0022-3018/00/18810-695
THE JOURNAL OF NERVOUS AND MENTAL DISEASE
Copyright © 2000 by Williams & Wilkins
Vol. 188, No. 10
Printed in U.S.A.

Social Sharing of Gulf War Experiences

Association with Trauma-Related Psychological Symptoms

STEVEN M. SOUTHWICK, M.D.,[1,2] CHARLES A. MORGAN III, M.D.[1,2], AND ROBERTA ROSENBERG, M.S.[2]

It commonly is believed that talking with family and friends (social sharing) about stressful or traumatic experiences can be therapeutic with regard to stress-related psychological symptoms. Two years after serving in the Gulf War, 58 National Guard Reservists completed the Mississippi Posttraumatic Stress Disorder Scale (PTSD), the Brief Symptom Inventory, and a measure of social sharing that asked how much they had talked to family and friends about their experiences in the Gulf during the 2-year period since returning from the war. Subjects had a broad range of Mississippi PTSD scores. Six subjects met Mississippi criteria for PTSD. Degree of talking to family and friends about Gulf War experiences did not account for a significant portion of the variance in the prediction of PTSD symptoms but did significantly contribute to prediction of scores for interpersonal sensitivity, depression, and psychoticism. Thus, degree of talking with family and friends was not found to be related to PTSD symptoms, although it may have influenced some symptoms of general psychopathology, such as depression, that are not specific to PTSD.

— *J Nerv Ment Dis* 188:695–700, 2000

It is well known that extreme stress can cause acute and chronic psychological symptoms. Many of these symptoms have been grouped within the DSM-IV diagnosis of posttraumatic stress disorder (PTSD). These include symptoms of reexperiencing, avoidance, and persistent arousal. Extreme stress also can lead to a variety of other psychological symptoms such as depressed mood, phobic anxiety, and even psychosis (*e.g.*, Falsetti et al., 1995; Mazure, 1995; Meuser and Butler, 1987) that are not specifically associated with PTSD. The psychological symptoms that follow extreme stress can have long-term debilitating effects on psychosocial functioning.

It commonly is believed that talking with family and friends (social sharing) about traumatic experiences can be therapeutic with regard to stress-related psychological symptoms. As noted by Allen (1995), the "universal prescription for trauma" is to "talk about it with any trusted person who will listen" and "the sooner the better." During WWII, Kardiner (1941) suggested that combat experiences be shared among soldiers as soon as possible. More recently, Schatzow and Herman (1989) have recommended that victims of domestic violence disclose traumatic experiences to sensitive and receptive family members. Further, a large body of work by Pennebaker (1993a) has shown that writing about traumatic experiences results in improved immune function, better school performance, and decreased physician visits.

On the other hand, some clinicians and researchers believe that social sharing of traumatic experiences generally is ineffective in reducing trauma-related symptoms or perhaps even detrimental. In a series of studies by Rime (1995), quantitative retrospective accounts of social sharing about emotional events appeared unrelated to emotional recovery. Deleterious effects have been described by Tait and Silver (1989), who suggest that social sharing of important negative experiences may reactivate emotional distress rather than resolve it. Similarly, Bohannon (1988) found that repeated rehearsal of fearful traumatic memories leads to enhanced long-term recall. This is consistent with the fact that fear increases neuromodulators, such as epinephrine and norepinephrine, that are known to facilitate encoding and consolidation of memory (LeDoux et al., 1989; McGaugh, 1990). Thus, with each rehearsal of a fearful episode, the event may become further encoded in memory (Pitman, 1989). Finally, Lazarus (1985) has pointed out that the sharing of highly emotional events often

[1] Yale University School of Medicine, 25 Park Street, New Haven, Connecticut 06519.
[2] National Center for Post Traumatic Stress Disorder, Clinical Neuroscience Division, VA Connecticut Healthcare System, Psychiatry Service 116A, 950 Campbell Avenue, West Haven, Connecticut 06516. Send reprint request to Dr. Southwick.
The authors thank Beverly Horner, M.A., Martha Dillon, M.A., Judith Buda, and Ann Staudt for their valuable assistance. This work was supported by the National Center for Post Traumatic Stress Disorder.

leads to personal rejection and negative social responses.

The present report is part of an ongoing follow-along investigation focusing on the evolution of trauma-related symptoms in veterans of Operation Desert Storm. Veterans from two National Guard Units completed self-administered questionnaires 1 month, 6 months, and 2 years after returning from the Gulf War (Morgan et al., 1998; Southwick et al., 1993, 1995, 1997). The goal of the current study was to investigate the relationship between social sharing of Desert Storm experiences and the severity of trauma-related psychological symptoms in individuals who served in the Gulf War.

Methods

Fifty-eight subjects were part of a prospective study designed to assess the longitudinal course of trauma-related symptoms in veterans of the Gulf War. These 58 participants were recruited from one of two National Guard units: a military police unit (N = 28) or a medical unit (N = 30). Subjects were 74% male and averaged 31.5 years of age (SD = 9.90; range 21 to 56). All subjects gave written informed consent after the study had been described in detail. During their tour in the Persian Gulf, most subjects were exposed to multiple stressors. For example, SCUD missile attacks were a constant threat for both units. Subjects in the military police company were stationed near a U.S. munitions storage site and reported that at least one missile exploded within one-half mile of their compound. Members of the medical unit described enemy small arms fire, and two of its members were killed during an alleged ambush. Members of the medical unit also reported seeing corpses, body parts, and burned bodies.

The current methodology is a continuation of that used in several previous reports involving Desert Storm veterans (Morgan et al., 1998; Southwick et al., 1993, 1995, 1997). Questionnaires relevant to the current study that were administered at the 2-year time point included the Mississippi Scale for Combat-Related PTSD (Keane et al., 1988), the Brief Symptom Inventory (Derogatis and Spencer, 1982), and a measure of social sharing.

The Mississippi PTSD scale is a self-report inventory consisting of 35 items derived from DSM-III and associated features. Possible scores range from 35 to 175. It measures PTSD symptom severity and the effect of these symptoms on an individual's life. The measure's reliability and validity have been well established (Keane et al., 1988). For this sample, Total Mississippi PTSD scores at 2 years ranged from 35 to 101 (X = 65.2; SD = 15.0). Six subjects met criteria for a presumptive diagnosis of PTSD using a cut-off score of 89 or greater (Southwick et al., 1993, 1995, 1997).

The Brief Symptom Inventory (BSI) is a 53-item self-report inventory designed to reflect the psychological symptom patterns of psychiatric and medical patients as well as nonpatient individuals. It measures general psychopathology as opposed to PTSD symptoms per se. Each item is rated on a 5-point scale of distress ranging from (0) "not at all" to (4) "extremely." The BSI is scored and profiled in terms of 9 primary symptom dimensions: 1) somatization, 2) obsessive-compulsive, 3) interpersonal sensitivity, 4) depression, 5) anxiety, 6) hostility, 7) phobic anxiety, 8) paranoid ideation, and 9) psychoticism (Derogatis and Spencer, 1982). The BSI is a widely used measure of general psychopathology. Total BSI scores in this sample ranged from 0 to 125 (X = 25.2; SD = 27.3).

Two years after returning from the Gulf, all subjects also completed a social sharing questionnaire that asked how much they had talked about their experiences in the Persian Gulf since returning from the war. On a 0 (not at all) to 3 (a great deal) scale, subjects were asked how frequently they had talked about their war experiences with their spouse or significant other, children, parents, siblings, nonmilitary friends, military friends who served with them in their Desert Storm unit, military friends who served in Operation Desert Storm but not in their unit, and military friends who did not serve in the Gulf. A Family Talking score was calculated by summing the scores for spouse or significant other, children, parents, and siblings. A Friend Talking score was calculated by summing the scores for military and nonmilitary friends. A Total Talking score was calculated by summing the Family Talking and Friend Talking scores.

Power calculations were performed based on the sample of 58 subjects and an expected alpha of .05. Assuming a medium effect size (.35), the power of the analysis was estimated at .77.

Results

Demographic and descriptive data were examined for their relationships to each of the dependent measures. Age was not significantly correlated with either the Mississippi or BSI Total scores or any of the BSI subscale scores. However, t-tests revealed that women reported significantly higher levels of PTSD symptomatology on the Mississippi scale (t = 56; 2.25, $p < .05$). Gender differences also emerged for six of the nine BSI subscales and the total score (all p's <.05 to .01), with women reporting signifi-

cantly higher interpersonal sensitivity, depression, phobic anxiety, hostility, paranoia, and psychoticism scores. Additionally, t-tests revealed significant differences between the two military units for the dependent measures. The medical unit reported significantly higher scores for the obsessive-compulsive, interpersonal sensitivity, depression, paranoia, and psychoticism subscales, as well as for the Total BSI scale (all p's $< .05$–$.01$). These findings prompted the use of gender and unit as covariates in subsequent analyses.

T-tests were also performed to examine the relationship between the three talking measures and gender as well as between the three talking measures and unit. These t-tests revealed no significant differences between males and females with regard to the three Desert Storm talking measures (Talk Tot $t = .26$, $p = .80$; Family Talk $t = .03$, $p = .98$; Friend Talk $t = .41$, $p = .68$). There were also no significant differences between the three talking measures and unit (Talk Tot $t = 1.36$, $p = .18$; Family Talk $t = 1.41$, $p = .17$; Friend Talk $t = .93$, $p = .35$).

To better understand any possible overlap between the three measures of talking, the relationships among the talking variables were also examined. As expected, the Total Talking score was strongly correlated with both of its components (Family: $r = .85$, $p < .0001$; Friends: $r = .87$, $p < .0001$). Additionally, there was a significant positive correlation between Talking with Family and Talking with Friends ($r = .49$, $p < .0001$). Although stronger than expected, this relationship indicates that the two Talking subscales share only 25% of their variance. This leaves the majority of their variance available for discriminative prediction.

Separate hierarchical regression analyses were then performed to examine the relative and cumulative contributions of each of the three measures of Talking to the prediction of trauma-specific symptoms and measures of general psychopathology. For each analysis, gender and unit were examined before evaluating the incremental contributions of each of the Talking measures.

PTSD Symptoms

Gender ($R^2 = .083$, $F[1,56] = 5.07$, $p < .05$), but not unit, accounted for a significant portion of the variance in the prediction of the total Mississippi score. After controlling for the effects of the descriptive data, separate examination of measures of Total Talking, Talking to Family, and Talking to Friends was performed. No significant increases in variance emerged by adding any of the Talking measures to the models. Table 1 presents these results.

TABLE 1
Hierarchical Regression Analyses Examining the Contributions of Social Sharing in the Prediction of Trauma-Related Symptoms Controlling for Gender and Unit[a]

	$R^2\Delta$	Total R^2	df	F for $R^2\Delta$	β
Mississippi Total					
Gender		.083*	1,56	5.07	
Gender, Unit	.010	.093	1,55	0.59	
Gender, Unit, TalkTot	.015	.108	1,54	0.91	−0.12
Gender, Unit, Family Talk	.003	.096	1,54	0.18	−0.06
Gender, Unit, Friend Talk	.023	.116	1,54	1.43	−0.15
Interpersonal Sensitivity					
Gender		.149**	1,56	9.79	
Gender, Unit	.067*	.216***	1,55	4.73	
Gender, Unit, TalkTot	.037	.253***	1,54	2.68	−0.20
Gender, Unit, Family Talk	.008	.224**	1,54	0.54	−0.09
Gender, Unit, Friend Talk	.057*	.273***	1,54	4.19	−0.24
Depression					
Gender		.200***	1,56	13.98	
Gender, Unit	.037	.237***	1,55	2.68	
Gender, Unit, TalkTot	.046	.283***	1,54	3.45	−0.22
Gender, Unit, Family Talk	.016	.253***	1,54	1.14	−0.13
Gender, Unit, Friend Talk	.057*	.294***	1,54	4.36	−0.24
Psychoticism					
Gender		.136**	1,56	8.85	
Gender, Unit	.040	.177**	1,55	2.70	
Gender, Unit, TalkTot	.082*	.259***	1,54	5.99	−0.29
Gender, Unit, Family Talk	.045	.222**	1,54	3.11	−0.22
Gender, Unit, Friend Talk	.078*	.255***	1,54	5.68	−0.28

[a]Unit = medical or military police.
*$p < .05$; **$p < .01$; ***$p < .001$.
The Somatization, Anxiety, Hostility, Phobic Anxiety, Paranoia, and Obsessive-Compulsive subscales, and Total BSI scores had no significant findings.

General Psychopathology

Also shown in Table 1 is the finding that gender was a significant predictor for the Total score and for seven of the nine BSI subscales, accounting for between 7% and 20% of the variance of these measures. The introduction of unit significantly improved the predictive power of the models for only two of the BSI subscales, adding another 6.7% to 10.3% of the variance. The unique contribution of each Talking measure was then examined for each of the BSI measures. The Total Talking score accounted for a significant increment in variance only for the prediction of the Psychoticism subscale ($R^2\Delta = .082$, $F[1,54] = 5.99$, $p < .05$). Talking

to Family did not predict any of the BSI subscale scores or the Total BSI score, whereas Talking to Friends significantly contributed to the prediction of the interpersonal sensitivity ($R^2\Delta = .057$, $F[1,54] = 4.19$, $p < .05$), depression ($R^2\Delta = .057$, $F[1,54] = 4.36$, $p < .05$), and psychoticism ($R^2\Delta = .078$, $F[1,54] = 5.68$, $p < .05$) subscales. All significant findings revealed a negative association between social sharing and psychological distress.

Discussion

For this sample of veterans, the amount of social sharing over a 2-year period about events personally experienced during the Gulf War was not significantly related to PTSD symptom severity as measured by the Mississippi PTSD scale at 2 years. Thus, these data do not support the commonly held belief that talking with family and friends decreases the likelihood of developing PTSD symptoms after highly stressful experiences. Equally important, the data do not support the notion that social sharing promotes the development of PTSD symptoms. Instead, the current findings suggest that social sharing is unrelated to PTSD symptoms.

These results are consistent with a recent report by Schnurr et al. (1997) where WWII veterans who told others about their own highly stressful experiences with mustard gas testing were no more or less likely to develop PTSD than soldiers who did not tell anyone. The data also are consistent with the finding that psychological debriefing, where each subject describes their traumatic experiences in a small group, had no effect on psychiatric morbidity 9 months after debriefing in a cohort of traumatized British Desert Storm veterans (Deahl et al., 1994). As noted by Kinzie and Boehnlein (1989), there is no firm evidence in the scientific literature that simply talking about a trauma is in itself sufficient to protect against the development of PTSD symptoms.

A number of studies have found that disclosure of emotions, in addition to disclosure of facts, is an important element in psychological recovery from traumatic experiences. In an elegant body of work by Pennebaker (1986; 1989; 1993b), subjects were told to write at length about a personally experienced trauma. The most positive outcomes were found in subjects who specifically were instructed to write about their deepest trauma-related thoughts and feelings. In the current study, it is not known whether social sharing about Gulf War experiences included deep levels of emotional disclosure. It is possible that talking at length about one's deepest trauma-related thoughts and feelings would affect recovery even for PTSD symptoms. However, as noted by Rime, "natural social situations are not likely to offer people opportunities to verbalize in depth and at length feelings experienced during an emotional episode. It may thus be that what people evidence as social sharing behaviors in everyday life would rather be uncompleted attempts at processing episode-related emotional information. One can probably conclude that in the field of emotion, there is ample place for professional intervention" (Rime, 1995).

This study does not specifically address the talking that takes place in psychotherapy. Although disclosure is an essential component of most psychotherapies, disclosure alone generally is believed to have limited therapeutic efficacy. For example, Borkovec and Costello (1993) found that supportive reflective listening therapy, where patients simply talked about their worries, had little effect on anxious behavior at the time of therapy and 1 year later. Successful therapy for trauma patients may require access to the full network of affect, cognition and conceptual meaning related to the index trauma (Foa, 1997; Herman, 1997). A necessary component of such a therapy likely includes a nonjudgmental supportive atmosphere where deeply emotional trauma-related experiences can be shared safely and then processed in detail. This may not be possible in most social situations where friends and family have not been trained to tolerate the intense feelings of sadness, despair, helplessness, excitement, anger, disgust, and fear that the trauma survivor describes and that they, the listeners, often experience when hearing traumatic stories (Danieli, 1984; Herman, 1997).

Although social sharing was not significantly related to PTSD symptoms, it was significantly related to several subscales of the BSI. This was true primarily for talking with friends where the amount shared significantly predicted scores on the interpersonal sensitivity, depression, and psychoticism subscales. That is, higher levels of talking with friends about experiences in the Gulf was related to fewer feelings of personal inadequacy and inferiority, less self-deprecation and discomfort in interpersonal interactions; lower levels of dysphoric mood and affect and other cognitive and somatic correlates of depression; and fewer first rank symptoms of schizophrenia.

With the present study design, it is not possible to determine the causal relationship between BSI subscale scores and degree of social sharing. Thus, a negative relationship between amount of social sharing and interpersonal sensitivity could mean that higher levels of talking with friends about Gulf War experiences resulted in improvements in inter-

personal sensitivity or that individuals with lower levels of interpersonal sensitivity (*i.e.*, fewer feelings of inadequacy and inferiority, less discomfort with interpersonal interactions) tended to talk more. Similarly, higher levels of talking could have resulted in decreased symptoms of depression, or increased levels of depression could have resulted in a decreased tendency to talk with others. The same is true for the psychoticism subscale. These data are consistent with data from holocaust survivors where Kahana et al., (1988) reported a positive association between sharing of wartime experiences with family and friends and positive affect forty years after internment.

The current report has a number of limitations. First, accounts were retrospective in nature and subject to inaccurate recall. Second, the questionnaires were self-report and not clinician administered. Although multiple data collection methods, including self-report and clinician-administered interviews generally are preferred, we chose self-report questionnaires at the initial interview in order to minimize disruption of ongoing military exercises. For consistency, we continued to use the same methodologies. Third, the social sharing interview that was used in this study has not been tested for reliability and validity. Further research using this measure is clearly indicated. Finally, the study involved Gulf War veterans and as such it may not be possible to generalize the results to other traumatized populations.

Conclusions

In summary, our data suggest that simply talking with family and friends about war-related experiences is unrelated to severity of PTSD symptoms. This may be due, in part, to the nature of most social situations that makes it difficult to fully express both facts and feelings related to an emotional episode. On the other hand, the data do support a significant relationship between social sharing, particularly with friends, and measures of general psychopathology. It is possible that social sharing has positive effects in these areas which in turn likely would have beneficial effects on psychosocial functioning. Of note, only six subjects met Mississippi criteria for PTSD. Thus the present report does not primarily focus on veterans with PTSD but instead on veterans who experienced a broad range of trauma-related symptoms as a result of their military service in the Gulf War. Clearly, further research is needed to better understand the effects of talking with family and friends about personally experienced stressful and traumatic events.

References

Allen JG (1995) *Treatment approaches in coping with trauma: A guide to self understanding.* Washington, DC: American Psychiatric Press, Inc.

Bohannon JN (1988) Flashbulb memories for the Space Shuttle disaster: A tale of two theories. *Cognition* 179–196.

Borkovec TD, Costello E (1993) Efficacy of applied relaxation and cognitive behavioral therapy in the treatment of generalized anxiety disorder. *J Consult Clin Psychol* 61:611–619.

Danieli Y (1984) Psychotherapists participation in the conspiracy of silence about the Holocaust. *Psychoanal Psychol* 1:23–42.

Deahl MP, Gillham AB, Thomas J, Searle MM, Srinivasan M (1994) Psychological sequelae following the Gulf War factors associated with subsequent morbidity and the effectiveness of psychological debriefing. *Br J Psychiatry* 165:60–65.

Derogatis LR, Spencer PM (1982) *The Brief Symptom Inventory (BSI): Administration, scoring and procedures manual.* Baltimore: Johns Hopkins University School of Medicine.

Falsetti SA, Resnick HS, Dansky BS, Lydiard RB, Kilpatrick DG (1995) The relationship of stress to panic disorder: Cause or effect? In CM Mazure (Ed), *Does stress cause psychiatric illness* (pp 111–147). Washington, DC: American Psychiatric Press, Inc.

Foa EB (1997) Psychological processes related to recovery from a trauma and an effective treatment for PTSD. In R Yehuda, AC McFarlane (Eds), *Psychobiology of posttraumatic stress disorder* (Vol 821, pp 410–424). New York: The New York Academy of Sciences.

Herman JLC (1997) *Trauma and recovery: The aftermath of violence, from domestic abuse to political terror.* Scranton, PA: HarperCollins.

Kahana B, Harel Z, Kahana E (1988) Predictors of psychological well-being among survivors of the Holocaust. In JP Wilson, Z Harel, B Kahana (Eds), *Human adaptation to extreme stress: From the Holocaust to Vietnam* (pp 171–192). New York: Plenum Press.

Kardiner A (1941) The traumatic neuroses of war. New York: Hoeber.

Keane TM, Caddell JM, Taylor KL (1988) Mississippi Scale for combat-related Posttraumatic Stress Disorder: Three studies in reliability and validity. *J Consult Clin Psychol* 56:85–90.

Kinzie JD, Boehnlein JK (1989) Post-traumatic psychosis among Cambodian refugees. *J Trauma Stress* 2:185–198.

Lazarus RS (1985) The trivilization of distress. In JC Rose, LJ Solomon (Eds), *Primary prevention of psychopathology, prevention in health psychology* (pp 279–298). Hanover, NH: University Press of New England.

LeDoux JE, Romanski L, Xagorais A (1989) Indelibility of subcortical emotional memories. *J Cogn Neurosci* 1:238–243.

Mazure CM (Ed) (1995) Does stress cause psychiatric illness? *Progress in psychiatry* (Vol 46):Washington, DC: American Psychiatric Press, Inc.

McGaugh J (1990) Significance and remembrance: The role of neuromodulatory systems. *Psychol Sci* 1:15–25.

Meuser KT, Butler R (1987) Auditory hallucinations in combat-related chronic posttraumatic stress disorder. *Am J Psychiatry* 144:299–300.

Morgan CA, Kingham P, Nicolaou A, Southwick SM (1998) Anniversary reaction in Gulf War veterans: A naturalistic inquiry 2 years after the Gulf War. *J Trauma Stress* 1:165–171.

Pennebaker JW, Beall SK (1986) Confronting a traumatic event: Toward an understanding of inhibition and disease. *J Abnorm Psychol* 95:274–281.

Pennebaker JW (1989) Confession, inhibition, and disease. In L Berkowitz (Ed), *Advances in experimental social psychology* (Vol 22, pp 211–244). New York: Academic Press.

Pennebaker JW, Barger SD, Tiebout J (1989) Disclosure of traumas and health among holocaust survivors. *Psychosom Med* 51:577–589.

Pennebaker JW (1993a) Mechanisms of social constraint. In DM Wegner, JW Pennebaker (Eds), *Handbook of mental control* (pp 200–219). Englewood Cliffs, NJ: Prentice Hall.

Pennebaker JW (1993b) Putting stress into words: Health, linguistic, and therapeutic implications. *Behav Res Ther* 31: 539–548.

Pitman RK (1989) Posttraumatic stress disorder, hormones and memory. *Biol Psychiatry* 26:221–223.

Rime B (1995) Mental rumination, social sharing, and the recovery from emotional exposure. In JW Pennebaker (Ed), *Emotion, disclosure, and health* (pp 271–292). Washington, DC: American Psychological Association.

Schatzow E, Herman JL (1989) Breaking secrecy: Adult survivors disclose to their families. *Psychiatr Clin North Am* 12: 337–349.

Schnurr PP, Ford JD, Friedman MJ, Green B, Dain BJ (1997) PTSD in World War II mustard gas test participants: A preliminary report. *Ann N Y Acad Sci* 821:425–429.

Southwick SM, Morgan A, Nagy LM, Bremner JD, Nicolaou A, Johnson DR, Rosenheck R, Charney DS (1993) Trauma-related symptomatology in veterans of Operation Desert Storm: A preliminary report. *Am J Psychiatry* 150:1524– 1528.

Southwick SM, Morgan CA III, Darnell A, Bremner JD, Nagy L, Charney DS (1995) Trauma-related symptoms in veterans of Operation Desert Storm: A 2–year follow-up. *Am J Psychiatry* 152:1150–1155.

Southwick SM, Morgan CA III, Nicolaou AL, Charney DS (1997) Consistency of memory for combat-related traumatic events in veterans of Operation Desert Storm. *Am J Psychiatry* 154: 173–177.

Tait R, Silver RC (1989) Coming to term with major negative life events. In JJ Vleman, JA Bargh (Eds), *Unintended thoughts* (pp 351–382). New York: Guilford Press.