Social Relationships and PTSD Symptomatology in Combat Veterans

Sherrie Wilcox
University of Georgia

The primary purpose of this study is to determine if recent combat veterans discriminate between different sources of social support, and then preliminarily investigate the relationship of social support source on posttraumatic stress disorder (PTSD) symptomatology. Participants included 83 married male combat veterans. Principal-axis factor analysis with equamax rotation observed four distinct latent factors for each source of support examined. ANOVAs were performed to determine the relationship of each source of support from the distinct latent factors on the level of PTSD. Results indicate that the level of PTSD is related to support received from a significant other, $F(1, 81) = 30.36$, $p < .001$, family, $F(1, 81) = 8.10$, $p = .006$, and military peers, $F(1, 81) = 6.70$, $p = .011$, but not friends, $F(1, 81) = 1.79$, $p = .18$. In general, higher levels of support from each category were associated with lower levels of PTSD in combat veterans. The results suggest that combat veterans distinguish between specific sources of social support, which may have a protective effect on the level of PTSD.

Keywords: buffering effect, combat veteran, factor analysis, PTSD, source of social support

It has long been known that social support plays an important role in helping to protect against the negative effects of stress on health (e.g., Cassel, 1976; Cohen & Wills, 1985; Holahan & Moos, 1981; Kaplan, Cassel, & Gore, 1977; Kessler & McLeod, 1985; Norris & Murrell, 1990; Stretch, 1985). Social support has been identified as a powerful factor that may facilitate recovery from stress, and may "buffer" against the effects of stress (Brewin, 2003; Dean & Lin, 1977; McEwen, 1998). However, few studies have examined the influence of specific sources of social support on this relationship and even fewer studies have examined this relationship in combat veterans, a group with high exposure to stressors (Hoge, Castro, Messer, McGurk, Cotting, & Koffman, 2004). Although the role of specific sources of social support in recovery from stress remains underexamined, some research suggests that specific sources of social support (e.g., the spouse, family, friends, and military peers) can be helpful in recovery from stress (Laffaye, Cavella, Drescher, & Rosen, 2008).

Social support is a complex concept and a difficult area to study; it is a term that has become more abstract in recent years. Social support initially referred to an interaction, person, or relationship (Veiel & Baumann, 1992) and is often narrowly and inconsistently defined (e.g., Hupcey, 1998). Usual definitions of social support have included type of support provided, recipients' perceptions of support, intentions, or behaviors of the provider, reciprocal support, and social networks (Hupcey, 1998). Researchers often do not include a comprehensive definition of social support and some researchers feel that comprehensive definitions of social support should not be used (e.g., Cohen, 1992; Vaux, 1988). These researchers argue that social support is a multifaceted concept and

that a simple, single definition could not provide an adequate definition of this metaconstruct (Vaux, 1988).

Zimet and colleagues (1988) discussed the difficulty of defining social support and understanding how social support operates, and developed an instrument to measure the subjective assessment of social support adequacy. Previous research indicates that social support can come from various sources (Vaux, 1988) including family, friends, and a significant other (Zimet et al., 1988). Moreover, individuals often have multiple support networks (Abbey, Abramis, & Caplan, 1985; Procidano & Heller, 1983) which may vary in importance (Abbey, Dunkel-Schetter, & Brickman, 1983; French, Rodgers, & Cobb, 1974). However, many instruments do not consider the sources as distinct subgroups or may not include a comprehensive assessment of sources (Procidano & Heller, 1983). Social support is also made up of various supportive behaviors, defined as intentional acts of support or assistance that occur within the relationship (Vaux, 1988). Thus, the way in which support is received from different individuals may also play a role in the beneficial effects of social support on stress and health. A recent meta-analysis (Ozer, Best, Lipsey, & Weiss, 2003) found that social support was among the strongest predictive factors of posttraumatic stress disorder (PTSD), an anxiety disorder that results from exposure to traumatic and extremely stressful life experiences (American Psychiatric Association, 2000). Brewin, Andrews, and Valentine (2000) investigated risk factors for PTSD and found social support to have the strongest weighted average effect size (.40). Other studies on victims of combat have found that social support is significantly related to the severity of PTSD symptoms (Barrett & Mizes, 1988; Jankowski et al., 2004, 2005; Solomon, Waysman, & Mikulincer, 1990). Moreover, research has found that greater levels of social support predicted lower PTSD symptoms in combat veterans as well as other populations who have experienced traumatic events (Barrett, 1988; Boscarino, 2006; Haden, Scarpa, Jones, & Ollendick, 2007; Stephens, Long, & Miller, 1997).

Sherrie Wilcox, Department of Health Promotion & Behavior, University of Georgia.

Correspondence concerning this article should be addressed to Sherrie Wilcox, University of Georgia, 221C Ramsey Student Center, 300 River Road, Athens, GA 30602. E-mail: sherriewilcox@gmail.com

Although there remains a strong research interest in the role of social support in disease etiology, little is known about the influence of social support sources among the newer generation of combat veterans with PTSD. Combat veterans are exposed to higher than normal rates of traumatic experiences, which increases their stress levels and may cause the development of PTSD (Kulka, Schlenger, & Fairbank, 1990). Because of the large number of military personnel who are being sent to combat zones in Iraq and Afghanistan, there will be an increase in the number of the newer generation of veterans who will develop PTSD (Gray, Bolton, & Litz, 2004). Recent research by Hoge and colleagues (2004) found that 17% of veterans returning from Iraq suffered from an emotional problem (i.e., PTSD) and the prevalence of PTSD among veterans has increased at a linear relationship with combat exposure. Not surprisingly, research has found that those with PTSD experience a reduced quality of life (Magruder et al., 2004; Stein, Walker, Hazen, & Forde, 1997). With a new generation of combat veterans emerging and an increased rate of PTSD developing, it is critical to examine factors that may impact PTSD development in combat veterans and ways to reduce and prevent PTSD (Friedman, 2004; Hoge et al., 2004; Jones, 2004).

Despite an extensive amount of literature indicating the importance of social support, there are many unanswered questions about specific aspects of social support that may produce the positive effects on health. The impact of specific support networks remains a fairly uninvestigated area of study and may be an important factor to consider in the prevention and reduction of PTSD in combat veterans as the source of social support is a defining construct of social support (Vaux, 1988). Thus, although social support is beneficial to combat veterans exposed to trauma, the underlying mechanisms remain largely unknown. Previous factor analytic studies that have examined sources of social support have found that distinct subgroups emerge (Zimet et al., 1988). Furthermore, studies that have examined the role of the specific source of social support on mental health have found that the source of social support is related to health in a variety of populations (Clara, Cox, Enns, Murray, & Torgrude, 2003; Zimet, Powell, Farley, Werkman, & Berkoff, 1990). However, no known studies have examined the role of sources of social support on PTSD in the newer generation of combat veterans.

The primary purpose of this study is to determine if recent combat veterans discriminate between different sources of social support. A secondary purpose of this study is to preliminarily investigate the relationship between the social support sources and the impact on PTSD symptomatology. To characterize the patterns of covariation among the observed variables in terms of the influence of latent factors, social support from four subgroups will be examined. The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) will be used to assess support from friends, significant other (i.e., the spouse), and family. Additional items will be added to assess support from military peers, a subgroup relevant to this population and previously found to provide high levels of perceived social support to combat veterans (Laffaye et al., 2008). Once the latent factors are developed, the relationship between the factors and the level of PTSD in combat veterans will be examined. It is expected that four distinct factors will form representing each of the four subgroups measured and will be related to PTSD symptomatology. This study will contribute to the understanding of the underlying mechanisms of social support and how social support operates for this specific population.

Method

Sample

The participants were 83 married male Army combat veterans stationed at mid-Atlantic military bases close to where the research was initially conducted. Although female combat veterans were not excluded from the study, female combat veterans did not elect to participate. Of the 83 participants, 86.75% were White, 10.84% were Black, and 2.41% were Other. The combat veterans ranged from 19 to 38 years of age ($M = 24.69$, $SD = 2.69$) and served in a war for the United States in the past 7 years. All combat veterans were married during the time of participation and marriage length ranged from 3 to 84 months ($M = 25.52$, $SD = 12.96$). Although combat veterans without PTSD symptoms were not excluded from the study, all participants exhibited some degree of PTSD symptomatology.

The data collection for this project occurred between October 2007 and June 2008. Of 112 individuals who expressed interest in the study, 83 individuals responded with complete data yielding a response rate of 74.11%. Participants were recruited from within the communities near the military bases through publicly posted flyers and referral by other research participants. Participants were not recruited by contacting veterans directly through the military bases. Criteria for the study included that participants are: (1) combat veterans who have served in a war for the United States in the past 7 years or currently in a combat zone, (2) married during time of participation, and (3) over the age of 18 years. The research procedure was approved by the University Human Subjects Review Board (HSRB). Because the research was not completed within the military system nor was data collected on the military base, military Institutional Review Board approval was not included as part of the research procedure.

Measurement Instruments

Multidimensional Scale of Perceived Social Support (MSPSS). The MSPSS (Zimet et al., 1988) is a 12-item self-report measure that inquires about three dimensions of social relationships (family, friends, and a significant other) on a 7-point Likert-type scale (1 = very strongly disagree to 7 = very strongly agree). Higher scores on each of the subscales indicate higher levels of perceived support. Although the MSPSS is commonly used to inquire about different dimensions of social relationships, it also produces a Global satisfaction with perceived support score can be obtained by taking the sum of the three scales (Clara et al., 2003; Dahlem, Dahlem, Zimet, & Farley, 1988).

The reliability and validity of the MSPSS have been demonstrated in several samples including university students (Dahlem, Zimet, & Walker, 1991), pregnant women (Zimet et al., 1990), urban adolescents (Canty-Mitchell & Zimet, 2000), and psychiatric outpatients (Cecil, Stanley, Carrion, & Swann, 1995). The internal reliability of the total scale on the MSPSS was has been reported as excellent (.91). Cronbach's alpha showed excellent reliability for the family, friends, and significant other subscales (.90, .94, and .95, respectively; Dahlem, Zimet, & Walker, 1991).

The current study added a fourth dimension relevant to military personnel that assessed sources of social support from military peers. Cronbach's alpha for the MSPSS with the additional Military Peers items in this study was acceptable (.73), indicating that the items form a scale that has reasonable internal consistency. The MSPSS items are presented in Table 1 along with the military peers subscale. A global satisfaction with perceived support score was obtained for the MSPSS items and military peers items by taking the sum of the four scales and will be referred to as the "Global Score," in this study. To determine whether or not the "special person" was the spouse, an additional item was assessed (i.e., "The special person in my life is my spouse," item 17), but was not included in the data analyses. All participants indicated that the "special person" was the spouse.

PTSD Checklist, Military Version. The PTSD Checklist, Military Version (PCL-M) is a governmental survey created by a team of researchers from the National Center for PTSD. It was used in this study to assess the veterans PTSD symptomatology. The PCL-M is a self-report scale consisting of 17 statements, which each corresponding to the 17 core PTSD symptoms listed in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (American Psychiatric Association, 1994). For each statement, the combat veterans were asked to indicate how frequent they experienced the symptom during the previous month, on a 5-point scale ranging from 1 = not at all to 5 = extremely. PCL-M scores range from 17–85, where 17 indicates that no PTSD symptoms are present and 85 indicates that PTSD symptoms are present at extreme levels. A score of 50 or above on the PCL-M was indicative of probable PTSD (Weathers & Ford, 1996). The PTSD symptomatology within the combat veterans was calculated as the sum of the responses on the scale. In this study, scores below 50 were classified in the "low PTSD" symptomatology group and those with scores at or above 50 were in the "high PTSD" symptomatology group. The test–retest reliability has been reported as high (0.96; retest interval was not specified) and the internal consistency (ranging from 0.89 to 0.92, but no data on individual items; Weathers et al., 1993). A more detailed assessment of the PCL is cited elsewhere (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996).

Description of Data

Before analyzing the data, variables were screened for non-normality and outliers. No data was missing for the analyses performed in this paper. DeCarlo's macro (DeCarlo, 1997) was used to examine the data for skewness, kurtosis, and outliers. Based upon the values of skewness and kurtosis, all of the variables were normally distributed as the values of skewness ($g1$) and kurtosis ($g2$) were below the cut-off values of 2 and 7, respectively. Skewness values ranged from .01 to 1.17 and kurtosis values ranged from .07 to 2.92. To test for outliers, Mahalanobis distances were calculated with alpha set to 0.05. Ten cases were found to have large Mahalanobis distances and were significant at the 0.05 level. These cases were examined for coding error and data entry error, and it was determined by the researcher that these cases will be included in the final analysis as they may represent valid cases for which the patterns of the variables may differ among this population. Descriptive statistics for the variables are presented in Table 2, and Table 3 presents the correlation matrix.

Results

Participants' mean score overall on the PCL-M was 42.39 (SD = 13.44, range = 24–63). Thirty-five participants (42.17%) reported high levels of PTSD symptomatology (M = 56.20, SD = 3.54) as indicated by a score at or above 50 on the PCL-M and were included in the "high PTSD" symptomatology group. The remaining 48 participants (57.83%) reported scores below 50 and were included in the "low PTSD" symptomatology group (M = 32.31, SD = 7.78). All participants exhibited some degree of PTSD as indicated by a score above 17 on the PCL-M.

Method of Extraction

Before the variables were extracted, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were performed to determine how amenable the matrix is to factoring. The KMO value (KMO = .77) approached "meritorious," (Kaiser, 1974) and Bartlett's test was significant (χ^2 (120) =

Table 1
MSPSS Items Including Military Peers Items

Item	Question
1	There is a special person who is around when I am in need.
2	There is a special person with whom I can share my joys and sorrows.
3	My family really tries to help me.
4	I get the emotional help and support I need from my family.
5	I have a special person who is a real source of comfort to me.
6	My friends really try to help me.
7	I can count on my friends when things go wrong.
8	I can talk about my problems with my family.
9	I have friends with whom I can share my joys and sorrows.
10	There is a special person in my life who cares about my feelings.
11	My family is willing to help me make decisions.
12	I can talk about my problems with my friends.
13	I can talk about my problems with my Military Peers.
14	My Military Peers care about my feelings.
15	My Military Peers really try to help me.
16	I get the emotional help and support I need from my Military Peers.

Table 2

Descriptive Statistics for MSPSS Items

Item	Sub-scale	Mean	*SD*
1	Significant Other	1.75	1.022
2	Significant Other	1.69	.810
3	Family	6.28	.591
4	Family	6.13	.488
5	Significant Other	1.66	.859
6	Friend	4.76	.508
7	Friend	4.74	.519
8	Family	6.10	.532
9	Friend	4.71	.530
10	Significant Other	1.65	.803
11	Family	6.12	.479
12	Friend	4.71	.456
13	Military Peers	6.06	.451
14	Military Peers	6.05	.515
15	Military Peers	6.04	.479
16	Military Peers	6.06	.591

1072.18, $p < .001$), indicating that the matrix is amenable to factoring.

The method used to best investigate the research question was the common factor analytic technique, or principal-axis factor (PAF) analysis, which gives more accurate results than principal component analysis (Widaman, 1993). In addition, common factor analysis is more suited to the purpose of this study than principal component analysis (Widaman, 1993). Thus, to obtain parameters reflecting latent factors, PAF analysis with iterations for factor extraction and equamax rotation was used.

The communalities were high (i.e., >.65) on most variables. Variables 1, 3, and 16 produced communalities below .65 (.312, .466, and .188, respectively). The unrotated factor matrix produced factors that were difficult to interpret. Oblique rotations were initially performed and because of the low correlation among the factors, orthogonal rotations were found to be more appropriate. The final rotation was an equamax rotation, which is a combination of varimax and quartimax rotations, and produced the most interpretable results.

Determining the Number of Factors

To accurately determine the number of factors that should be retained, multiple analytic procedures were performed. The eigenvalue-one procedure (Kaiser, 1960) was performed by default and suggested that four factors be extracted. Additionally, the eigenvalue-one procedure showed that the four factors accounted for 77.62% of variance (30.53, 20.91, 14.07, and 12.11%, respectively for factors 1–4). The second procedure was the visual scree procedure (Cattell, 1966, 1978). Based on the scree plot, four factors should be retained as there is a drop-off after the fourth variable. The final method conducted was a parallel analysis with data set to 95% (Horn, 1965), which also suggested the extraction of four factors (see Table 4). Based upon the unanimous results, and consistent with expectations, four factors were extracted and rotated.

Rotation of Factors

Equamax rotation with four factors yielded a matrix close to simple structure with high loadings on each component and only one cross-loading when a cutoff value set to .3 was used. The equamax rotated factor matrix with the factor loadings is presented in Table 5. Based upon the weights for each factor, four distinct factors emerged for each of the four dimensions of social support (i.e., friends, significant other, family, and military peers). The cumulative percent of the variance accounted by the four factors after rotation was 72.24%, with factors 1–4 accounting for 20.68, 18.80, 17.43, and 15.33% of the variance, respectively.

Interpretation of factors. Factor 1 produced high loadings from variables 6, 7, 9, and 12, which correspond to the source of social support from friends. There were also a cross-loading from variable 3, from the family subgroup. However, this variable was excluded from Factor 1 because of the interpretability of the factor. Factor 2 produced high loadings from variables 1, 2, 5, and 10, corresponding to sources of social support from the significant other. Variables 3, 4, 8, and 11 loaded on the third factor and corresponded to the sources of social support from the family. The fourth factor produced loadings from sources of social support

Table 3

Correlation Matrix for MSPSS Variables

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1.00															
2	.507	1.00														
3	.198	.311	1.00													
4	.190	.230	.505	1.00												
5	.457	.862	.306	.166	1.00											
6	−.001	−.037	−.506	−.263	−.133	1.00										
7	−.013	−.084	−.433	−.292	−.148	.771	1.00									
8	.225	.240	.496	.748	.205	−.319	−.127	1.00								
9	.111	−.100	−.442	−.227	−.163	.870	.780	−.246	1.00							
10	.485	.861	.335	.244	.905	−.089	−.108	.280	−.126	1.00						
11	.213	.256	.484	.922	.189	−.280	−.311	.767	−.245	.269	1.00					
12	.024	−.017	−.378	−.154	−.096	.748	.701	−.135	.810	−.046	−.174	1.00				
13	.245	.186	.074	.019	.210	.064	.069	.026	.125	.193	.022	.026	1.00			
14	.139	−.022	−.004	.023	.010	.138	.139	−.017	.185	.041	−.024	.112	.721	1.00		
15	.143	−.002	−.079	−.021	.030	.136	.234	.034	.185	.002	−.072	.104	.722	.830	1.00	
16	−.035	−.062	−.223	−.239	−.079	.171	.211	−.251	.173	−.032	−.241	.111	.215	.310	.336	1.00

Table 4
Parallel Analysis

Root	Raw data	Means	Percentile
1	4.65	1.08	1.25
2	3.09	0.86	1.02
3	2.00	0.69	0.74
4	1.76	0.56	0.70
5	0.23	0.44	0.56
6	0.18	0.34	0.45
7	0.08	0.24	0.35
8	0.04	0.15	0.25
9	0.004	0.06	0.14
10	−0.02	−0.01	0.06
11	−0.03	−0.08	−0.02
12	−0.04	−0.15	−0.10
13	−0.08	−0.21	−0.16
14	−0.11	−0.28	−0.23
15	−0.12	−0.34	−0.30
16	−0.13	−0.41	−0.38

from military peers, variables 13, 14, 15, and 16. Thus, Factors 1–4 were interpreted as constructs for friends, family, significant other, and military peers, respectively. Factor 1 was thus labeled social support from friends; Factor 2, social support from significant other; Factor 3, social support from family; and Factor 4, social support from military peers.

Examination of Factors on PTSD Symptomatology

One-way analyses of variance (ANOVA) were conducted on each of the newly developed factors from the PAF to examine the ability of the diagnostic groups to differentiate among subgroups of social support (i.e., combat veterans with low vs. high levels of PTSD symptomatology for each source of social support factor). The analysis revealed that Factor 1 (Friends) was not significantly related to the level of PTSD symptomatology in combat veterans, $F(1, 81) = 1.79$, $p = .18$. However, Factors 2, $F(1, 81) = 30.36$, $p < .001$, 3, $F(1, 81) = 8.10$, $p = .006$, and 4, $F(1, 81) = 6.70$, $p = .011$ were significantly related to the level of PTSD symptomatology in combat veterans. In general, combat veterans with higher levels of PTSD symptomatology reported lower levels of satisfaction with perceived social support than combat veterans with lower levels of PTSD symptomatology. Descriptive statistics are reported in Table 6.

A one-way ANOVA was conducted on the combined factors to determine the ability of the Global Score to differentiate among the diagnostic groups. The analysis revealed that the Global Score was significantly related the level of PTSD symptomatology in combat veterans, $F(1, 81) = 54.83$, $p < .001$. Combat veterans with higher levels of PTSD symptomatology exhibited lower overall satisfaction of perceived social support ($M = 71.20$, $SD = 2.52$) compared to combat veterans with lower levels of PTSD symptomatology ($M = 76.90$, $SD = 4.01$).

To examine the ability of the original factors (i.e., friends, significant other, and family) to differentiate among the diagnostic groups, a one-way ANOVA was performed. The analysis revealed that the combined three original scores were significantly related the level of PTSD symptomatology in combat veterans, $F(1, 81) = 45.09$, $p < .001$ such that combat veterans with higher levels of

PTSD symptomatology exhibited lower overall satisfaction of perceived social support ($M = 47.51$, $SD = 2.27$) compared to combat veterans with lower levels of PTSD symptomatology ($M = 52.31$, $SD = 3.75$).

Discussion

The results of this analysis are consistent with similar analyses on the MSPSS such that subgroups from specific sources of social support are formed as expected (e.g., Clara et al., 2003; Dahlem et al., 1991; Zimet et al., 1988; Zimet et al., 1990). Even with the addition of a fourth distinct group, military peers, the factors still formed as expected. This suggests that combat veterans differentiate between distinct sources of social support from family, friends, significant other, and military peers, rather than one all-inclusive global construct of social support.

Interestingly, the current study found that sources of social support from family, significant other, and military peers were related to the level of PTSD symptomatology among combat veterans, and that social support from friends was not significantly related to the level of PTSD symptomatology among combat veterans. In other words, although social support from friends was found to be a distinct dimension from the PAF analysis, the support received from friends produced less of an impact on combat veterans than the other groups examined. Previous research has suggested the social support can "buffer" the negative effects of stress (Brewin, 2003; Cohen & Wills, 1985; Dean & Lin, 1977; McEwen, 1998). However, for combat veterans, it may be that social support from friends has less of a buffering effect than sources of social support from a significant other, family, and military peers. Moreover, this sample consisted of combat veterans who were married and therefore may spend more time with military peers, a significant other, and family than with friends. This area should be investigated further. It is important to note that this study did not differentiate between military friends and nonmili-

Table 5
Equamax Rotated Factor Matrix

Item	Factor 1	Factor 2	Factor 3	Factor 4
9	**.933**	−.040	−.120	.134
6	**.894**	−.012	−.199	.071
12	**.840**	.006	−.056	.035
7	**.809**	−.048	−.163	.127
5	−.124	**.937**	.051	.021
10	−.061	**.930**	.144	.020
2	−.022	**.914**	.131	−.013
1	.061	**.505**	.177	.149
4	−.119	.107	**.932**	−.011
11	−.132	.136	**.927**	−.048
8	−.118	.162	**.791**	−.005
3	−.426	.260	**.465**	−.011
15	.095	.006	.001	**.918**
14	.072	.004	.029	**.905**
13	.007	.207	.022	**.785**
16	.121	−.039	−.250	**.330**

Note. Factor 1 = Friends; Factor 2 = Significant Other; Factor 3 = Family; Factor 4 = Military Peers. The bold loadings indicate the items that were used to interpret each factor, using a cutoff value of 0.3.

Table 6

Means and SDs of MSPSS Scores for Combat Veterans With High and Low Levels of PTSD Symptomatology Across Factors

Factor	PTSD symptomatology	*N*	MSPSS mean	*SD*
Factor 1	1—Low PTSD	48	19.15	1.76
(Friends)	2—High PTSD	35	18.60	1.93
	Total	83	19.92	1.84
Factor 2	1—Low PTSD	48	8.08	3.18
(Significant Other)	2—High PTSD	35	4.91	1.40
	Total	83	6.75	3.02
Factor 3	1—Low PTSD	48	25.08	1.80
(Family)	2—High PTSD	35	24.00	1.59
	Total	83	24.63	1.79
Factor 4	1—Low PTSD	48	24.58	1.79
(Military Peers)	2—High PTSD	35	23.69	1.18
	Total	83	24.21	1.61

tary friends, as participants were asked only about support from "friends," and not specifically "nonmilitary friends." Future studies on combat veterans should distinguish between military friends and nonmilitary friends, as there may be a difference between these two categories.

Previous research has found that perceived social support is associated with psychological well-being (e.g., Chou & Chi, 2001; Wethington & Kessler, 1986). Moreover, research on the original three constructs found that the constructs are negatively associated with depression symptomatology (Clara et al., 2003). This study extends the results of previous studies to a sample of combat veterans and adds a relevant construct of military peers. However, despite the vast array of research that demonstrates the beneficial effects of social support on health and well-being (Coyne & Delongis, 1986; Uchino, Uno, & Holt-Lunstad, 1999), relatively little is known about the mechanisms that influence these changes in health. Mapping the combat veteran's support network is valuable and may provide insight on important factors that may mediate PTSD symptomatology.

Limitations of the current study include the relatively small sample size. Typical guidelines for factor analysis suggest at least 100 participants (Gorsuch, 1983). However, this study produced fairly high communalities on most variables, suggesting an adequate sample size for the PAF analysis. A sample size over 100 could raise the communalities and produce a higher percent variance in the rotated factor matrix. Overall, this study accounted for a large percent of variance (over 70%) and produced high loadings on the extracted factors (over .4). This study also met the requirement of having at least 3–5 variables per factor (i.e., 4 variables per factor; MacCallum et al., 1999; Velicer & Fava, 1998; Widaman, 1993).

The limited generalizability of the results across the population may be considered a limitation. However, this study was specific to married combat veterans and is more representative of a military population than the general population. The lack of female combat veterans limits generalizability to the overall military population. However, females generally do not serve in combat and fewer numbers of females are present in combat zones than males. Additionally, combat duties were not obtained and should be obtained in the future as the specific combat duty may impact the risk for PTSD and other mental health problems. A caveat encoun-

tered during the study was the cross-loading of a family variable onto a friend factor. Although the "family" cross-loading was excluded from the "friend" factor, future research should examine this issue further. There is a need for replication studies on this population so that these distinct latent factors can be cross-validated.

In addition to strengths already mentioned, another strength of the study include the screening methods performed before the analysis to check assumption and multiple rotational procedures performed to determine the most appropriate, interpretable, and replicable matrix, procedures not often performed or reported (Benson & Nasser, 1998; Fabrigar et al., 1999).

The primary focus of this study was on the latent factor structure of items on the MSPSS with an addition of Military Peers, and the implications for combat veterans with PTSD symptomatology. Latent constructs emerged from this sample of combat veterans and were found to be related to PTSD symptomatology. Understanding how social support functions to buffer against PTSD symptomatology is beneficial for the population-at-large. If researchers are able to map out the social network and the impact of social relations on traumatic experiences, this information could be applied to interventions for trauma survivors. Future research should be conducted to explore the possibility of sources of social support as a buffer for PTSD symptomatology in combat veterans and the resulting implications for health promotion and preventive intervention. Furthermore, more powerful analytic techniques such as path analysis and structural equation modeling could be used to examine the relationship of these latent factors in the stress-mental health relationship in a larger sample of combat veterans.

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