veterans and wives of control veterans.

The MANOVA for the dyadic interaction scales yielded a significant difference among the study groups (See Table 2). Univariate ANOVAs revealed that this effect reached significance for all three scales. Duncan post hoc tests yielded that wives of immediate PTSD veterans and wives of delayed PTSD veterans perceived less cohesion, consensus, and satisfaction in their interaction with their husbands than wives of control veterans. No significant differences in dyadic adjustment was found between wives of delayed PTSD and immediate PTSD veterans.

In summary, wives of immediate PTSD and delayed PTSD veterans reported having less satisfactory marital interaction than wives of control veterans. In addition, the family cohesion of wives of immediate PTSD veterans was poorer than the cohesion of wives of delayed PTSD and control veterans.

Wives perceptions of veteran"s current PTSD status

This study employed wives as informants regarding the PTSD status of their husbands. Results indicated that fifty-eight percent of delayed PTSD veterans were perceived by their wives as currently suffering from PTSD. Forty-four percent of immediate PTSD veterans were perceived as currently suffering from PTSD by their wives, and only twelve percent of control subjects were so perceived. A chi-square analysis revealed a significant difference between the three groups ($X2=27.19$, $df=2$, $p<.01$). Interestingly, wives' perception of husband's PTSD generally correspond to the rates of PTSD obtained in 1985 when the husbands were queried about their PTSD status.

Husband"s PTSD and wives status

In order to assess the relationship between wives' perceptions of her husband current mental status (PTSD, non-PTSD) and her psychosocial status, one-way multivariate and univariate analyses of variance (MANOVAs and ANOVAs) for husband's PTSD (PTSD, non-PTSD) were performed on the SCL-90 global score, SCL-90 subscales, the report of loneliness and social support, and the report of health status and number of somatic illnesses. Table 3 presents means, SD, and F-ratios of the psychosocial status measures in PTSD and non-PTSD groups.

Table 3

Means, SD, and F-ratios of wives' psychosocial status according to their perception of husbands' current PTSD status

	PTSD		Non-PTSD		
	Mean	SD	Mean	SD	F
SCL-90 - GSI	0.97	0.66	0.60	0.52	10.08**
SCL-90 - Subscales					
Somatization	0.86	0.76	0.76	0.64	0.57
depression	1.20	0.89	0.68	0.66	11.92**
phobia	0.67	0.82	0.33	0.63	5.42*
obsessive thoughts	1.18	0.86	0.69	0.68	10.51**
anxiety	1.04	0.83	0.71	0.64	5.13*
paranoid ideation	1.10	0.76	0.44	0.71	19.70**
interpersonal	0.92	0.67	0.49	0.51	14.48**
hostility	1.28	1.06	0.78	0.77	7.82**
psychosis	0.57	0.64	0.30	0.43	6.69*
MANOVA (9,195)					2.41*
Social relations					
Loneliness	3.06	0.56	2.69	0.45	14.08**
Social Network	2.95	0.79	3.38	0.65	8.62**
MANOVA (2,200)					7.01**
Somatic problems					
Health status	1.34	0.84	0.64	0.71	4.14*
illnesses (number)	2.16	1.29	1.85	0.82	11.73**
MANOVA (2,200)					6.01**

The MANOVAs for the various psychosocial measures revealed a significant difference between PTSD and non-PTSD groups. All the univariate ANOVAs, with the exception of the ANOVA for somatization, also yielded a significant effect for the husband's perceived current mental status. According to groups means (See Table 3), wives who perceived their husbands as currently suffering from PTSD reported more severe psychiatric symptomatology, and more social and somatic problems than wives who perceived their husbands as non-PTSD.

Two-way ANOVAs were performed for assessing the interaction of study group (immediate PTSD, delayed PTSD, and control) and husband's current status (PTSD, non-PTSD) on the various psychosocial status measures. These analyses indicated that such an interaction did not reach significance, implying that the effects of combat stress and the wives' perceptions of their husbands' current PTSD on wives' psychosocial status were additive.

Husband"s PTSD and family interaction

In order to assess the relationship between wives' perceptions of their husbands' current mental status (PTSD, non-PTSD) and family interaction, one-way multivariate and univariate analyses of variance (MANOVAs and ANOVAs) for husband's PTSD (PTSD, non-PTSD) were performed on the Family environment scales and dyadic interaction scales. Table 4 presents means, SD, and F-ratios of family interaction measures in PTSD and non-PTSD groups.

Table 3

Means, SD, and F-ratios of wives' psychosocial status according to their perception of husband's current PTSD status

	PTSD		Non-PTSD		
	Mean	SD	Mean	SD	F
Family Environment Scale					
Cohesion	5.75	2.53	7.29	1.66	13.84**
Expressiveness	4.92	1.82	6.77	1.54	29.98**
Conflict	2.98	2.05	2.27	1.40	4.44*
MANOVA (3,200)					4.25**
Dyadic interaction					
Consensus	4.63	1.11	5.01	0.72	4.70*
Satisfaction	4.26	1.19	4.95	0.85	12.53**
Cohesion	3.71	1.31	4.20	0.99	4.79*
MANOVA (3,200)					4.23**

Notes: * $p<.05$; ** $p<.01$

The MANOVAs for the various family interaction measures revealed significant differences between the PTSD and non-PTSD groups. All the univariate ANOVAs also yielded a significant effect for the husband's perceived current mental status. According to groups means (See Table 4), wives who perceived their husbands as currently suffering from PTSD reported less cohesion, less expressiveness, and more conflict in their families than wives who perceived their husbands as non-PTSD. In

addition, wives who perceived their husbands as currently suffering from PTSD reported less cohesion, less consensus, and less satisfaction in their marital interactions than wives who perceived their husbands as non-PTSD.

Two-way ANOVAs were performed for assessing the interaction of study group (immediate PTSD, delayed PTSD, and control) and husband's current status (PTSD, non-PTSD) on the family interaction measures. These analyses indicated that such an interaction did not reach significance, implying that the effects of combat stress and the husband's current PTSD on family and marital interaction were additive.

Discussion

The first part of this study examined the relationship between the psychiatric status of combat veterans two years after the war (immediate onset PTSD, delayed onset PTSD, and non-PTSD) and the psychosocial adjustment of their wives four years laters. The findings indicate, first of all, that wives of PTSD veterans are considerably less well adjusted than the wives of non-PTSD veterans. These wives reported more psychiatric symptomatology, more somatic problems, more loneliness, and poorer family and marital adjustment than wives of control, whether the onset of their husbands' PTSD was immediate (i.e. during the war) or delayed (up to two years after the war). This set of findings provides clear empirical validation to numerous clinical observations (e.g., Williams, 1980) which have emphasized the price paid by wives of PTSD veterans for their husbands' traumatization on the battlefield.

Our findings are consistent with reports of secondary traumatization among children of Nazi holocaust survivors (Bergman & Jucovy, 1982; Epstein, 1979; Danieli, 1980; Kestenberg, 1972; Rosenheck & Nathan, 1985). It appears that a kind of transmission of symptoms can occur, by which the distress spills over from the trauma victim to others, especially family members, and in this case the spouse. This finding is a unique contribution of the current study, however, since to the best of our knowledge no other large scale research has systematically investigated and documented the prolonged detrimental effects of trauma on people who did not experience and were far removed from the traumatic event.

Our findings also show, however, that the severity of the wives' distress was associated with the time of onset of the husband's PTSD. Wives of delayed onset PTSD veterans reported greater impairment than wives of immediate onset PTSD veterans. This was especially evident in the realm of psychiatric symptomatology. When compared with wives of immediate onset PTSD veterans, wives in the delayed group reported greater severity of both general psychopathology and specific symptom groups such as obsessive compulsive thoughts, anxiety, hostility, phobia, interpersonal sensitivity, and psychoticism.

These findings closely parallel those relating to the veterans themselves In our assessment of the men, we also found that both immediate and delayed onset PTSD veterans reported greater overall impairment than non-PTSD veterans. PTSD was thus found to be associated with a wide range of psychiatric, social, and somatic impairment in both veterans and their wives.

It may, however, be argued that the greater severity of psychological impairment among the wives of the delayed group was a cause, rather than an effect, of both the delayed onset and the ~~greater severity~~ of the husband's disorder. According to this line of thought, these are families in which the husband weathered the immediate stress of combat, but broke down after returning home to a wife who, due to her own problems, was not able to facilitate his full recovery, but on the contrary, wore down his already depleted coping resources, until he finally succumbed to a full-blown PTSD.

Since all our data were gathered after the war, we cannot totally negate this possibility. However, it does seem unlikely. The men in all

three study groups were closely matched on pre-military psychological, physical, and sociodemographic variables, and there is no reason to assume that those in the delayed group were married to women who were initially less well adjusted than the other wives.

In the second part of this study, the wives served as informants regarding their husbands' current PTSD status. We found that wives of PTSD veterans perceived a greater percentage of their husbands to be currently suffering from PTSD than wives of non-PTSD veterans. The highest rate of current PTSD was reported, however, by wives of delayed onset PTSD veterans.

We next examined psychosocial adjustment and family relations among wives of combat veterans as a function of their perception of their husbands' current PTSD status. Here we found that women who perceived their husbands to be currently suffering from PTSD reported greater impairment than wives of veterans not currently meeting DSM-III criteria for PTSD. This impairment was found in all of the areas examined: wives of veterans currently suffering from PTSD reported more severe psychiatric symptomatology, more somatic problems, more loneliness and less social support, as well as poorer marital adjustment and family relations.

Our overall findings thus point to two major conclusions. First of all, combat stress not only has pathogenic posttraumatic effect on veterans, but also on their wives quite a long period of time -- six years -- after the war. Secondly, when the onset of PTSD is delayed the severity of distress is greater for both the veteran and his wife.

Our data are consistent with a circular model of causality regarding psychopathology in these families. Veterans who reported higher levels of social support and better family relations suffered from lower rates of PTSD, so it would appear that the post-war support provided by the wife in these families can effect the mental status of the husband. The husband's mental status, on the other hand, influences his ability to provide support and prevent psychological, social, and somatic dysfunctions in his wife. Thus while the post-war period may be a very trying time for many families of war veterans, the degree of support provided by each of the spouses to the other can influence the other's well-being and thereby lead to more support being provided in return. In PTSD families, and especially those ~~where the PTSD is delay~~ed, there appears to be a cycle of mutually non-supportive interaction leading to increasingly severe distress in both spouses, which in turn leads to a further reduction in support.

These findings would thus seem to indicate the need for a family system approach to therapy (Figley, 1978). This would provide a context wherein the entire family is seen as the unit of treatment and the suffering of all family members is acknowledged. Dysfunctional patterns of interaction can be blocked while promoting a benevolent cycle of interaction in their place.

Considering the marked severity of delayed onset PTSD for both the veterans and their wives, it would seem especially important to look into factors that might promote or impede recovery from this disorder. More specifically, we recommend investigating the influence of factors such as those already examined here on the onset of PTSD among these

veterans: personal resources, intra- and extra-familial social resources, and life events.

Another important issue that requires further research is the effects of PTSD on the children of these veterans. Since both the veterans and the wives in this study reported impaired family relations, it does not seem very likely that the children in these families would remain unscarred, although this was not examined directly. Future studies should include evaluations of children as well as direct observations of family interaction.

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