ARTICLE

DELAYED-ONSET PTSD AFTER COMBAT: THE ROLE OF SOCIAL RESOURCES

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Delayed-onset posttraumatic stress disorder (DPTSD) has been under medico-legal debate for years. Previous studies examining the prevalence and underlying mechanisms of DPTSD have yielded inconclusive findings. This study examined the role of social resources and warzone exposure in DPTSD. Six hundred and seventy-five Israeli veterans from the 1982 Lebanon War, 369 with antecedent combat stress reaction (CSR) and 306 without CSR, were assessed prospectively, 1, 2, and 20 years after the war. Veterans were divided into 4 groups, according to the time of first PTSD onset (first onset at 1983, 1984, and 2002 and no-PTSD onset). Participants completed self-report questionnaires tapping various social resources (social network support, family environment, military company environment, homecoming reception), as well as subjective and objective warzone exposure. Our results show that a significant portion (16.5%) of the veterans reported DPTSD. As hypothesized, social resources were found to be implicated in DPTSD. Interestingly, however, social resources accounted for long—not short—delays in PTSD onset. In addition, higher levels of both objective and subjective battle exposure were associated with a more immediate PTSD onset. Finally, CSR was found to be the most powerful predictor of DPTSD. Theoretical and clinical implications of these findings are discussed. © *2013 Wiley Periodicals, Inc.*

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INTRODUCTION

Combat is often highly traumatic, involving exposure to immediate threats of injury and death. Such experiences were found to potentially induce both short-term and long-term psychopathology. The most common immediate psychological breakdown on the battlefield is known as combat stress reaction (CSR; Solomon, 1993). With the end of the war, the debilitating effects of combat stress may abate in some cases, while in others they may crystallize into posttraumatic stress disorder (PTSD). PTSD may develop after the war, either independently or as sequelae of a CSR, and is marked by a range of debilitating symptoms, which are often enduring and resistant to treatment (American Psychiatric Association [APA], 2000).

PTSD may follow various courses over time (Blank, 1993; Solomon & Mikulincer, 2006). When the disorder first appears 6 months or more after the traumatic event, it is defined as delayed-onset PTSD (DPTSD; APA, 2000). For many years, there has been substantial medico-legal debate regarding the validity of this phenomenon. In a reality where victims may benefit financially from being labeled as "posttraumatic," DPTSD is often regarded with suspicion. Thus, some have argued that seemingly new cases of PTSD are actually manifestations of malingering (Smith & Frueh, 1996). Others (e.g., Pary, Turns, & Tobias, 1986) have claimed that in many cases it is not the disorder that is delayed, but rather the seeking of treatment or the identification of posttraumatic symptoms – whether by the victim, by the victim's family, or by the medical authorities. According to this view, the posttraumatic disorder may have been active for a significant period of time without ever being properly diagnosed.

Nevertheless, a growing body of literature exists supporting the existence of this phenomenon. In fact, DPTSD was found among victims of various kinds of traumatic events, such as motor vehicle accidents (Mayou, Bryant, & Duthrie, 1993), natural disasters (Green et al., 1990), incest (Green, Coupe, Fernandez, & Stevens, 1995), and combat (Nitto, 2001). Still, studies of DPTSD have yielded inconclusive results regarding the prevalence of this phenomenon (Adams & Boscarino, 2006; Bryant & Harvey, 2002), as well as regarding the factors contributing to the delay in symptom onset.

Over the years, several cognitive (Ehlers & Clark, 2000), psychodynamic (Horowitz & Solomon, 1975; Shatan, 1973) and biological (Pitman, 1989) explanations for DPTSD have been proposed. However, there is still a scarcity of empirical studies attempting to explain DPTSD. The present study aims to examine the role of various social resources in DPTSD among Israeli war veterans. Social support has been found to buffer the negative effects of various traumatic events (e.g., Hyman, Gold, & Cott, 2003; Hyodo & Morino, 1999; Schnoll, Knowles, & Harlow, 2002), including combat trauma (e.g., Boscarino, 1995; King et al., 2006; Koenen, Stellman, Stellman, & Sommer, 2003). However, when social resources were studied as possible correlates of DPTSD, the results were inconclusive, with some studies showing higher levels of social resources to contribute to the delay in PTSD onset and others failing to find such a connection (e.g., Boscarino & Adams, 2009).

The present study aims to fill this gap in the literature by prospectively examining the contribution of social resources to DPTSD. In a recent review paper exploring the links between PTSD and social support (Guay, Billette, & Marchand, 2006), the authors pointed out that most trauma studies failed to examine social support at both the general level and the trauma-specific level. This study therefore examined social resources at various levels, thus attempting to present a more comprehensive picture of their role in DPTSD.

The first level refers to the combatant's perceived support within his military company. Troop cohesion is a feeling of mutual supportiveness within a combat unit among

enlisted men. It was systematically found to serve as an important buffer against psychic breakdown, both during and following combat (Wright, 1996; Zimmermann, Hahne, Biesold, & Lanczik, 2005), as well as an important predictor of motivation and morale among soldiers (Maguen & Litz, 2006; Rielly, 2000). During combat, unit members often rely on each other for their physical and mental survival. Thus, the nature and quality of support within the unit may have crucial implications for the soldier's well-being and ability to withstand the stresses of war. To the best of our knowledge, the only time unit support was examined vis-à-vis DPTSD was in a previous wave of this study (Solomon, Mikulincer, & Waysman, 1991a), which found that 2 years after the war, veterans with delayed and immediate PTSD did not differ in the level of officer support received.

The second level examined here is the family level. As the combatant returns home, he resumes family life. Quite often, the veteran's return requires a re-adaptation on the part of the entire family (Figley, 1978). The family environment established following the veteran's return was often found to be associated with his postwar adjustment and mental health (e.g., O'Donnell et al., 2006). Still, family variables were only scarcely studied with regard to DPTSD (Solomon, Mikulincer, & Waysman, 1991b).

The third level assessed in this study is the veteran's social network. After the war, the soldier resumes civilian life and is surrounded by others who can potentially offer social support or withhold it. Vast literature attests to the fact that both the quality and size of one's social network are associated with one's reaction to stress and mental health (e.g., Sundquist, Johansson, DeMarinis, Johansson, & Sundquist, 2005). Therefore, it is important to examine whether at homecoming the returning soldier feels that he has people he can talk to, count on, and share his feelings with. This may enable a better understanding of the factors that promote or delay the onset of PTSD. Supporting the association between social network support and DPTSD, a previous wave of this study found that 2 years after the war, Israeli soldiers with DPTSD reported more satisfaction with their social networks than soldiers with immediate PTSD (Solomon et al., 1991b).

The fourth level examined here is the broader national and social environment into which the combatant returns. After the loneliness and isolation experienced during combat, a warm reception by society at large may serve as a corrective emotional experience that increases the veteran's sense of safety and belonging. On the other hand, if one senses that one's efforts and sacrifices were not acknowledged by the government and by society at large, this may entail feelings of alienation and estrangement that increase the risk of psychopathology. Social support at homecoming has often been de-scribed as an important factor in the ad-justment of war veterans (Figley & Leventman, 1980; Koenen et al., 2003). With regard to DPTSD, a previous wave of the present study showed that soldiers with DPTSD reported more feelings of social alienation and disregard upon homecoming compared to veterans without PTSD (Solomon et al., 1991b). However, no difference was found between soldiers with delayed and immediate onsets of PTSD. Thus, questions regarding the role of the homecoming experience in DPTSD still call for further exploration.

Finally, this study also examines the association between DPTSD and various measures of combat exposure. Trauma studies often reveal a direct connection between the severity of the trauma and the level of psychological distress experienced by the traumatized individual (e.g., Sümer, Karanci, Berument, & Güneş, 2005). The level of trauma exposure was also examined in several studies of DPTSD. However, findings from these studies did not reveal a clear picture. Some studies have shown that trauma casualties with delayed PTSD differed in trauma exposure from individuals with chronic PTSD (e.g., McFarlane,

1988), while other studies have failed to find any connection between the severity of the trauma and the course of PTSD (e.g., Bryant & Harvey, 2002).

The present study capitalizes on a 20-year prospective longitudinal assessment of Israeli veterans of the 1982 Lebanon War. The study addresses the following questions: Are social resources at various levels (military company, family, social network, society at large during homecoming) associated with DPTSD? What is the relative role of each of these social resources in DPTSD? Is battle exposure implicated in DPTSD?

We hypothesize that higher levels of social resources will be associated with a longer delay in PTSD onset. Also, we hypothesize that higher levels of combat exposure will be associated with a shorter delay in PTSD onset.

METHOD

Participants

Two groups of male subjects participated in this study. The clinical group comprised 369 Israeli veterans who fought in the 1982 Lebanon War and had been identified by military mental health personnel as suffering from acute combat stress reaction (CSR). The nonclinical group comprised 306 veterans who fought in the same combat units as the CSR group, but were not identified as suffering from CSR. The two groups were matched in age, education, military rank, and assignment. These 675 male veterans from the 1982 Lebanon War were assessed at three points in time after the war: 1 year postwar (Time 1), 2 years postwar (Time 2), and 20 years postwar (Time 3) after the war. All participants have served in frontline units during the war.

These 675 participants were divided into four study groups, according to the time PTSD onset: (a) the "*1983 onset*" group comprised veterans who already had PTSD in the first assessment; (b) the "*delayed to 1984*" group comprised veterans who did not have PTSD in the first assessment, but did suffer from the disorder in the second assessment; (c) the "*delayed to 2002*" group comprised veterans who did not have PTSD in the first and second assessments, but did suffer from the disorder in the third assessment; and (d) the "*no-PTSD*" group comprised veterans who did not suffer from PTSD in any of the three assessments. It should be noted that these four study groups represent *different levels/lengths* of delays in onset across time, instead of the more common, dichotomous division into "delayed/acute" PTSD.

Procedure

One and 2 years following their participation in the 1982 Lebanon War, participants were asked to report to the headquarters of the Surgeon General to take part in this study. Participants filled out a battery of questionnaires in small groups. Data in the third wave (2002) were collected at the veterans' homes. The participants' consent was obtained and they were informed that the data would remain confidential and would in no way influence their status in military or civilian life. Because of the complex longitudinal nature of this study, variable were assessed at different points in time. For the purpose of our analyses, when a variable was assessed several times we chose to use the earliest time in which it was assessed, as close to the baseline (1983) as possible. Sociodemographic characteristics, war exposure variables, military company environment, and family environment were all assessed at 1983, homecoming exclusion and support were assessed at 1984, social support

was assessed twice, at both 1984 and 2002, and PTSD symptoms were assessed at all three points in time.

Attrition and Handling of Missing Data

Six hundred and seventy-five veterans participated in the study at 1983 (time 1). Of those, 462 also participated in the study at 1984, constituting a 68.4% participation rate at follow-up. Of those 462 veterans, 296 participated in the third and final follow-up at 2002, constituting 64.1% of those who participated in the first two assessments. To deal with the effects of attrition, all missing data were handled using the multiple imputation (MI) technique. According to Rubin's (1987) MI procedure, instead of filling in a single value for each missing value, the missing value is replaced by *a set* of plausible values that represent the uncertainty about the right value to impute. MI is a widely used and recommended method for handling missing data in longitudinal studies, and is known to have considerable advantages over other missing data techniques (e.g., Newman, 2003). It was also used specifically in studies of war veterans (e.g., Ginsberg, Ayres, Burriss, & Powell, 2006).

Measures

PTSD inventory. The PTSD inventory (Solomon, Weisenberg, Schwarzwald, & Mikulincer, 1987) comprises 13 statements describing the Diagnostic and Statistical Manual of Mental Disorders Third Edition (DSM-III; American Psychiatric Association [APA], 1980) symptoms of PTSD, as adapted for combat trauma. DSM-III was the standard used when the study commenced, and was therefore employed to allow standardization across all three measurements. The 13 symptoms were divided into three categories, corresponding to the following three PTSD symptom clusters: (a) re-experiencing of the trauma (e.g., "Pictures or thoughts about the Lebanon War come back to you"); (b) responsiveness to- or avoidance of the ex-ternal world (e.g., "You avoid activities which remind you of war events"); (c) additional symptoms, including hyper-alertness, sleep disturbance and memory or concentration difficulties (e.g., "You suffer from memory difficulties or have trouble concentrating"). Participants were asked to indicate whether or not they have suffered from each symptom during the month preceding the assessment. In line with DSM-III symptom criteria, participants were diagnosed with PTSD if they endorsed at least one re-experiencing symptom, one numbing/avoidance symptom, and two hyper-alertness symptoms.

The clinical validity of the inventory was assessed by concurrent clinical interviews for a sample of 114 soldiers, 1 year after the Lebanon War. Clinicians experienced with PTSD assessed the existence of each symptom in the PTSD inventory. Concordance percentages calcu-lated for each symptom ranged from 68.75% to 80%, indicating consider-able agreement between the self-report and the clinical diagnosis of PTSD. The PTSD inventory was also administered twice within a 1-week interval to 20 soldiers. Percentage of agreement was 82.3%, indicating high test-retest reliability. At Time 1, the PTSD inventory was correlated with the Im-pact of Event Scale (Horowitz et al., 1979), a measure designed specifically to assess the im-pact of traumatic experiences. The PTSD inventory correlated with both the Im-pact of Event Scale intrusion ($r = 0.62$) and avoidance ($r = 0.40$) factors, supporting concurrent validity for the PTSD measure. In the present study, Cronbach's Alphas for this inventory ranged from 0.89 in 1983 and 1984 to 0.92 in 2002.

Subjective combat exposure was assessed via the following two questions. (a) The first question "To what degree do you believe the experiences you had during the war were dangerous and threatening?" was rated on a 5-point scale, ranging from 1 (*not at all*) to 5 (*very much*), and is similar to that used by Green, Grace, and Gleser (1985). (b) The second question was "The battles in which I had participated were: ("difficult" = 1, "average" = 2, "easy" = 3, "did not participate" = 4). *Objective battle exposure* was assessed via the following question: "What role did you serve during combats: an active fighting role, an assisting role or a service role?"

Social Network Scale. The social support questionnaire was revised for the purpose of this study on the basis of Mueller's (1980) social network interview. Participants received seven questions regarding expressive and instrumental support that they received from their network's members. Examples of items are "I have friends who would remain true friends even if I got in trouble" and "I have people around me who respect and value me." Participants were asked to indicate on a 4-point scale, ranging from 1 (*not at all*) to 4 (*very much*) to what extent they received support from their network's members. In the present study, the scale was found to have good reliability (Cronbach's alpha = .86).

Family Environment Scale (FES). The FES (Moos & Moos, 1981) comprises 10 subscales that assess three major domains in family relations: interpersonal relations, personal growth, and family structure maintenance. In this study we used only three subscales: (a) family cohesiveness refers to the amount of family member's commitment to give help and support to each other (sample item: "in our family, we really help and support each other"); (b) family expressiveness refers to the amount of open emotional communication, self-disclosure, and emotional sharing within the family (sample item: "in our family, people usually keep their feelings to themselves"); and (c) family conflict refers to the amount of anger, violence, and disputes that characterize the family (sample item: "we fight a lot in our family"). When employed on this sample of combat veterans, the questionnaire was found to have good reliability for the various subscales (Cronbach's alpha = .78-.89).

Social Reintegration Scale. The Social Reintegration Scale was devised by Laufer, Yager, Frey-Wouters, and Donellan (1981) to assess soldiers' readjustment following homecoming. The questionnaire presents eight statements, to which the respondent is asked to indicate on a 5-point scale, ranging from 1 (*disagree strongly*) to 5 (*agree strongly*), to what extent he agrees or disagrees with each. For the present study, the scale was translated into Hebrew by three highly experienced bilingual psychologists and further pretested on a small sample of soldiers, with favorable results. The following two scores were then computed for the scale: (a) Feelings of alienation at homecoming (three items, for example, "Readjusting to civilian life was more difficult than most people imagine"); and (b) Belief that people and government support veterans (five items, for example, "People at home made you feel proud to have served your country in the army"). Internal consistency among the items was high (Cronbach's alpha = 0.88).

Military company environment. Company environment 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 1982 Lebanon War. This scale comprises four different factors (Moos, 1973). The first comprises nine items assessing emotional support (sample item:

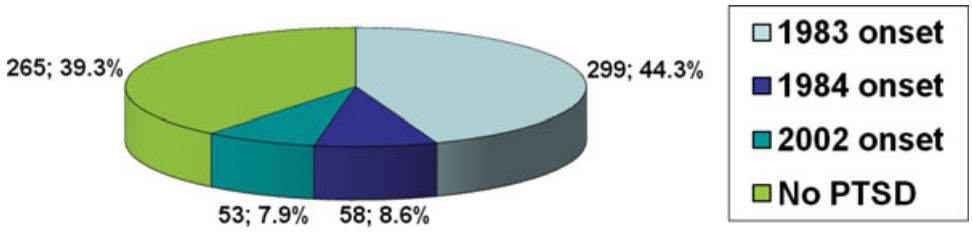

Figure 1. Number and percentage of veterans according to group.

"soldiers care about each other"). The second comprises 16 items assessing officer support (sample item: "officers encourage their soldiers"). The third factor comprises nine items assessing soldiers' involvement in company activities (sample item: "soldiers in the unit also meet in their off-duty time"). Finally, the last factor comprises five items tapping order and coherence ("our unit is well-trained and ready for war"). Alpha coefficients for the factors ranged between .71 and .83, indicating high internal consistency.

RESULTS

DPTSD: Prevalence

As noted, the study compared four groups of veterans, according to the time of the first reported PTSD onset (1983, 1984, and 2002 and no-PTSD). Because of the nature of our study design, our definition of DPTSD was not based on the DSM-IV (APA, 2000) 6 months threshold. Instead, for the purpose of prevalence calculation, we defined only veterans from the 1984 and 2002 onset groups as those representing DPTSD (i.e., they did not have PTSD at the first wave, but did endorse it at some other time point). While this definition does not meet DSM criteria, it is in line with other studies of delayed PTSD (Andrews, Brewin, Philpott, & Stewart, 2007).

Figure 1 presents the number and percentage of veterans belonging to each group.

As can be seen, the largest group consisted of veterans who experienced their first PTSD onset 1 year after the war, followed by veterans who did not suffer from PTSD at any time of assessment during the study's 20-year period. Together, the two groups that according to this study's definition represent relative delays in PTSD onset (2 years and 20 years delay) comprised 16.5% of the sample. As can also be seen, the rate of veterans who experienced a 2-year delay was very similar to that of veterans experiencing a 20-year delay.

Difference in Sociodemographic Characteristics

In this section we examined whether the 1983 onset, delayed to 1984, delayed to 2002, and no-PTSD groups differed in family status, military rank, economic status before the war, education, age, and number of children. A series of χ^2 analysis of independence (using exact significance estimation to account for possible assumptions violation when calculating χ^2 analyses) revealed that the groups did not differ in family status, $\chi^2(3) = 3.51$, $p = .32$, military rank, $\chi^2(3) = 11.79$, $p = .07$, economic status before the war, $\chi^2(15) = 22.96$, $p = .09$, or education, $\chi^2(15) = 24.55$, $p = .06$. Moreover, using multivariate analysis of variance (MANOVA) with group classification as the independent measure

Table 1. Means and Standard Deviations for Differences in Sociodemographic Characteristics Between the 1983 Onset, Delayed to 1984, Delayed to 2002, and No-PTSD Groups

No-PTSD		*At 2002*		*At 1984*		*PTSD*		
SD	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	
1.43	1.55	1.07	1.28	1.28	1.11	1.35	1.48	Number of children
6.13	29.68	5.87	28.42	4.78	27.88	5.90	29.65	Age

Note. PTSD = posttraumatic stress disorder; SD = standard deviation; M = mean.

and age and number of children as the dependent measures, we found no significant differences between the groups in age, $F(3,671) = 2.15$, $p = .09$, $\eta^2 = .01$, or number of children, $F(3,671) = 1.27$, $p = .30$, $\eta^2 = .01$. Means and standard deviations are presented in Table 1.

Differences in War Variables

In this section we explored whether (a) the 1983 onset, delayed to 1984, delayed to 2002, and no-PTSD groups differ in their subjective assessments of battle severity and exposure to danger, (b) whether the study groups differ in military assignments (warriors, support, and services), and (c) whether they differ in the probability of having experienced combat stress reaction on the battlefield. To this end, we conducted a series of χ^2 analyses of independence (using exact significance estimation to account for possible assumptions violation when calculating χ^2 analyses). Results show that 24.5% of the participants in the no-PTSD group, 35.8% of the participants in the delayed to 2002 group, and 41.4% of the participants in the delayed to 1984 group reported being exposed to extreme danger, and 64.5% of the participants in the 1983 onset group endorsed such extreme exposure, $\chi^2(12) = 120.06$, $p < .001$.

In a similar vein the analysis revealed that whereas 27.9% of the participants in the no-PTSD group reported being exposed to extremely severe battles, 48.2% of the participants in the 1983 onset group reported such extreme exposure, $\chi^2(9) = 44.63$, $p<.001$. In comparison, 39.6% of the participants in the delayed to 2002 group, and 34.5% of the participants in the delayed to 1984 group reported being exposed to extremely severe battles.

In addition, the analysis revealed that 79.9% of the participants in the 1983 onset group were either warriors or served in support roles, compared with 63.8%, 71.7%, and 75.1% of the participants in the 1984 DPTSD, 2002 DPTSD, and no-PTSD groups, respectively, χ^2 (3) = 7.93, $p<.05$. Finally, the results revealed that whereas 27.9% of the participants in the no-PTSD group were classified as suffering from CSR, 79.3% of the participants in the 1983 onset group were classified as suffering from CSR, $\chi^2(3) = 151.72$, $p<.001$. In comparison, 58.6% of the participants in the delayed to 1984 group and 45.3% of the participants in the delayed to 2002 group were classified as suffering from CSR.

Differences in Social Resources

In this section we explored whether (a) the 1983 onset, delayed to 1984, delayed to 2002, and no-PTSD groups differ in their subjective reports of their military company

Table 2. Means, Standard Deviations, and Test Statistics for Differences in Social Resources Between the 1983 Onset, Delayed to 1984, Delayed to 2002, and No-PTSD Groups

	No-PTSD		*At 2002*		*At 1984*		*PTSD*		
$\chi^2(3)$	*SD*	*M135*	*SD*	*M*	*SD*	*M*	*SD*	*M*	
42.33***	7.74	30.96	7.44	32.20	9.29	28.31	8.87	27.09	Military company environment
21.14***	1.83	7.37	1.86	7.35	2.18	6.62	2.27	6.61	Family cohesiveness
36.62***	1.67	6.52	1.73	6.40	1.87	6.08	1.78	5.65	Expressiveness among family members
20.08***	2.02	2.58	2.17	2.73	2.24	3.09	2.21	3.37	Conflicts between family members
42.23***	.58	3.11	.52	2.98	.67	2.89	.64	2.76	Social support at 1984
95.60***	.47	3.32	.62	2.98	.68	3.04	.64	2.83	Social support at 2002
48.14***	.63	.21	.63	.27	.73	.01	.78	−.19	Homecoming support feelings
97.01***	.64	−.36	.56	−.01	.72	−.05	.69	.21	Homecoming exclusion feelings

Note. PTSD = posttraumatic stress disorder; SD = standard deviation; M = mean.
*** $p < .001$. χ^2= Kruskal-Wallis statistic.

environment; (b) whether they differ in their family environment (family cohesiveness; expressiveness among family members; and family conflict); (c) whether they differ in the social support they have received 2 years and 20 years after the war; and (d) whether they differ in their perception of the homecoming experience following the war (feelings of support or exclusion). Due to non-normal distribution of the dependent variables, we conducted a series of Kruskal-Wallis tests with group classification as the independent variable and military company environment, family environment subscales, social support, and reception at homecoming subscales as the dependent variables. Means, standard deviations, and univariate statistics are presented at Table 2.

As can be seen in Table 2, study groups differed in all social variables tested. Tamhane posthoc tests revealed that participants of the no-PTSD group (a) endorsed more positive company and family environments, higher family cohesiveness, more expressiveness among family members, fewer conflicts between family members, (b) received more social support 2 and 20 years after the war, and (c) felt more support and less exclusion at homecoming than participants of the 1983 onset group. Moreover, the analyses revealed that participants of the no-PTSD group received more social support 20 years after the war and felt less exclusion at homecoming than the delayed to 1984 and 2002 groups. Finally, the analyses revealed that participants of the 1983 onset group (a) endorsed less supportive company environment and less expressiveness among family members, (b) had less social support 2 years after the war, and (c) felt less support at homecoming than participants of the delayed to 2002 group. All other effects were not significant.

Discriminant Function Analysis (DA)

In this section we examined the relative contribution of previously tested variables to the difference between PTSD, delayed to 1984, delayed to 2002, and no-PTSD groups. To this end, we conducted DA with group classification as the grouping variable and all variables that were found to differentiate between study groups in the previous analyses as the independent variables. Specifically, we explored the relative contribution of battle severity, exposure to danger, role during the war, CSR, military company environment, family environment (family cohesiveness, expressiveness, and conflict), social support,

Table 3. Standardized Canonical Discriminant Function Coefficients for Relative Differences Between the 1983 onset, Delayed to 1984, Delayed to 2002, and No-PTSD Groups

Loadings	β	*Measure*
.67*	.45	CSR
.53*	.44	Exposure to danger
.49*	.25	Homecoming feelings of exclusion
.48*	−.30	Social support at 2002
.33*	−.03	Social support at 1984
.29*	−.10	Expressiveness among family members
.22*	.06	Conflicts between family members
.28	−.19	Military company environment
.33	−.19	Homecoming feelings of support
.03	−.28	Position during the war
.28	.18	Battle severity
.22	.00	Family cohesiveness

Note. CSR = combat stress reaction.
Higher significant loading values refer to heightened differences between classification groups. Positive standardized coefficients refer to higher values for the 1983 onset group than the no-PTSD group. Negative standardized coefficients refer to higher values for the no-PTSD group than the 1983 onset group.

and support at homecoming to the differences between PTSD, delayed to 1984, delayed to 2002, and no-PTSD groups.

The analysis revealed one significant canonical discriminant functions that placed the study groups on one continuum dimension with PTSD on one end, followed with delayed to 1984 and delayed to 2002 groups (in this order), and the no-PTSD group on the other end. The function explained 94.2% of the variance, *Wilks'* $\lambda = .59$, $\chi^2(36) = 354.30$, $p < .0001$, $cr = .63$. The second, *Wilks'* $\lambda = .96$, $\chi^2(22) = 26.02$, $p = .25$, $cr = .16$, and third functions, *Wilks'* $\lambda = .99$, $\chi^2(10) = 8.60$, $p = .57$, $cr = .11$, were not significant. Canonical function's loadings and standardized canonical discriminant coefficients are presented in Table 3.

As can be seen in Table 3, seven variables significantly differentiated among study groups. CSR and exposure to danger were the most differentiating variables, followed by homecoming exclusion and social support at 2002 and 1984. Family expressiveness and conflict were the least differentiating variables.

DISCUSSION

The present study examined the associations between social resources, combat exposure, and DPTSD. Over a 20-year period, DPTSD was found among 16.5% of the veterans who participated in the study. Results indicated that social variables are implicated in DPTSD. Generally speaking, we found that higher levels of social resources were associated with longer delays in PTSD onset. Our results also showed that higher levels of objective and subjective battle exposure were associated with a more immediate onset of PTSD. CSR was also negatively associated with DPTSD. Finally, when all significant predictors of DPTSD were examined together, CSR was the variable that most strongly differentiated between the four study groups, while family conflict was the least powerful differentiator.

The results of this study indicate that a significant number of veterans reported a delay in PTSD onset. The rate of DPTSD found here (16.5%) is higher than the one

found in most studies (Frueh, Grubaugh, Yeager, & Magruder, 2009; Gray, Bolton, & Litz, 2004). However, some studies have found similar rates (e.g., McFarlane, 1988). Overall, the prevalence of DPTSD in this study provides further evidence for the existence of DPTSD. For many years, the validity of this phenomenon was cast in doubt (e.g., Pary et al., 1986). However, in recent years there have been a growing number of studies that provide solid empirical evidence for the existence of this phenomenon (e.g., Andrews et al., 2007).

Our results clearly implicate social resources in DPTSD. Overall, this study indicates that higher levels of social resources are associated with longer delays in PTSD onset. This finding is in line with vast literature, showing social resources to be important protective factors in the face of traumatic stress. It is by now a well-accepted fact that trauma survivors may significantly benefit from support offered by various sources in their environment. This support may serve important emotional, cognitive, and practical functions (Cohen, Hettler, & Park, 1997), often attenuating feelings of helplessness and loneliness, and strengthening one's sense of mastery and potency. More specifically, however, our findings are in line with previous studies showing that social resources may contribute to the delay in PTSD onset (e.g., Nitto, 2001). One may conclude that support from various social sources often helps trauma casualties endure the detrimental effects of war for a longer period of time, during which the onset of PTSD is delayed.

Still, it should be noted that while the negative association between PTSD onset and social support is by now well-established, the directionality of this association is often the subject of debate. While most researchers tend to view social support as a resource affecting PTSD levels, it is also possible to attribute the association between social support and PTSD to the interpersonal difficulties that accompany the disorder. Studies of war veterans have showed that those suffering from PTSD often have difficulty solving interpersonal problems, and they experience problems in intimacy, marriage, and parenthood (e.g., Ruscio, Weathers, King, & King, 2002). Therefore, it is possible that PTSD exerts a negative effect on the quality and availability of social support among those suffering from the disorder. This line of reasoning was supported by both retrospective (Keane, Scott, Chavoya, Lamparski, & Fairbank, 1985) and prospective (King et al., 2006) studies of war veterans.

It should also be noted that social resources play a complex role in the DPTSD literature. On one hand, our findings are in line with previous studies showing social resources to contribute to the delay in PTSD onset. On the other hand, the original theory of delayed stress responses (Horowitz & Solomon, 1975) suggests otherwise. According to that theory, when a soldier returns from combat, he gradually lets go of the denial and numbing mechanisms that helped him cope during combat. What enables him to let go of these defenses is the comfort and support offered to him by his social environment. Consequently, posttraumatic symptoms that were suppressed during combat may rise to the foreground after homecoming.

As opposed to our findings, this perspective views social support as a factor that may facilitate, rather than delay, the onset of PTSD. This perception of social support also has practical implications. For example, during the 1973 Yom Kippur War, Israeli soldiers often were not allowed to return home for vacation, in fear that in the safe environment of their friends and family they would allow themselves to lower their emotional guards, and consequently experience mental breakdown (Gernak et al., 1990).

A more careful look at our findings reveals an interesting picture. As expected, the 1983 onset group, whose members experienced the fastest onset of PTSD, consistently reported the lowest rates of social resources, both during the war and at various stages after

homecoming. Also as expected, the no-PTSD group reported the highest resources levels. However, a complex pattern of results is unveiled with regard to DPTSD. Our findings show that while significant differences in social resources exist between the 1983 onset and delayed to 2002 groups, the former does not differ from the delayed to 1984 group. In other words, the 1-year delay separating the 1983 onset and delayed to 1984 groups may not be accounted for by changes in social resources. However, a longer delay in PTSD onset–in this case, a 20-year delay–is associated with higher levels of social resources. The main conclusion that stems from this finding is that social resources have significant long-term, but not short-term effects on the time of PTSD onset.

This may have several possible explanations. First, it is possible that social resources do not exert their positive influence immediately. Rather, social resources facilitate various processes that, with time, serve to improve one's well-being and psychological resilience. In the words of Thoits (1986), social resources may be seen as "coping assistance." In other words, one's feeling of belonging to a strong social network may enhance one's ability to employ various coping strategies that have positive psychological implications. This shift, from feeling safe and protected to coping effectively with stress, may be the result of a gradual, long-term process. A second explanation for the exclusively long-term effect of social resources may be that during the first years after the war, the pains and memories of the trauma are still powerful and thus may overshadow the positive effects of protective factors. However, many years after war, it is possible that the traces of the original trauma have slightly faded, thus enabling social resources to exert their protective influence.

As for combat exposure, our findings generally showed that the delay in PTSD onset was associated with lower levels of exposure. The 1983 onset group, which represents the fastest PTSD onset, consistently reported the highest levels of combat exposure, both objective and subjective. On most measures of exposure, the two groups representing DPTSD (delayed to 1984 and delayed to 2002) reported significantly lower exposure than veterans who experienced a more immediate onset. Thus, a "dose-response" effect was found, in which the duration of delay in PTSD onset was negatively associated with the level of combat exposure. This finding should come as no surprise, as it is in line with numerous previous studies showing a correlation between level of trauma exposure and posttraumatic morbidity (e.g., Sümer et al., 2005).

Most importantly, however, we have found that CSR rates vary as a function of the delay in PTSD onset. CSR has been previously found to be a potent risk factor for PTSD (e.g., Solomon & Mikulincer, 2006). It seems that the initial, acute reaction to combat stress renders one more vulnerable to a more chronic disorder in the future. This vulnerability may be expressed in several ways, one of them being a faster onset of PTSD. Previous studies of DPTSD have examined only CSR as part of the definition of DPTSD, but did not include it as a possible correlate of this condition (e.g., Shaw et al., 2009). Thus, our findings shed light, perhaps for the first time, on the role of CSR in DPTSD. Finally, one may argue that the correlational nature of this study does not allow any conclusion regarding the directionality of this relationship. Thus, we may not know for sure whether exposure affects PTSD or vice versa. However, the prospective nature of this study and the consistency of results across multiple exposure variables do seem to provide strong support for the latter possibility.

Finally, when all significant predictors of DPTSD were examined together, CSR was the variable that most powerfully distinguished between the four study groups. This should come as no surprise, as CSR is not merely a measure of exposure, but rather an acute psychiatric reaction to stress known to be a significant risk factor for PTSD onset. The second most powerful predictor was exposure to danger. This is an interesting finding,

as this measure refers to subjective, rather than objective, exposure to stress. This is in line with previous studies showing that subjective warzone exposure may be a more powerful predictor of PTSD than objective exposure (Mehlum & Weisaeth, 2002). A possible explanation for this may be that subjective exposure already incorporates various psychological aspects that are strongly linked to one's reaction to trauma. For example, it was previously found that one's subjective appraisal of trauma severity may change as a function of one's posttraumatic mental health status (e.g., Ehlers & Clark, 2000).

Finally, our findings regarding the role of subjective exposure are particularly relevant to the recent debate regarding the utility of the A2 DSM criterion for PTSD, which refers to one's subjective experience of the traumatic event (e.g., Karam et al., 2010). Our findings indicate that subjective exposure is an important predictor of PTSD, and thus should be taken into account in any assessment of this disorder.

The results pertaining to the relative predictive power of the social resources reveal an interesting pattern. At the start of this article, we presented several different levels or "circles" of social resources, from one's military company to one's family, one's general social network, and, finally, society as a whole. According to our findings, the broadest circle (the veteran's homecoming experience vis-à-vis society as a whole) made the largest contribution to DPTSD, followed by the social network and family. Thus, the broader the social resource, the larger its contribution to DPTSD.

This finding may have several explanations. First, when a soldier is sent out to war, he often sees himself as representing his country, rather than representing himself or his family. In a sense, war is a national, not a personal, experience. In a similar vein, when they return from combat, their eyes are focused upon the country at large, and its attitude towards them. Thus, whether or not society at large will produce a warm and favorable reaction towards it returning solders may have a particularly crucial effect on the latter's well-being and adjustment (Figley, 1980). A second explanation for our findings may be that the general homecoming experience is the "gateway" through which all other social factors exert their influence. Thus, the attitude expressed by society at large may consequently affect the attitudes expressed by the inner social circles, such as one's family and close social networks.

Finally, it is more than likely that important aspects of the narrow social circles (i.e., feelings of acceptance and cohesiveness) are already included in the broader social sphere. In other words, the narrow social circles may not add much to the broad circle's already-significant effect.

This study has several methodological limitations. First, it is based on self-report measures that, although very common in trauma studies, still entail the risk of biased reporting and/or biased memory. Another limitation is related to our definition and measurement of DPTSD. The first assessment occurred 1 year after the war, thereby exceeding the 6-month mark determined by the DSM for DPTSD. In addition, because of the time lag between assessments, we have no way of knowing if veterans suffered from PTSD in between our examinations.

A final limitation is the diagnosis of PTSD according to DSM-III criteria, and not according to the more updated DSM-IV edition. It may be expected that applying the more stringent criteria of DSM-IV would have resulted in lower rates of DPTSD. Nonetheless, this limitation may be seen as a natural consequence of conducting a 20-year long study. DSM-III was the edition used at the time of the first two assessments (1983 and 1984). Therefore, to allow a standardized comparison of respondents over time, the only possible solution was to use DSM-III criteria as the reference point for all three follow-ups, including the one at 2002.

Despite these limitations, however, the present study has both theoretical and clinical importance. First and foremost, our findings provide strong support to the existence of DPTSD. This phenomenon has been the subject of ongoing debate, and the results of this study seem to validate its existence among a considerable number of war veterans. Second, the unique methodology employed here enables us to conceptualize and assess PTSD onset at various points across time. The delay in PTSD onset does not seem to be an all-or-none phenomenon, but rather one that has differential lengths (i.e., delays of 1 year and 20 years). To the best of our knowledge, this is also the first study of DPTSD to systematically examine the role of social resources at various levels. This is a major contribution to the DPTSD literature, as most studies in this field examined disparate and unrelated variables, instead of relying on a coherent theoretical rational.

The findings of this study shed light on the importance of social resources in both delaying and facilitating the onset of PTSD. The fact that social support exerts its influence at various levels (society, family, etc.) stresses the need for providing a solid "holding" environment for the returning veteran. This study also reveals a strong connection between antecedent CSR and DPTSD. This finding may have important clinical implications, as it identifies a possible marker for a faster PTSD onset. The findings of this study may also have clinical implications. Mental health professionals are encouraged to develop interventions aimed at increasing social support for returning veterans. Veterans may highly benefit from interventions at various levels, starting from peer support groups, through family therapy, to community-based interventions. Psychoeducational strategies may also be needed, to raise the environment's awareness to the unique and complex nature of veterans' homecoming experience.

Finally, interventions aimed at one's social environment may subsequently help cut back on treatment costs. As shown here, social resources serve as important buffers in the face of traumatic stress. If these resources were to be identified and maximized at an early stage, this may prevent future deterioration in one's psychological condition, and with it the need to undergo costly treatment.

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