

An Eighteen-Year Follow-up Study of Israeli Prisoners of War and Combat Veterans

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The current study assesses the psychological and psychiatric aftermath of war captivity; 164 Israeli ex-POWs and 189 comparable controls were assessed for posttraumatic stress disorder, intrusion and avoidance tendencies, and generalized psychiatric symptomatology 18 years after the war. Findings indicated that trauma-related psychopathology and general psychiatric symptomatology were more prevalent among POWs than among their matched controls. In addition, captivity experience, social support at homecoming, and, above all, socio-demographic and military factors were found to be strongly correlated with the outcome measures. Theoretical and clinical implications of the aftermath of captivity are discussed.

War captivity entails some of the most traumatic experiences perpetrated by human beings. It is often experienced subsequently to brutal combat and involves prolonged and repeated traumatization (Herman, 1992; Hunter, 1993). Most POWs are held in solitary confinement, at times blindfolded and handcuffed for months, in small cells under unsanitary circumstances. They are subjected to deliberate and systematic violence on the part of their captors, including physical torture, deprivation of basic needs, and deliberate humiliation.

The current study examined the long-term traumatic residuals in Israeli soldiers who were captured by Syria and Egypt during the 1973 Yom Kippur War. The Egyptian captivity lasted about 6 weeks, and the Syrian lasted 8 months. Both experiences were extremely traumatic in terms of torture, humiliation, and deprivation.

Most empirical research on POWs has found that the traumatic stress of captivity produces deep and long lasting pathology: psychological (e.g., Kral et al., 1967; Sutker et al., 1986; Ursano et al., 1996), somatic (Beebe, 1975; Engdahl et al., 1991b; Ohry et al.,

1994; Tennant et al., 1986), cognitive (Sutker et al., 1990, 1991, 1992, 1995), and functional (Van Vranken, 1978) disorders. Among the psychological disorders, posttraumatic stress disorder (PTSD) is prominent (Solomon et al., 1994; Sutker and Allain, 1996). Findings revealed high PTSD rates, ranging from 30% (Speed et al., 1989), 50% (Goldstein et al., 1987; Zeiss and Dickman, 1989), 70% (Sutker et al., 1993), 71% (Crocq et al., 1991), and 76% (Sutker and Allain, 1996) among World War II POWs, and up to 86% (Sutker et al., 1991) and 88% (Sutker and Allain, 1996) of POWs samples of the Korean conflict.

A considerable body of research revealed not only typical posttraumatic symptomatology but also a wide range of psychiatric symptomatology, particularly anxiety and depression (Dent et al., 1987; Engdahl et al., 1991a; Kluznik et al., 1986; Page et al., 1991; Tennant et al., 1986; Ursano and Rundell, 1990), hysteria (Sutker and Allain, 1991), paranoia (Klonoff et al., 1976), and hypochondria (Klonoff et al., 1976; Sutker & Allain, 1991). POWs are also at high risk for long-term adjustment problems, including unemployment (Sutker et al., 1986), financial difficulties (Van Vranken, 1978), interpersonal problems, among them social isolation and loneliness, suspiciousness, and hostility (Herman, 1992; Sutker and Allain, 1991), sexual dysfunction (Sutker et al., 1986; Ursano et al., 1981), substance use disorders (Ursano and Rundell, 1990), family problems (Ursano and Rundell, 1990), and high divorce rates (Nice et al., 1981; Van Vranken, 1978).

However, several empirical studies revealed that although there are widespread immediate detrimental effects, much of the reaction is limited and transient. Hall and Malone (1976) have found that although elevated emotional distress and impaired functioning were prevalent in the first 2 years after release, psychological reactions then abated. Moreover, some studies (e.g., Sledge et al., 1980) indicated that considerable numbers of POWs attributed beneficial consequences to their experiences. POWs discovered increased inner strength, more self awareness, creativity, and a greater sense of fulfillment.

As can be seen, there is a considerable variability among studies assessing captivity residuals. Efforts have been made to explain this variance. Several risk factors for post-captivity pathology have been identified: the political conditions of the theater and the

timing of captivity (Ursano et al., 1987; Wheatly and Ursano, 1982), captivity location and duration (e.g., Crocq et al., 1991; Sutker and Allain, 1996), severity of captivity trauma (e.g., Beal, 1995; Crocq et al., 1991; Sutker and Allain, 1996; Ursano et al., 1981, 1987; Ursano and Rundell, 1990), weight loss during imprisonment (e.g., Eberly and Engdahl, 1991; Speed et al., 1989; Sutker and Allain, 1996), pre-captivity personality factors (Ursano, 1981), and social support during and after captivity (Ursano et al., 1996; Ursano and Rundell, 1990). Sociodemographic and military factors, such as level of education, age, and military rank have been identified as well. These studies showed that probability for psychological disorders was higher among less-educated (Dent et al., 1987; Sutker and Allain, 1995), younger (Crocq et al., 1991; Engdahl et al., 1991a; Page et al., 1991), and lower military rank (Sutker and Allain, 1995; Zeiss and Dickman, 1989) POWs.

There are reasons to believe, however, that other risk factors are implicated as well, which have not yet been systematically examined. This study investigates several factors that may be involved in the long-term adjustment of ex-POWs: pre-captivity combat experience, socio-demographic variables (education and father's country of origin), social support at homecoming, and the well-documented, high-risk variables of military rank and type of military service (e.g., Solomon, 1993).

Stressful experiences are often implicated in the genesis of mental disorders (Brown and Birley, 1968; Markush and Favero, 1974; Paykel, 1979). Previous studies pointed to the significant role of stressor intensity in determining subsequent adjustment (Janis, 1971; Murrell and Norris, 1984). This was also evidenced in studies that examined battlefield experience (e.g., Solomon, 1993). More specifically, level of exposure to war stress has been shown to be a consistent predictor of subsequent posttraumatic reactions. The more intense the fight, involving threat of danger, loss, and injury, the higher the prevalence and the severity of posttraumatic reactions (Green, 1993; Keane et al., 1997; Mullins and Glass, 1973).

Social support at homecoming has often been described as an important factor in the subsequent adjustment of war veterans (Figley and Leventman, 1980; Solomon, 1993) and POWs (Hunter, 1993; Ursano et al., 1996; Ursano and Rundell, 1990). Some researchers suggest that lack of social support increases the risk of psychological

disorders and might be even more harmful and pathogenic than the traumatic experience itself (Eitinger, 1964; Quarantelli, 1985). Homecoming after release from captivity has been recognized as a formative crucial period that may be either beneficial or detrimental to the POWs' psychological health (Hunter, 1976, 1984, 1993). The former prisoner who had been forced to adjust to the terror and lack of freedom of captivity is forced to readjust to a world of relative liberty (Eberly et al., 1991) and may have difficulty in bridging the two realities (Herman, 1992). Based on the literature, the present study hypothesizes that whereas a positive, supportive reception at homecoming decreases the risk for psychological disorders, a negative, accusatory reception increases vulnerability.

This study examines a) the long-term psychological disorders of POWs compared with that of combatants who did not experience war captivity and b) the role that socio-demographic and military variables, combat exposure, and social support at homecoming play in the long-term psychopathology.

Methods

This study examined two groups consisting of a total of 353 Israeli veterans who fought in the 1973 Yom Kippur War.

Prisoners of War

According to Israeli's Ministry of Defense records, 240 soldiers serving in the Israeli Army land forces (excluding the navy and the air force) were captured in the Yom Kippur War. At the time of this study, three of the men had died and 20 were living abroad. Of the remaining 217 former POWs residing in Israel at the time of the study, 164 participated in the study, constituting a 75.5% response rate. Respondents did not differ from non-respondents in socio-demographic and military variables. The group consisted of 136 POWs who were captured by the Egyptians and 28 who were imprisoned by the Syrians. Despite the difference in terms of duration of captivity, 8 months in Syria and 6 weeks in Egypt, POWs of both groups have been subjected to intense isolation and systematic torture, consisting of the infliction of severe physical pain and great mental pressure. Mental pressure was applied by a range of techniques, including frightening the prisoner with numerous threats (of death, mutilation, or killing

family and friends), exhausting him through inadequate food, extremes of heat or cold, prolonged standing or deprivation of exercise, and prolonged interrogations. POWs were humiliated verbally and by interfering with their personal hygiene and natural bodily functions.

Analysis revealed no differences between POWs held in Egypt and in Syria, neither in socio-demographic and military variables nor in any of the outcome measures. Thus, we decided to group all POWs together.

Controls

A control group of 280 combat veterans of the Yom Kippur was sampled from Israel Defense Forces computerized data banks. The groups were matched on the following personal and military variables: a) military assignment, a soldier from the same unit and the same duty; or b) scores on military performance prediction tests that were administered when the soldiers were first drafted and consisted of personality features and measures of intelligence. Of the control group, 20 were abroad at the time of the study and five had died. Of the remaining 255 men, 189 participated in the study, constituting a 74% response rate. Again, respondents and non-respondents did not differ in background variables.

Examination of socio-demographic variables revealed that age, ethnic background, marital status, and educational background were similar in POWs and control groups. Subjects' average age during the war was 22 years. Father's country of origin was Israel in 7% of cases, Asia or Africa in 36%, and Europe or America in 57%. Twenty-six percent of the subjects were married during the war, and 70% had completed high school. However, the POWs and controls were found to differ somewhat in military rank during the war: 80% of POWs were privates versus 65% in the control group; 6% of POWs were corporals and sergeants versus 10% in control group; 13% of POWs were first and second lieutenants versus 23% in the control group; and 1% of POWs were majors and colonels versus 2% in the control group ($\chi^2 = 10.12, p < .05$). This difference was controlled for in the statistical analysis that will be presented in the results section.

Instruments

PTSD Inventory. PTSD was assessed by a 17-item PTSD Inventory based on DSM-ID-R (American Psychiatric Association, 1987) criteria. Each item describes a DSM-ID-R PTSD symptom, adapted for war trauma. The inventory enables a decision on whether a person is suffering from PTSD. In addition, PTSD intensity was computed by averaging subjects' answers. Internal consistency among the 17 items was high (Cronbach alpha = .86), and the scale was found to have high convergent validity when compared with diagnoses based on structured clinical interviews (Solomon et al., 1993).

Impact of Event Scale (IES). The IS was devised by Horowitz et al. (1979) to assess the emotional sequelae of extreme stress. The questionnaire describes 15 trauma-related emotional reactions, tapping intrusion, and avoidance. The respondent is asked to indicate on a four-point scale ranging from "not at all" to "often" how frequently he experienced each reaction during the previous week. Two score, intrusion and avoidance, were computed by summing the items corresponding to each scale. The IES is a widely used measure with validated psychometric properties (Hendrix et al., 1994; Neal et al., 1994). Previous studies indicate high validity and reliability of the Hebrew version (Schwarzwald et al., 1987).

SCL-90. This questionnaire is a self-report measure that inquires into 90 psychiatric symptoms during the 2 weeks preceding the assessment (Derogatis, 1977). Previous studies indicate satisfactory psychometric properties (Derogatis and Clearly, 1977; Derogatis et al., 1976). Subjects were compared on a global symptoms measure that gauges the extent and severity of psychiatric symptomatology. The Global Severity Index (GSI) reflects the clinical severity of all symptoms and was computed by averaging each subject's answers on the 90 symptoms.

Independent Variables

Socio-demographic and Military Information. For the assessment of socio-demographic and military variables, the subjects filled out a questionnaire asking about their military and civilian background, including father's country of origin, family status, education, military rank, and type of military service.

Battlefield Stressors. To gauge the exposure to battlefield stressors during the

Yom Kippur War, we designed a self-report questionnaire consisting of 23 items. A factor analysis with Varimax rotation revealed four main factors, which explained 64% of the variance. Factor 1 explained 42% of the variance and consisted of nine items relating to encounters with death (e.g., I saw a lot of dead soldiers; Cronbach alpha = .88). Factor 2 explained 9.9% of the variance and consisted of four items pointing to life threatening situations (e.g., I found myself in a situation in which I felt it is the end of my life; Cronbach alpha = .76). Factor 3 explained 6.8% of the variance and consisted of two items describing active fighting (e.g., I killed enemy soldiers; Cronbach alpha = .90). Factor 4 explained 5.3% of the variance and consisted of three items describing uncertainty (e.g., I found myself in a situation where who the commander was unclear; Cronbach alpha = .63).

Homecoming. To obtain a picture of family and social support during home coming, we designed a self-report questionnaire of 14 items. A factor analysis with Varimax rotation revealed five main factors that explained 60% of the variance. Factor 1 explained 22% of the variance and consisted of four items (loading > .45) pointing to negative responses (e.g., They insulted me). Factor 2 explained 14% of the variance and consisted of three items indicative of blaming (e.g., I felt anger against me). Factor 3 explained 9% of the variance and consisted of two items suggesting active support (e.g., I received help from family and friends). Factor 4 explained 8% of the variance and consisted of three items suggesting high expectations from the ex-POW (e.g., My family asked me to be with them all the time, and I did not get a moment's rest). Factor 5 explained 7% of the variance and consisted of two items suggesting that the ex-POW was ignored (e.g. They had learned to live without me).

To decrease the number of the factors, a secondary factor analysis was conducted. This procedure yielded two distinct global factors: the first, which reflected positive responses, explained 27% of the variance and included the items of the third factor (Cronbach alpha = .71). The second, which reflected negative responses, explained 23% of the variance and consisted of items of the rest of the factors (only those loading greater than .70; Cronbach alpha = .50).

TABLE 1
Means and Standard Deviations of Outcome Measures POWs Control group

	POWs		Control group		t(340)
	Mean	SD	Mean	SD	
PTSD symptoms	3.50	(4.52)	1.83	(2.83)	4.19***
Intrusion symptoms	1.31	(1.43)	.82	(.86)	3.83***
Avoidance symptoms	.96	(1.04)	.61	(.77)	3.41***
SCL-90: Global Severity Index	.58	(.63)	.38	(.45)	3.31***

*p<.05; **p<.01; p<.001.

Procedure

Eighteen years after their participation in the 1973 war, POWs and control subjects were asked to come for assessment to the Rehabilitation Department of the Sheba Medical Center. The request was accompanied by a personal letter explaining that, in the wake of the Israel Defense Forces' concern for the well-being of its soldiers, the recipient was being asked to take part in a study assessing soldiers' medical status. Subjects were seated in groups of 30 to 50 and filled out a battery of questionnaires. This took approximately 2 hours and included a short break. Some of the veterans who were unable to come to the hospital had the questionnaires administered at home. Before filling out the questionnaires, subjects signed a consent form and were assured that the data would remain confidential and would in no way affect their status in military or civilian life.

Data Analysis

The differences between POWs and controls in current status were examined via a series of t-tests and a chi-square test. In addition, a series of multiple hierarchical regression was conducted to assess the unique and relative contribution of the predictor variables to the variance in the subjects' current status.

Results

To examine whether there were differences between the two groups' current psychological and psychiatric status, a three step analysis was carried out. First, we examined the prevalence of PTSD in the two groups. Chi-square tests showed that PTSD

was more prevalent among the ex-POWs than in the control group (12.8% versus 3.3% respectively, $\chi^2 = 11.04$, $df = 1$, $p < .001$).

Second, a series of t-tests were carried out. As can be seen in Table 1, there were significant differences between the two groups. The POWs report a higher level of distress: more PTSD symptoms, more intrusion and avoidance symptoms, and more severe psychiatric symptoms. Because the two groups differed in military rank, analysis of covariance was performed, revealing that when military rank was controlled, the pattern of results was not changed.

Third, to determine the relative contribution of captivity, socio-demographic and military variables, combat experience, and social support at homecoming to the subjects' current status, a series of multiple hierarchical regression analyses were performed with PTSD symptoms, intrusion and avoidance tendencies and general psychiatric symptomatology as dependent variables.

Captivity (POWs / non-POWs) was entered into the regression first to assess its unique contribution. The remaining variables were entered in chronological order, starting with the prewar demographic and military characteristics (education, father's country of origin, family status, military rank, and type of military service), followed by combat experience (encounters with death, life-threatening situations, active fighting, and uncertainty), and ending with social support at homecoming (negative and positive reception). Table 2 presents only the significant beta coefficients for the various dependent variables. Table 3 presents the amount of variance explained by the independent variables.

PTSD

Results showed that about 19% of the variance in PTSD was explained by the independent variables in this study ($F = [5, 239] = 11.03$; $p < .001$). War captivity explained 5.3% of this variance, with POWs suffering from more PTSD symptoms (beta = $-.23$). Demographic features contributed 11.7%, with education and father's origin being the most significant factors. Soldiers with lower levels of education and whose fathers immigrated from Asia or Africa suffered from more PTSD symptoms (beta = $-.26$).

and $\beta = .16$, respectively). In addition, reservists, at the time of the war, suffered from more PTSD than conscripts and career soldiers ($\beta = .13$). Combat stressors did not make any unique contribution. Support at homecoming explained an additional 1.6% of the variance. Subjects who reported having received active support at homecoming had fewer PTSD symptoms ($\beta = -0.14$).

Intrusion and Avoidance

Intrusion symptoms were significantly linked to captivity, socio-demographic and combat features, and combat stressors ($F[3, 233] = 13.72$; $p < .001$). POWs ($\beta = -.22$), less-educated soldiers ($\beta = -.30$), and soldiers who were exposed to life threatening situations in combat ($\beta = .19$) suffered from higher levels of intrusion symptoms.

Avoidance symptoms were also significantly linked to captivity, sociodemographic characteristics, and social support at homecoming ($F[3, 227] = 8.71$; $p < .001$). POWs ($\beta = -.20$), less-educated soldiers ($\beta = -.15$), and those who met with negative reactions at homecoming ($\beta = .20$) reported more avoidance symptoms.

Psychiatric Symptomatology

The independent variables explained almost 17% of the variance on the Global Severity Index (GSI) of SCL-90 ($F[5, 239] = 9.51$; $p < 0.001$). Again, captivity and socio-demographic features (education and father's country of origin) made the major contributions. Military rank during the war added a moderate contribution: officers reported fewer psychiatric symptoms ($\beta = .13$). Subjects who met with negative reactions at homecoming reported more psychiatric symptoms ($\beta = .16$).

Discussion

The findings of the current study show that almost two decades after release from captivity, former Israeli POWs still suffer from higher rates of trauma-related psychopathology (PTSD), stronger intrusive and avoidance tendencies, and more severe psychiatric symptomatology than comparable veterans who had not been taken into

captivity.

These findings are consistent with other studies showing long-term vulnerability among ex-POWs. These have similarly shown that war captivity may result in long-term traumatic sequelae, ranging from specific trauma-related disorder (i.e., PTSD) through intrusion and avoidance and general psychiatric symptomatology (e.g., Beal, 1995; Kluznik et al., 1986; Sutker and Allain., 1996; Ursano et al., 1996). The findings are also consistent with both clinical and empirical findings on war induced psychopathology, which similarly show that this too is not limited to the recognized PTSD but extends to a range of psychiatric manifestations. Elevated levels of other clinical and sub-clinical disorders, including anxiety, depression, obsessive-compulsive disorders and substance abuse, were repeatedly reported among American veterans after the Vietnam war (e.g., Figley, 1978) and among Israeli veterans after the Lebanon war (Solomon, 1989).

The question is why captivity experience is more pathogenic than combat. Several factors may account for the potent pathogenic consequences of war captivity. The first is the compound nature of the traumatic experience. Prisoners of war undergo a double trauma: the trauma of combat, immediately followed by the trauma of captivity. Captivity not only adds to the duration of the traumatic experience as a whole, which is known to contribute to the severity of the ensuing psychopathology (Hunter, 1993), but it is also a distinct, separate traumatic exposure, which follows the trauma of combat, which had already drawn heavily on the soldiers' coping resources (Ursano et al., 1996). The cumulative damage of multiple traumas is also known to be more severe than the damage of a single and focused trauma (Herman, 1992). Another explanation lies in the difference in the nature of the trauma of captivity and the trauma of combat. Combat confronts the soldier with the threat to life and limb, and there is ample evidence of the psychological damage that threat can do (e.g., Kardiner and Spiegel, 1947; Solomon, 1993). But in a way it is an impersonal event. That is, although it takes people to shoot at or shell one another, the weapons are not aimed at any particular soldier and there is no affront on or to the victim's personhood. The trauma of captivity is deeply personal, in that it occurs within the relationship between the captive and his or her captors. The torture, humiliation, isolation, and concerted efforts to "break" the individual, which are part and parcel of captivity (Molica et al., 1987; Molica et al., 1990; Turner and Gorst-Unsworth,

1993), are intentionally inflicted on the victim by persons he gets to know and may relate to on a daily basis. According to Herman (1992), this kind of ongoing and directed abuse exposes the victim to an extreme sense of helplessness, seriously damages his self-structure, and makes it hard to recover his capacity to feel, trust, and relate to others.

Interestingly, the PTSD rates in the current study (about 13%) are relatively low compared with previous findings. Both Goldstein et al. (1987) and Zeiss and Dickman (1989) found PTSD rates of about 50% among former World War II POWs 40 years after captivity. Sutker et al. (1991) and Sutker and Allain (1996) found even higher PTSD rates (86%; 88%) among American POWs captured in Korea. The difference may be attributed to the relatively shorter duration and lesser severity of the Israeli soldiers' captivity. Whereas the Israeli prisoners were held for between 6 weeks and 8 months, the American POWs in the Far East, for example, were held captive several years during which they were subjected to prolonged and repeated torture and abuse and exposed to extremely harsh physical conditions and severe deprivation (Goldstein et al., 1987; Sutker and Allain, 1996).

The findings show that social support at home-coming associated significantly with avoidance symptoms and to a lesser degree with PTSD symptoms and general psychiatric symptomatology of both the ex-POWs and the non-POW controls. The findings are consistent with the substantial evidence showing the importance of supportive homecoming environment for both POWs (Hunter, 1993; Ursano et al., 1996) and combat veterans (Solomon, 1993). After the terrible loneliness and isolation of both combat and war imprisonment and the deliberate assault on the individual's person and integrity in these situations, a warm reception at homecoming may serve as a corrective emotional experience that bolsters the victim's sense of safety, personhood, and sense of belonging.

Findings showed that intrusive residuals are more prevalent than avoidance residuals in both groups. This is consistent with former studies on combat veterans (e.g., Solomon, 1993). Interestingly, combat experience, especially the threatening situations it had entailed, was linked only to intrusive symptoms, neither to avoidance residuals nor to any other dependent variables (PTSD, SCL-90: GSI). Although it has been suggested that the effects of combat exposure decrease over time (Fontana and Rosenheck, 1993) our

findings revealed that the most extreme experiences are persistent and enduring even decades after the war ends and become imprinted in dreams, memories, and in other manifestations of re-experiencing.

The socio-demographic variables of education and father's country of origin made significant contributions to the PTSD, intrusion, and general psychiatric symptomatology of both the POWs and combat controls, accounting for about half of the variance. Low education before army service, was similarly found to be powerful contributors to future disturbances among World War II POWs (Dent et al, 1987; Sutker and Allain, 1995) as well as Israeli (Solomon, 1993) and American (Kulka et al, 1990) combat veterans. These findings suggest that education is an important resource in coping with stress. In general, higher educational level strengthens the personality resources in terms of sense of coherence (Antonovsky, 1987), self-esteem, and a sense of self-efficacy (Solomon, 1993). Among many other possibilities, the better educated POWs may have been better able to negotiate with their captors, improve the conditions of their confinement, communicate with their cell neighbors while in solitary confinement, find effective techniques of passing the time, and use any prior knowledge they may have about war captivity. At the same time, it is also possible that a person who is able to achieve high education is, to begin with, more adaptive than a person who did not reach the same level of education.

Father's country of origin made a unique contribution to the explanation of variance of the POWs and combat controls' current status. These findings are consistent with earlier studies of Israeli combat stress - reaction casualties (Solomon, 1993) that found that eastern origin (Asia and Africa) was strongly related to long-term psychological sequelae. In a similar vein, recent studies (Kulka et al., 1990; Manson, 1997; Marsella et al., 1996) have shown that certain American populations as immigrants and ethnic minorities are at high risk for posttraumatic reactions after exposure to traumatic stress. Levav et al. (1977), who also found that minority soldiers were at a higher risk for psychiatric breakdown on the battlefield, suggest that this was due to their social marginality. In a similar vein, Parson (1985) suggest that membership in ethnic minority confronted the veterans of Vietnam war with tripartite adaptational dilemma related to complication of bicultural identity, institutional racism, and residual stress upon

which war trauma was layered. Failures in solving the dilemma increased the risk for PTSD and related disorders. It may be speculated that minorities in Israel are subjected, although to a lesser extent, to similar challenges and obstacles, and therefore are similarly at high risk for PTSDs.

The findings of this study must be considered in the light of its retrospective research design. Data collected retrospectively are known to be subject to recall error (Dohrenwend and Dohrenwend, 1974) and to be influenced by current mental status (Brown and Harris, 1978). Furthermore, later events tend to interfere with retrieval of memories (retrospective inhibition; Solomon and Flum, 1986). In addition, despite the systematic matching procedure between the groups, there were still differences in rank. This difference might represent a fundamental gap between the two groups in terms of maturity, achievement, and length of service' in the military that, like former studies reported (Sutker and Allain, 1995; Zeiss and Dickman, 1989), might have contributed substantially to the variance. Yet, to minimize this problem, the groups were matched on several related variables (e.g., intelligence) controlled for the differential distribution in the statistical analysis.

Nonetheless, the study's assessment of various aspects of adjustment in a large, representative, and carefully matched sample of POWs and combat veterans makes a valuable contribution to the understanding of the aftermath of war captivity. Our study shows that POWs are at high risk not only for trauma-related psychopathology, but also for developing deep, encompassing, and long-lasting general psychological and psychiatric disturbances.

War captivity and other forms of human violence are all too prevalent. Unfortunately, mental health professionals can do little if anything to prevent them. With greater knowledge, however, we may be able to minimize the damage they cause. We call for research to identify factors that can be instrumental in the planning and implementation of therapeutic programs for POWs and the many others who fall prey to manmade traumas.

References

- American Psychiatric Association (1987) *Diagnostic and statistical manual of mental disorders* (3rd ed, rev). Washington DC: Author.
- Antonovsky A (1987) *Unraveling the mystery of health*. San Francisco: Jossey-Bass.
- Beal AL (1995) Post-traumatic stress disorder in prisoners of war and combat veterans of the Dieppe Raid: A 50-year follow-up. *Can J Psychiatry* 40:177-184.
- Beebe GW (1975) Follow-up studies of World War 2 and Korean war prisoners. *Am J Epidemiol* 101:400-422.
- Brown GW, Birley JL (1968) Crisis and life changes and the onset of schizophrenia. *J Health Soc Behav* 9:203-214.
- Brown GW, Harris KT (1978) *Social origins of depression: A study of psychiatric disorders in women*. New York: Free Press.
- Crocq MA, Hein KD, Duval F, Macher JP (1991) Severity of the prisoner of war experience and post-traumatic stress disorder. *Eur Psychiatry* 6:39-45.
- Dent OF, Tennant CC, Goulston KJ (1987) Precursors of depression in 'World War II veterans 40 years after the war. *J Neuro Ment Dis* 175:486-490.
- Derogatis L, Clearly P (1977) A confirmation of the dimensional structure of the SCL-90: A study in construct validity. *J Clin Psychol* 33:981-989.
- Derogatis I, Rickles H, Rock A (1976) SCL-90 and the MMPI: A step in the validity of a new self report scale. *Br J Psychiatry* 128:280-289.
- Derogatis RL (1977) *The SCL-90 manual F: Scoring, administration and procedures for the SCL-90*. Baltimore: The Johns Hopkins University, School of Medicine, Clinical Psychometrics Unit.
- Dohrenwend BS, Dohrenwend BP (1974) *Stressful life events: Their nature and effects*. New York: John Wiley.
- Eberly RE, Engdahl BE (1991) Prevalence of somatic and psychiatric disorders among former prisoners of war. *Hosp Community Psychiatry* 42:807-813.
- Eberly RE, Harkness AR, Engdahl BE (1991) An adaptational view of trauma response as illustrated by the prisoner of war experience. *J Traumatic Stress* 4:363--380.
- Eitinger L (1964) *Concentration camp survivors in Norway and Israel*. London: Allen and Unwin.

- Engdahl BE, Page WF, Miller TW (1991a) Age, education, maltreatment, and social support as predictors of chronic depression in former prisoners of war. *Soc Psychiatry Psychiatr Epidemiol* 26:63-67.
- Engdahl BE, Speed N, Eberly RE, Schwartz J (1991b) Comorbidity of psychiatric disorders and personality profiles of American world war II prisoners of war. *J Nerv Ment Dis* 179: 181-187.
- Figley CR (1978) Psychosocial adjustment among Vietnam veterans: An overview of the research. In CR Figley (Ed), *Stress disorders among Vietnam Veterans: Theory, research and treatment* (pp 57-70). New York: Brunner/Mazel.
- Figley CR, Leventman S (Eds) (1980) *Strangers at home: Vietnam veterans since the war*. New York: Praeger.
- Fontana A., Rosenbeck R (1993) A causal model of the etiology of war related PTSD. *J Traumatic Stress* 6:475-500.
- Goldstein G, Van Kanunen W, Shelly C, Miller DJ, van Kanunen DP (1987) Survivors of imprisonment in the Pacific theater during World War II. *Am J Psychiatry* 144:1210-1213.
- Green BL (1993) Identifying survivors at risk: Trauma and stressors across events. In JP Wilson, B Paphael (Eds), *International handbook of traumatic stress syndromes* (pp 135-144). New York: Plenum.
- Hall RCW, Malone BT (1976) Psychiatric effects of prolonged Asian captivity: A two year follow up. *Am J Psychiatry* 133: 786-790.
- Hendrix CC, Jurich AP, Schumn WR (1994) Validation of the Impact -of Event Scale on a sample of American Vietnam veterans. *Psychol Rep* 75:321-322.
- Herman JH (1992) *Trauma and recovery*. New York: Basic Books.
- Horowitz M, Woer N, Alvarez M (1979) Impact of Event Scale: A measure of subjective stress. *Psychosom Med* 41:209-218.
- Hunter EJ (1976) The prisoner of war: Coping with the stress of isolation. In R Moos (Ed), *Human adaptation: Coping with life crisis* (pp 322-331). Lexington, MA: DC Heath.
- Hunter EJ (1984) Treating the military captive's family. In F Kaslow, R Ridenour (Eds), *Treating the military family: Dynamics and treatment* (pp 167-196). New York:

Guilford Press.

Hunter EJ (1993) The Vietnam prisoner of war experience. In JP Wilson, B Raphael (Eds), *International handbook of traumatic stress syndromes*. New York: Plenum Press.

Janis IL (1971) *Stress and frustration*. New York: Harcourt Brace Jovanovich.

Kardiner A, Spiegel H (1947) *War stress and neurotic illness*. New York: Harper.

Keane TM, Newman E, Orsillo SM (1997) Assessment of military related posttraumatic stress disorder. In JP Wilson, TM Keane (Eds), *Assessing psychological trauma and PTSD* (pp 267-290). New York: Guilford Press.

Klonoff H, McDougall G, Clark C, Kramer P, Horgan J (1976) The neuropsychological, psychiatric, and physical effects of prolonged and severe stress: 30 years later. *J Neuro Ment Dis* 4:246-252.

Kluznik JC, Speed N, Van Valkenberg C, Magraw R (1986) Fortyyear follow-up of United States prisoners of war. *Am J Psychiatry* 143:1443-1446.

Kral VA., Pazder LH, Wigdor BT (1967) Long-term effects of a prolonged stress experience. *Can Psychiatr Assoc J* 2:175181.

Kulka RA., Schlenger WE, Fairbank JA, Hough RL, Jordan BK, Marmar CR, Weiss DS (1990) *Trauma and the Vietnam war generation: Report of findings from the National Vietnam Veterans readjustment study*. New York: Brunner/Mazel.

Levav I, Greenfeld H, Baruch E (1977) Psychiatric combat reactions during the Yom-Kippur war. *Am J Psychiatry* 136:637641.

Manson SP (1997) Cross-cultural and multiethnic assessment of trauma. In JP Wilson, TM Keane (Eds), *Assessing psychological trauma and PTSD* (pp 239-266). New York: Guilford Press.

Markush RE, Favero RV (1974) Epidemiological assessment of stressful life events, depressed mood and psychophysiological symptom: Preliminary report. In BS Dohrenwend, BP Dohrenwend (Eds), *Stressful life events: Their nature and effects* (pp 171-190). New York: Wiley.

Marsella A, Friedman M, Gerrity E, Scutleld R (1996) *Ethnocultural variation in trauma and PTSD*. New York American Psychological Association Press.

Molica RF, Wyshak G, Lavelle J (1987) The psychosocial impact of war trauma and

- torture on Southeast Asia refugees. *Am J Psychiatry* 144:1567-1572.
- Molica RF, Wyshak G, Lavelle J, Truong T, Tor S, Yang T (1990) Assessing symptom change in Southeast Asian refugee survivors of mass violence and torture. *Am J Psychiatry* 147:83-88.
- Murrell SA, Norris FE (1984) Resources, life events, and changes in positive affect and depression in older adults. *Am J Community Psychol* 12:445-464.
- Mullins WS, Glass AJ (Eds) (1973) *Neuropsychiatry in World War II: Overseas theaters* (Vol 2). Washington, DC: Army Medical Department.
- Neal LA, Busuttill W, Rollins J, Herepath R, Strike P, Turnbull G (1994) Convergent validity of measures of post traumatic stress disorder in a mixed military and civilian population. *J Traumatic Stress* 7:447-455.
- Nice DS, McDonald B, McMillian T (1981) The families of U.S. Navy prisoners of war from Vietnam five years after reunion. *J Marriage Family* 43:431-437.
- Ohry A, Solomon Z, Neria Y, Waysman M, Bar-On Z, Levy A (1994) The aftermath of captivity: An 18-year follow-up of Israeli ex-POWs. *Behav Med* 20:27-33.
- Page WF, Engdahl BE, Eberly RE (1991) Prevalence and correlates of depressive symptoms among former prisoners of war. *J Nerv Ment Dis* 179:670-677.
- Parson E (1985) Ethnicity and traumatic stress: The intersecting point in psychotherapy. In C Figley (Ed), *Trauma and its wake: The study of treatment of PTSD* (pp 314-337). New York: Brunner/Mazel.
- Paykel ES (1979) Causal relationships between clinical depression and life events. In JE Barret, RM Rose, GL Klenman (Eds), *Stress and mental disorder* (pp 71-86). New York: Raven.
- Quarantelli EL (1985) An assessment of conflicting views on mental health: The consequences of traumatic events. In CR Figley (Ed), *Trauma and its wake: The study and treatment of post-traumatic stress disorder* (pp 173-215). New York: Brunner/Mazel.
- Schwarzwald J, Solomon Z, Weisenberg M, Mikulincer M (1987) Validation of the Impact of Event Scale for psychological sequel of combat. *J Consult Clin Psychol* 55:251-256.
- Sledge WH, Boydstun JA, Rahe AJ (1980) Self concepts changes related to war captivity.

Arch Gen Psychiatry 37:430-443.

- Solomon Z (1989) Characteristic psychiatric symptomatology of PTSD in veterans: A three year follow-up. *Psychol Med* 19:927- 936.
- Solomon Z (1993) *Combat stress reaction: The enduring toll of war*. New York Plenum Press.
- Solomon Z, Benbenishty R, Neria Y, Abramowitz M, Ginzburg K, Ohry A (1993) Assessment of PTSD: Validation of the revised PTSD inventory. *Israel J Psychiatry Relat Sci* 30:110-115.
- Solomon Z, Flum H (1986) Life events and combat stress reaction in the 1982 war in Lebanon. *Israel J Psychiatry Relat Sci* 23:10-16.
- Solomon Z, Neria Y, Obey A, Waysman M, Ginzburg K (1994) PTSD among Israeli former prisoners of war and soldiers with combat stress reaction: A longitudinal study. *Am J Psychiatry* 151:554-559.
- Speed N, Engdahl BE, Schwartz J (1989) Posttraumatic stress disorder as a consequence of the prisoner war experience. *J Neuro Ment Dis* 177:147-153.
- Sutker PB, Allain AN (1991) MMPI profiles of veterans of WWII and Korea: Comparisons of former POWs and combat survivors. *Psychol Rep* 68:279-284.
- Sutker PB, Allain AN (1995) Psychological assessment of aviators captured in World War II. *Psychol Assess* 7:66-68.
- Sutker PB, Allain AN (1996) Assessment of PTSD and other mental disorders in World War II and Korean Conflict POW survivors and combat veterans. *Psychol Assess* 8:18-25.
- Sutker PB, Allain AN, Johnson JL (1992) Memory and learning performances in POW survivors with history of malnutrition and combat veterans controls. *Arch Clin Neuropsychol* 7:431-444.
- Sutker PB, Allain AN, Winstead DK (1993) Psychopathology and psychiatric diagnoses of World II Pacific theater prisoner of war survivors and combat veterans. *Am J Psychiatry* 150:240-245.
- Sutker PB, Galina ZH, West JA, Allain AN (1990a) Trauma-induced weight loss and cognitive deficits among former prisoners of war. *J Consult Clin Psychol* 58:323-328.

- Sutker PB, Vasterling JJ, Brailey K, Allain A (1995) Memory, attention, and executive deficits in POW survivors: Contributing biological and psychological factors. *Neuropsychology* 9:118-125.
- Sutker PB, Winstead DK, Galina ZH, Allain AN (1991) Cognitive deficits and psychopathology among former prisoners of war and combat veterans of the Korean conflict. *Am J Psychiatry* 148:67-72.
- Sutker PB, Winstead DK, Goist KC, Malow RM, Allain AN (1986) Psychopathology subtypes and symptom correlates among former prisoners of war. *J Psychopathol Behav Assess* 8:89-101.
- Tennant CC, Goulston KJ, Dent OF (1986) The psychological effects of being a prisoner of war: Forty years after release. *Am J Psychiatry* 143:618-621.
- Turner SW, Gorst-Unsworth C (1993) Psychological sequela of torture. In JP Wilson, B Raphael (Eds), *International handbook of traumatic stress* (pp 667--084). New York: Plenum Press.
- Ursano RJ (1981) The Vietnam era prisoner of war: Precaptivity personality and the development of psychiatric illness. *Am J Psychiatry* 138:315-318.
- Ursano RJ, Boydston JA, Wheatley RD (1981) Psychiatric illness in U.S. Air Force Vietnam prisoners of war: A five-year followup. *Am J Psychiatry* 138:310-314.
- Ursano RJ, Rundell JR (1990) The prisoner of war. *Mil Med* 155: 178-180.
- Ursano RJ, Rundell JR, Fragala MR, Larson SG, Wain HJ, Brandt GT, Beach BL (1996) The prisoner of war. In RJ Ursano, AE Norwood (Eds), *Emotional aftermath of the Persian Gulf War* (pp 443-476). Washington: DC: American Psychiatric Press.
- Ursano RJ, Wheatley RD, Carlson EH, Rahe AL (1987) The prisoner of war: Stress, illness and resiliency. *Psychiatr Ann* 17: 532-535.
- Van Vranken E (1978) Current status and social adjustment of US Army returned prisoners of war. Presented at the Fifth Annual Joint Medical Meeting concerning MIA/POW matters, San Antonio, Texas.
- Wheatley RD, Ursano RJ (1982) Serial personality evaluations of repatriated U.S. Air Force Southeast Asia POWs. *Aviat Space Environ Med* 53:251-257.
- Zeiss RA, Diclanan HR (1989) PTSD 40 years later: Incidence and person-situation correlates in former POWs. *J Clin Psychol* 45:35-42.