

Prevalence and Correlates of Depressive Symptoms among Former Prisoners of War

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Studies of former prisoners of war (POWs) provide valuable insights into posttraumatic adaptation because they gather information from a large population who survived the traumatic experiences of military captivity. Previous studies of POWs have shown elevated rates of psychiatric symptoms and disorders. This report presents evidence from a longitudinal study of three large, representative, national samples of former POWs. The study finds that depressive symptomatology, as measured by the Center for Epidemiologic Studies Depression Scale, is elevated in World War II POWs from the Pacific and European theaters and in Korean conflict POWs. Decades later, depressive symptomatology is found to be strongly associated with prior treatment in captivity. Differences in depressive symptomatology among the three POW groups can be attributed to captivity-related factors and to buffering factors, such as age at capture and education.

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Studies of former prisoners of war (POWs), a large population who survived the traumatic experiences of military captivity, are important in their own right, have relevance to survivors of other harsh captivity conditions (Engdahl and Eberly, 1990), and provide insights into the phenomenology of general posttraumatic adaptation. Although several studies document the possibility of psychological growth from the trauma of being a POW (Sledge et al., 1980; Ursano, 1981), elevated rates of psychiatric illness are consistently reported among POWs. Cohen and Cooper (1954) found a four- to five-fold excess of hospitalizations for psychoneurosis, but not psychosis, among World War II Pacific theater POWs and European theater POWs compared with their controls. Beebe (1975) extended this follow-up study and found significantly more hospitalizations of POWs for a variety of psychiatric illnesses, including schizophrenic disorders, anxiety reactions without somatization, alcoholism, "nervousness and debility," and other psychoneurotic reactions. Psychoneuroses (particularly anxiety reactions and somatization) and psy-

choses (*e.g.*, schizophrenia) were especially frequent among Pacific World War II and Korean conflict POWs when compared with their controls. Kluznik et al. (1986) diagnosed retrospectively psychiatric disorders among 188 World War II and Korean conflict POWs. Within 1 year of their release, 67% fulfilled DSM-III criteria for posttraumatic stress disorder (PTSD), and more than half of those continued to have symptoms over 40 years later. Generalized anxiety disorders and depressive disorders also were frequent.

Psychiatric symptoms, particularly depressive symptoms, were elevated among Australian World War II POWs in a recent series of studies (Dent et al., 1987; Tennant et al., 1986a, 1986b). The examination of 170 POWs and comparable controls revealed that POWs were significantly more depressed than non-POW controls some 40 years after repatriation. No differences were found in state anxiety, trait anxiety, neuroticism, psychoticism, and hostility. To explain the persistence of depressive symptoms for 40 years after release from captivity, the investigators linked these findings, suggesting that over the long follow-up period, anxiety might diminish but depression might increase as a reaction to chronic posttraumatic impairment. Dent et al. (1987) reported separate regression analyses for the Australian POWs and controls, showing the following variables to be predictive of present-day depressive symptoms: experiencing a nervous illness during World War II or a depressive illness after World War II; having a lower level of education or socioeconomic status; and being unmarried, unemployed, or retired.

The present study collected data on the prevalence, severity, and correlates of depressive symptoms in a large, nationally representative sample of American

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POWs. Other recent reports of POWs' adaptation have been based on smaller samples drawn from a single region of the country (*e.g.*, Goldstein et al., 1987; Speed et al., 1989). The size of the samples in this report enables more detailed analyses within the three POW eras (World War II POWs of the Pacific and European theaters, and POWs of the Korean conflict), as well as comparisons among these eras. Also, the representative nature of the national samples strengthens generalizations made from them to the population of all POWs. We present descriptive data first, followed by data on the correlations between individual predictor variables and depressive symptoms. Finally, we use multiple regression to examine the combined effects of predictors on depressive symptoms.

Methods

Subjects

The Medical Follow-up Agency of the Institute of Medicine, National Academy of Sciences, Washington, DC, has studied the health of former POWs since the early 1950s. Cohen and Cooper (1954) assembled representative rosters of former World War II POWs and non-POW controls and characterized their mortality, morbidity, and disability after liberation. Nefzger (1970) later added Korean conflict prisoners and controls and studied their mortality. Beebe (1975) conducted a 20-year morbidity follow-up, collecting data from military and Veterans Administration (VA; now the Department of Veterans Affairs) records and from questionnaires. Keehn (1980) continued the mortality follow-up through 1976. We report data collected from a questionnaire follow-up of these earlier-defined cohorts.

Details of the sampling plan can be found in earlier reports; we provide an abbreviated description here. Cohen and Cooper (1954) used the Army's official roster of all known World War II POWs to select random, independent samples of white Army servicemen who were captured in the Pacific theater and European theaters. Nefzger (1970) subsequently doubled the number of Pacific prisoners and controls in the study cohort and added a group of Korean conflict POWs and non-prisoner controls.

The follow-up reported here began with a review of VA mortality records, which ascertained that 1319 men from the earlier studies were alive as of mid-1984 and thus eligible for the questionnaire study. Addresses were obtained from the Internal Revenue Service (under an arrangement with the National Institute for Occupational Safety and Health) and from two commercial tracing firms. The IRS provided addresses for roughly 90% of the total sample and the tracing firms provided addresses for an additional 3% of subjects. Next, up to three mailings per person were made to

each address, with a mailgram preceding the third mailing to alert the addressee to the forthcoming questionnaire. The mailings contained a cover letter from the study director at the time, Robert Keehn, and the questionnaire. Also included in the third mailing was a letter from the National Commander of the American Ex-POWs encouraging participation in the study. The actual mailing of questionnaires began late in 1984 and replies were accepted through December 1985. The questionnaire included the 20-item Center for Epidemiologic Studies-Depression Scale (CES-D; Radloff, 1977), the Lie and Hysteria scales of the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway and McKinley, 1951), and questions on smoking and drinking, history of hospitalizations since 1965, medical conditions under treatment, and medical conditions not being treated.

Measures

The CES-D, a standardized self-administered rating instrument, was chosen as the measure of depressive symptoms, which are known to be elevated among POWs (Tennant et al., 1986a). The CES-D is well suited to estimate the severity and prevalence of depressive symptoms among the general population of POWs, as it is widely used in epidemiologic studies of the prevalence and correlates of depression in nonclinical populations (*e.g.*, Murrell et al., 1983; Weissman et al., 1977). Although CES-D screening results correlate modestly with clinical diagnoses of depression (Boyd et al., 1982; Myers and Weissman, 1980), the CES-D does not yield a diagnosis. Its primary utility is in the estimation of symptom prevalence and in clinical or research efforts as a first-stage screening test. Differences of opinion exist as to the underlying dimension(s) measured by the CES-D, ranging from generalized anxiety (Breslau, 1985; Roberts et al., 1989), to demoralization (Roberts et al., 1989), to a four-factor structure (Golding and Aneshensel, 1989). We view the CES-D as a measure of general psychological impairment, primarily indexing depression.

The use of the CES-D permitted comparisons with other CES-D-based general and special population surveys. Previous studies using the CES-D among samples of men of roughly equivalent age found high scores (above the standard cutoff point of 16) among 3% to 18.5% of those surveyed (Comstock and Helsing, 1976; Eaton and Kessler, 1981; Frerichs et al., 1981; Murrell et al., 1983; National Center for Health Statistics [NCHS], 1980; Weissman et al., 1977).

The MMPI Lie scale, which detects tendencies to place oneself in an unusually favorable light, was included to check for response bias. A concern that POWs might misreport their psychological symptoms led to inclusion of the MMPI Hysteria scale, which fo-

cuses on symptoms and includes both overreporting (admit) and underreporting (deny) subscales (Little and Fisher, 1958).

For most subjects in the three POW groups studied here, earlier data collected by Beebe (1975) were available from medical and personnel records, as well as from the 1965 questionnaire on medical problems suffered during captivity. A total captivity symptom index score was calculated by adding the number of "yes" responses for each condition on the symptom list. The percentage of body weight lost was calculated as the difference between self-reported weight at induction and self-reported lowest weight during captivity, divided by self-reported weight at induction.

After excluding decedent subjects discovered by survey, the final response rates were 74.5% for the Pacific, 75.3% for the European, and 68.8% for the Korean POWs. After further exclusion of missing data, the total number of analyzable responses received was 989. Each of the 20 CES-D items was assigned a score of 0 to 3 and all the responses were summed. Scores could range from 0 to 60; the standard indication of significant depressive symptoms was a score of 16 or above. Missing item responses were assigned a weight of 0, and 5 or more missing responses on a single questionnaire resulted in the assignment of a missing total score for that person.

Analyses

Results were generated using the Statistical Analysis System computer program (SAS Institute, Inc., 1982). Differences in percentages were tested using two-sided χ^2 tests, without continuity correction. Bivariate (Pearson) correlations were calculated among demographic variables, the markers of captivity experience intensity, and the depression variables. We examined multivariate relationships among selected variables via multiple regression. The rationale for variable selection was based on work cited above, particularly the studies of Australian POWs.

Results

Military Captivity Data

Frequent medical problems and symptoms during captivity were related to malnutrition and untreated disease: malaria; gastrointestinal problems, including dysentery; lower extremity swelling, pain, and muscle problems; visual problems; and afflictions of the gums, tongue, and skin of the mouth and scrotum. The Pacific POWs experienced the highest rates of problems, followed by the Korean POWs, with the European POWs experiencing the lowest rates for all categories of symptoms. The one exception was night vision problems, which were most frequent among Korean POWs. Pa-

cific POWs reported a mean number of 9.45 symptoms, Korean POWs had a mean number of 6.76 symptoms, and European POWs reported a mean number of 2.55 symptoms. Both Pacific and Korean POWs reported greater weight loss than did European POWs, with Pacific POWs losing an average of 38.8% of their body weight, Korean POWs losing 35.1%, and European POWs losing 24.3%. We note that these self-reported data were collected some 20 years ago, and the accuracy of recall should be greater than that for data collected in the late 1980s. These data also are probably less susceptible to any recall biases introduced by age-associated declines in health. When exposed to comparable trauma, individuals who currently are more ill may tend to recall (and report) greater severity of stress than those who are less ill.

Demographic Data

Table 1 reveals notable demographic differences among the three POW groups. Relative to the Korean group, both World War II groups were older and included a higher proportion of high school graduates and college-educated men; further, they only include whites. There was also a lower proportion of infantry in both World War II groups, with a correspondingly higher proportion of Army Air Corps personnel (in 1947 the Army Air Corps became the Air Force) and a higher proportion of officers, warrant officers, and sergeants in the Pacific POW group.

In addition to these differences in age, rank, and education, there were differences between the two World War II groups. On average, Pacific POWs were slightly older than European POWs at capture, had higher rank and education, and had a lower percentage of draftees. These differences primarily reflect underlying differences in military theaters and eras. Pacific POWs were predominantly career soldiers captured early in World War II, whereas European POWs were predominantly draftees who were captured late. As detailed by Page (1991), differences between questionnaire respondents and nonrespondents were small, but uniform, and limited primarily to rank and education; nonrespondents tended to have lower rank and less education.

MMPI

Using standard conversion formulas for the MMPI, we converted raw scores to standardized T-scores, with mean T-scores of 50 and standard deviation T-scores of 10. The MMPI Lie scale and the deny subscale detected very little response bias, with mean T-scores close to the expected value of 50. Lie scale T-scores were 52.0, 52.6, and 51.7 for the Pacific, European, and Korean groups, respectively, and deny subscale T-scores were 49.3, 51.9, and 48.1. For the three groups,

TABLE 1
Prisoner of War Group Demographics^a

	Pacific (N = 476)	Europe (N = 271)	Korea (N = 572)
Rank/Component			
Regular Army or officer	74.3	24.8	68.5
Draft or National Guard	25.0	75.2	31.5
Marital Status ^b			
Single	92.0	79.7	85.0
All other	8.0	20.3	15.0
Years of Education ^b			
Less than high school	46.2	43.2	77.4
High school graduate	33.8	37.3	17.5
College	20.0	19.6	5.1
Race			
White	100.0	100.0	89.3
Black			6.8
Other			3.9
Year of Birth			
1919 or earlier	64.1	42.8	5.8
1920–1929	35.9	57.2	47.4
1930+			46.8
Type of Service			
Infantry	10.9	42.1	71.9
Artillery	8.6	5.5	17.1
Other ground	29.6	35.6	
Air Corps/Army Air Force	32.6	42.8	
Other	18.3	9.2	11.0
Rank at Separation			
Officer	11.1	22.1	6.3
Warrant officer/Sergeant	34.2	14.0	14.5
T4 or corporal	52.3	37.6	52.3
Private/PFC	1.5	26.2	23.4

^aThe numbers of participants include nonrespondents. Missing or unknown categories not displayed explicitly.

^bStatus at time of enlistment on active duty.

Hysteria total scale scores were elevated (70.6, 66.4, and 69.5, respectively), as were admit subscale scores (74.7, 66.8, and 74.2).

CES-D Scale

The proportions of CES-D scores at or above the cutoff point of 16 ranged from 53.9% in the Korean group and 50.2% for the Pacific group to 36.8% for the European group. The ranking of mean CES-D scores was identical to the ranking of proportions above the cutoff, and the means for the Pacific group (17.9) and the Korean group (18.8) were above the cutoff. The Pacific POW proportion above the cutoff was greater than the European proportion ($\chi^2 = 12.0$, $df = 1$, $p = .00068$), and the Korean proportion was greater than the European proportion ($\chi^2 = 20.5$, $df = 1$, $p = .00002$). The European POW group mean CES-D score (13.4), which was significantly lower than those of Pacific and Korean POW groups, was low only in comparison to them. Compared with figures for the general population (in which normal groups average 7.1; NCHS, 1980), the

European group mean CES-D score was markedly elevated.

Correlates of Depressive Symptoms

To further understand this basic finding of elevated depressive symptoms among POWs, we analyzed the relationships among depressive symptoms, captivity intensity, and individual factors. This approach assumes both the existence of a dose-response relationship between severity of trauma (captivity intensity) and the posttraumatic depressive symptoms, and the presence of individual factors that may moderate the dose-response relationship.

Bivariate Relationships of Antecedent Variables and the CES-D

Table 2 shows the proportions of CES-D scores at or above the cutoff point for the various demographic characteristics described in Table 1. It also shows the results of χ^2 tests comparing the proportions of men with elevated CES-D scores across the various levels of demographic characteristics by POW group. The differences in the proportion of elevated CES-D scores among categories for race, age, and type of service (e.g., infantry) were somewhat smaller than the corresponding differences for rank/component of service, marital status at entry into service, years of education, and rank at separation. To illustrate, the marked decrease in the proportion of high CES-D scores as the number of years of education increases is evidence of a strong, graded association. Similarly, rank at separation has a strong association with the proportion of high CES-D scores. The consistent CES-D differences by education and rank suggest that a more general (though unmeasured) underlying factor, such as socioeconomic status, may moderate the prevalence and severity of depressive symptoms.

The self-reported number of drinks per day showed an association with CES-D score, in which both non-drinkers and heavy drinkers reported a higher prevalence of depressive symptoms than did moderate drinkers. The nonlinear nature of this relationship (a U-shaped distribution) led us to exclude self-reported alcohol consumption from the current linear regression models; future nonlinear analyses will include this variable.

Other cross-tabulation analyses (not shown) revealed roughly the same proportion of men with high CES-D scores across the three POW groups when comparing men who reported the same range of weight loss or captivity symptom scores. This suggests that more severe treatment, as reflected both by greater weight loss and greater number of captivity symptoms, is linked to a higher level of subsequent depressive symptoms, and that differences in severity of treatment at

TABLE 2
Percentages of CES-D Scores at or Above the Cutoff Score for Predicting Depression, and Chi-Square Tests Relating CES-D Scores to POW Theater of Capture and POW Demographic Characteristics^a

Demographic characteristics ^b	Pacific (%)	Europe (%)	Korea (%)
Race	— ^b	—	NS
White	50.3	37.1	54.6
Black or other	—	—	51.8
Rank/Component	***	NS	**
Draft/National Guard	42.3	37.2	51.9
Regular Army or Officer	52.0	46.3	58.7
Marital Status ^c	**	NS	**
Single, Divorced, Separated	52.1	36.3	56.4
Married	25.9	38.8	37.3
Years of Education ^c	***	**	***
Less than high school graduate	62.2	52.3	58.1
High school graduate	44.5	34.3	42.3
College	33.7	19.6	31.0
Year of birth	NS	NS	*
1910	29.4	—	—
1910–1919	48.7	35.9	37.9
1920–1929	54.7	37.2	50.4
1930+	—	—	59.2
Type of Service	*	NS	NS
Infantry	55.1	43.4	55.6
Artillery/armored	64.1	42.9	51.1
Other	48.8	39.1	47.6
Rank at Separation	***	***	***
Officer	21.2	27.6	25.7
Warrant officer	46.5	36.1	46.9
Sergeant/Corporal	59.0	28.6	61.4
Private	—	58.5	52.3

^aChi-square tests are within demographic variable within study group.

^b—, too few cases.

^cAt entry on active duty.

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

least partially explain the differences in those symptoms across these POW groups. This observation, like the earlier ones, may be subject to confounding effects—therefore, the need for the following multivariate analyses.

Multivariate Relationships of Antecedent Variables and the CES-D

We estimated the joint effect of multiple potential causal factors on CES-D scores through multiple regression analyses, treating the CES-D total score as a continuous dependent variable rather than as a simple dichotomy (above or below the cutoff point score of 16). The rationale for variable selection was based on previous research, particularly the studies of Australian POWs. We examined the roles of several demographic and captivity-related factors: age at time of capture, marital status at entry into active duty, years of educa-

tion, weight loss in captivity, captivity symptom score, and, for Korean POWs only, Army General Classification Test (AGCT) score, rank at capture, and race. We treated all but marital status, rank at capture, and race as continuous measures, with rank at capture assigned three ordinal categories (highest to lowest): commissioned officers, sergeants and corporals, and privates. We divided marital status into two categories, married and unmarried (single, separated, or divorced), and coded race into two categories, white and nonwhite.

Rank at capture and AGCT score data had too many missing observations for the Pacific and European POWs, and race was white only in these two groups. Thus, rank at capture, AGCT score, and race were included only in a preliminary regression for the Korean POWs. None of these three factors was significant and they were, therefore, omitted from further analyses. Similarly, weeks of captivity had too many missing observations to be included in any of the regressions. We note, however, that weeks of captivity varied little within a POW group and, thus, would have explained little of the within-groups variance in CES-D scores. Notably high among variable intercorrelations for the combined samples were rank at capture with years of education ($r = .436$) and weight loss with captivity symptom score ($r = .457$).

The final models for all three groups were statistically significant, suggesting that both captivity severity factors and demographic factors are directly predictive of later depressive symptoms. As Table 3 shows, the strongest predictors of subsequent depressive symptoms were the captivity symptom score (number of medical symptoms while a POW) and the number of years of education; age at capture was a significant predictor in both Pacific and Korean groups, and percentage of body weight lost was a significant predictor only for Pacific POWs. As might be expected, subsequent depressive symptoms were positively associated with more captivity symptoms and greater weight loss, and inversely related to years of education, age at capture, and marital status. That is to say, POWs who had more education or were married at entry into active duty, or were older at capture, had less subsequent depression.

A regression equation based on the combined Pacific and Korean samples is presented in the last column of Table 3, including a dummy variable for POW status (in effect, Pacific POW status = 1 and Korean POW status = 2). The combined regression shows that both captivity factors and all demographic factors but one, marital status, were significant predictors of subsequent depressive symptoms. The strongest captivity-related predictive factor was captivity symptom score, and the strongest demographic predictive factors were number of years of education and age at capture, each with

TABLE 3

Multiple Regression Prediction of CES-D Scores, by POW Group, Using Captivity Severity Factors and Demographic Factors^a

	Pacific	Europe	Korea	Pacific + Korea
Captivity Severity Factor				
Symptom Index	3.18***	3.49***	3.35***	3.39***
Weight loss	1.83**	-.10	.68	1.22*
Korean captivity	— ^b	— ^b	— ^b	.20
Demographic Factor				
Years of education	-1.91**	-3.28***	-1.86**	-2.05***
Marital status ^c	.64	.08	-.67	-.57
Age at capture	-3.26***	.31	-1.57*	-2.25***
<i>R</i>	.460	.470	.385	.416
<i>R</i> ²	.212	.221	.148	.173
Number of Cases	364	193	394	758

^aStandardized regression coefficients (beta weights) are shown.

^bApplicable only to combined Pacific + Korea regression.

^cAt time of entry into active duty; 1 = unmarried, 2 = married.

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

roughly equal importance. It is interesting that the dummy variable for POW status has a small and insignificant predictive weight. Given similar captivity and demographic factors, predicted Pacific and Korean POWs' depressive symptoms were essentially the same.

The European group was not combined with the others for several reasons. Because the European POWs' captivity treatment was less harsh than that of Pacific and Korean POWs, it may be related differently to subsequent depressive symptoms. Also, because all three nonsignificant terms in the European group regression had opposite signs from those in the other groups, the regression estimates for the European group may be unstable, perhaps in part because it was the smallest group of the three.

Discussion

The data in this report differ from those in other studies in two important ways. First, they are drawn from the largest and most representative longitudinal samples of American POWs available. The size of the samples allows the kind of multivariate analyses presented here, and their representativeness ensures that generalizations to the population of all POWs will be sound. The second feature of the data, the inclusion of independent, nationwide samples from three different war theaters, allows separate group analyses and intergroup comparisons and contrasts.

Validity of the Data

The results from the MMPI Lie and Deny scales reflect no tendency to deny symptoms in these samples, but the elevated Hysteria and Admit scales raise the possibility of overreporting of current symptoms. Because the Admit items are a subset of the Hysteria items, Little and Fisher (1958) noted their high correlation and recommended viewing them as interchangeable.

In the present sample their correlation was .77. Furthermore, because Admit scores have not been widely studied, specific comparisons to other samples are not possible. Therefore, we focused on the Hysteria scale. Systematic increases in Hysteria scores over time have been reported in normal samples. Leon et al. (1979) surveyed 99 healthy men assessed longitudinally with the MMPI. These men manifested increases over time on the Hysteria scale, as well as on the Depression and Hypochondriasis scales. These increases point to the presence of lowered energy levels, depressive symptoms, and physical complaints and bodily concerns that might be quite realistic among older men. Hysteria scores are frequently elevated in valid POW MMPI profiles (Engdahl et al., 1991; Goldstein et al., 1987; Klonoff et al., 1976).

Our finding of an elevated Hysteria scale is also consistent with that of Wheatley and Ursano (1982), who examined U.S. Air Force POWs who had returned from North Vietnam. Those imprisoned earlier in the war and, correspondingly, treated more harshly had significantly higher Hysteria scores on their initial postrepatriation MMPIs and experienced longer and more difficult postrepatriation adjustment. Although item-level analyses and further research involving detailed interviewing are required to resolve this question, we believe the elevated Hysteria and Admit scores reflect actual somatic symptoms and concerns plus depressive symptoms, not a response bias of symptom overreporting.

Because internal consistency is an important component of validity, we again note that the high rates of depressive symptoms were associated with harsh conditions of captivity, primarily as indexed by the captivity symptom index, not weight loss. Although weight loss is viewed as a strong indicator of harsh treatment (Beebe, 1975) and as a robust predictor of psychiatric sequelae (Speed et al., 1989), it was a significant predictive factor only for the Pacific group. In the European group, it was possible that the lack of variability in weight loss accounted for its lack of statistical significance, but in the Korean group this explanation was not applicable. Overall, the captivity symptom score appears to be the better predictor of depressive symptoms.

The predicted effects of age and years of education (buffering demographic variables) were consistently in the expected directions. When similar factors operate in similar ways in differing groups, we have evidence for the validity of results. In addition, comparisons with a control group of non-POW Korean combat veterans (not displayed) showed that they have significantly lower rates of depressive symptoms than Korean POWs, but higher rates than a comparable general population sample. This observation of elevated depressive symptoms in a control group might suggest exaggerated

self-reports of overall depressive symptoms, but it actually argues for the validity of the study results; the non-POW Korean veteran control group was drawn from men wounded and then returned to active duty. Both combat exposure and combat wounds are known precursors of later psychopathology (Rundell et al., 1989). Finally, we note that Beebe's (1975) earlier regression analysis found a statistically significant relationship between captivity factors and total score on the Cornell Medical Index, a measure of somatic and psychic symptoms that overlaps significantly with the CES-D, producing regression results similar to those reported here.

External consistency with other studies provides additional evidence of validity. Most important is the consistency of our findings with independent evidence from the studies of World War II Pacific theater Australian POWs (Tennant et al., 1986a, 1986b) described above. These independent findings not only parallel the results in this report, but, significantly, are based on data collected using a different psychological instrument, the Zung Depression Scale (1965). Because the Australian studies measured different variables by different means, their significant regression analyses variables could not be duplicated by those found in this study. Nevertheless, there are clear parallels between the two sets of significant variables (education in both models and the related measure of socioeconomic status in the Australian model) and more tenuous parallels (nervous illness during World War II in the Australian model and captivity symptoms in the American model). In all, the kinds of factors associated with the depressive symptoms found among American POWs some 40 years after capture are quite similar to those found among Australian POWs.

Symptoms and Diagnoses Contributing to the CES-D Scores

As mentioned earlier, there are several possible interpretations of elevated CES-D scores, any one of which may hold for a particular individual. Elevated CES-D scores in nonclinical samples may be part of a larger constellation of problems, particularly those associated with medical illnesses (Murrell et al., 1983) or lack of social support or economic resources (O'Hara et al., 1985). Higher scores also may reflect a condition labeled "demoralization" (Roberts et al., 1989). CES-D symptoms may appear not only as a manifestation of depressive illness as such (*i.e.*, dysthymia or major depression), but as a manifestation of another psychiatric disorder. Two in particular are known to occur with elevated frequencies among POWs: PTSD and generalized anxiety disorder (Kluznik et al., 1986). Depressive symptoms are an associated feature of PTSD and major depression actually shares three diagnostic criteria

with PTSD—loss of interest in activities, sleep disturbance, and impaired concentration. The ongoing study of these cohorts includes the measurement of both PTSD and depression by questionnaire and by direct examination. This should help obtain more definitive psychiatric diagnoses and clarify the roles and relationships of anxiety, depressive, and somatic symptoms in the adjustment of POWs.

Conclusions

In comparison with the other CES-D general population studies noted earlier, the depressive symptom rates in this study are high. These groups of former POWs differ significantly from the general population and, in fact, most resemble a clinical population of recovering depressives.

The statistical evidence from the regression analyses supports two conclusions: a) the treatment of POWs during military captivity, at least as measured by self-reported medical symptoms (in all three groups) and weight loss (in Pacific POWs), is statistically linked with subsequent depressive symptoms; and b) differences in depressive symptoms can be attributed to differences in these captivity-related factors, even when moderating factors, such as age and education, are considered. The events of military captivity suffered decades ago are predictive of current, chronic posttraumatic depressive symptomatology.

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