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Life Meaning Following Combat Among Air Force Security Forces Personnel

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An active duty Air Force ground combat unit (n = 189) completed surveys about trauma and combat exposure, mood symptoms, and meaning in life. Two dimensions of deployment-related traumas were assessed: combat (e.g., firing weapons, being fired upon) and aftermath (e.g., seeing dead bodies, injury). Results of regression analyses indicated that Airmen who experienced more intense combat reported less presence of meaning in life, although the significant interaction with gender suggested declines in meaning in life were especially pronounced among males with higher combat intensity. In contrast, more intense aftermath exposure was associated with slightly stronger meaning in life, with no differences by gender. Intensity of combat exposure might differentially affect perceived meaning in life for male versus female combatants.

Keywords: military, Air Force, meaning in life, combat

Following adversity and major stressors, individuals demonstrate a continuum of responses. Some individuals demonstrate symptoms of trauma that are chronic and debilitating, others experience minor symptoms for a short period of time, and some seem to recover quickly but decompensate with time (Bonanno, 2004). For those in military service, there is converging evidence of increased posttraumatic stress disorder (PTSD) rates following war-zone deployment (Vasterling et al., 2010) with exposure to a combat situation correlated with screening positive for PTSD (Hoge et al., 2004; Hoge, Auchterlonie, & Milliken, 2006). Combined samples of U.S. service members deployed to Iraq or Afghanistan reveal estimated PTSD rates of 14% (Tanielian & Jaycox, 2008) These soldiers were also significantly more likely to leave service during the year following deployment (Hoge et al., 2006).

For many who are exposed to loss through traumatic events, positive changes such as improved relationships and shifts in life philosophy occur (Bonanno, 2004; Tedeschi & Calhoun, 2004). These positive changes have been found following a wide range of stressors including medical diagnoses, natural disasters, assaults, and military combat (Linley & Joseph, 2004). For example, in studies of those who have lost a spouse or parent, 10–42% of participants reported less depression, positive changes, and a deeper understanding of life following the death of a loved one (Bonanno et al., 2002; Shuchter & Zisook,

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1993; Schwartzberg & Janoff-Bulman, 1991). These positive changes may also occur in military populations following combat experiences. Elder and Clipp (1989), for instance, found that combat veterans from the Vietnam War were more likely to endorse positive than negative outcomes resulting from their combat experiences. Specifically, 60–70% of the combat veterans in their sample reported newfound ability to cope with adversity, self-discipline, greater independence, and a broader perspective on life.

Along these lines, Tedeschi, Park, and Calhoun (1998) documented the phenomenon of self-reported positive changes after a highly stressful event in their studies of posttraumatic growth. Following a traumatic event, individuals are intrinsically motivated to rebuild the assumptions, values, schemas, and personal narratives that have been challenged by the experience. Through a process of accommodation and assimilation, trauma survivors search for meaning to understand what has happened, and how and why the event happened (Joseph & Linley, 2005). As new information is accommodated, positive, personal growth occurs, leading to stronger relationships, resilience, and a clearer philosophy of life (Joseph & Linley, 2005). The more that an individual actively thinks about and makes meaning of the event, the more likely it is that posttraumatic growth will take place (Tedeschi et al., 1998).

A key process toward posttraumatic growth is the ability to make meaning of the trauma. Meaning-making as a coping strategy for those who face unwanted or unchangeable events has recently been studied in stress and coping research (Park & Folkman, 1997). *Meaning* has been defined as "perceptions of significance" and has been shown to lead to less psychological distress and greater life satisfaction, better adjustment, and the ability to move on (Brooks & Matson, 1982; Horowitz, 1990; Holahan, Moos, Holahan, & Brennan, 1995) Results of several studies suggest the presence of meaning has a protective effect against psychological distress (Johnson, Wood, Gooding, Taylor, & Tarrier, 2011; Steger, Frazier, Oishi, & Kaler, 2006) and is associated with recovery following trauma (Park & Ai, 2006; Southwick, Gilmartin, McDonough, & Morrissey, 2006). This inverse relationship extends to Iraq and Afghanistan veterans, for whom a stronger presence of meaning in life is associated with less severe PTSD symptoms (Owens, Steger, Whitesell, & Herrera, 2009).

In contrast, a recent meta-analysis of 87 studies found that the search for meaning following adversity is related to greater psychological distress including posttraumatic symptoms, depression, and anxiety (Helgeson, Reynolds, & Tomich, 2006). It has been proposed that the search for meaning is an associated feature of unresolved cognitive processing, such that the search for meaning in life is akin to the absence of meaning in life (or meaninglessness; Linley & Joseph, 2011). Perhaps not surprisingly, meaninglessness is associated with increased likelihood to seek out mental health treatment among combat veterans (Fontana & Rosenheck, 2005), and finding meaning in life is proposed to be a critical component of the emotional processing that leads directly to the many positive changes observed following adversity, as well as enhanced psychological well-being (Joseph & Linley, 2008; Zika & Chamberlain, 1992).

Unfortunately, research on the impact of combat experiences on veterans' sense of meaning in life is limited. Although a stronger sense of meaning in life has been found to be correlated with less severe PTSD symptoms and general psychological distress among veterans (Currier, Holland, Chisty, & Allen, 2011; Gillies & Neimeyer, 2006; Owens, Steger, Whitesell, & Herrera, 2009; Park, 2010; Park & Folkman, 1997; Schok, Kleber, Elands, & Weerts, 2008), even when controlling for depression and guilt (Owens et al., 2009), neither of these studies considered the associations among factors that might contribute to a strengthening (or weakening) of meaning in life, such as trauma intensity, differential types of trauma exposure, and gender differences. The primary aim of the current study was therefore to explore the associations among combat- and noncombat-related stressors and traumas with meaning in life in a sample of active duty military personnel. We sought to determine whether meaning in life was affected by trauma intensity and types of deployment-related experiences. Finally, we sought to determine any gender differences associated with the formation of life meaning following combat exposure.

Method

Participants

Participants included 189 active duty Security Forces personnel stationed at an Air Force Base in the southeast United States with a primary ground combat mission and frequent deployments. Almost all participants (93.7%) had deployed at least once, and most had deployed multiple times ($M = 2.20$, $SD = 1.67$, range: 0–8). The majority of personnel reported at least one deployment with traditional combat duties such as area security, quick reaction force, or police transition team. Other endorsed mission types included base security and support operations, humanitarian operations, and/or detainee operations. Of these 189 Airmen, 181 (95.8%) completed the surveys. The sample was predominantly male ($n = 150$, 79.4%), with an average age of 25.96 ($SD = 5.92$) years. Racial distribution was 59.8% Caucasian, 23.3% African American, 2.6% Native American or Alaskan Native, 1.1% Asian American,.5% Native Hawaiian or Pacific Islander, 9.0% "other," and 3.7% unknown. Only 8.5% endorsed Hispanic/Latino ethnicity as well.

Instruments

Meaning in life. The Meaning in Life Questionnaire (Steger, Frazier, Oishi, & Kaler, 2006) is a 10-item self-report scale that assesses two dimensions of meaning in life: (a) five items assessing the presence of meaning in life, or the extent to which the individual feels his or life is currently filled with meaning (e.g., "I understand my life's meaning"), and (b) five items assessing the search for meaning in life, or the active engagement in identifying meaning in one's life (e.g., "I am always looking to find my life's purpose"). Participants respond to each item on a 7-point Likert-scale ranging from 1 (*absolutely untrue*) to 7 (*absolutely true*), with higher scores indicating stronger perceived meaning in life. The scale has high internal consistency (.82) and correlates with other measures of mood and personality traits in the expected directions (Steger et al., 2006). The internal consistency estimates for the presence of meaning and search for meaning subscales were .90 and .88, respectively, in the current sample.

Trauma exposure. The Traumatic Events Scale is a checklist of potentially stressful or traumatic events (e.g., sexual assault, natural disaster, physical or domestic abuse) created by the authors. The scale lists 18 different experiences and asks respondents to indicate if they have experienced each event during their lives (yes/no). Items are summed to obtain an overall metric of exposure to traumatic events. An item asking about exposure to "military combat (e.g., torture, war zone, prisoner of war, hostage)" was omitted, however, to minimize artificial inflation of associations with other variables. The internal consistency estimate for the Traumatic Events Scale was .76 in the current sample.

Combat exposure. The Deployment Risk and Resilience Inventory (King, King, & Vogt, 2003) measures various dimensions and aspects of deployment-related issues. Two scales were used in the current study: the Combat Experience Scale and the Aftermath of Battle Scale. The Combat Experiences Scale asks participants about the frequency of experiencing a range of combat-specific events such as direct exposure to firing a weapon, being fired upon, witnessing injury and death, and going on special missions and patrols on a scale ranging from 1 (*never*) to 5 (*daily or almost daily*). The Aftermath of Battle Scale asks participants about the frequency of experiencing a range of events associated with the outcome or consequences of combat such as observing or handling human remains, dealing with prisoners of war, and seeing devastated communities and homeless refugees, using the same scoring scale as the Combat Experiences Scale. Both scales are reliable ($>.86$) and correlate in the expected directions with measures of psychological distress among Iraq war veterans (Vogt, Proctor, King, King, & Vasterling, 2008). The internal consistency estimates for the Combat Experiences Scale and the Aftermath of Battle Scales were .76 and .87, respectively, in the current sample.

Negative affect. The General Distress subscale of the 27-item Anxiety Depression Distress Inventory (Osman et al., 2011) was used to assess negative emotionality. The scale is composed of nine descriptors of general distress (e.g., was disappointed in myself, felt discouraged, felt hopeless, felt like a failure) that respondents rate on a 5-point Likert scale ranging

from 1 (*not at all*) to 5 (*extremely*). Reliability estimates exceed .80, and convergent validity is supported by moderate to large correlations with other measures of negative emotional states (Osman et al., 2011). The internal consistency estimate for the distress scale was .78 in the current sample.

Procedures

Participants were gathered at two separate unit meetings during the work day. At each meeting, the purposes of the study were explained and informed consent. Unit leaders were not present during informed consent to minimize potential coercion. Survey packets were distributed to Airmen choosing to participate, were completed anonymously, and then returned upon completion. Airmen were provided food and refreshments regardless of participation. This study was approved by the University of Texas at San Antonio's Institutional Review Board and the Air Force's Office of Research Oversight and Compliance.

Data Analytic Approach

Outcome variables were first inspected for distributional properties. The presence of meaning subscale demonstrated significant negative skew and was therefore reverse scored to provide a positive skew, enabling us to use generalized linear regression modeling for a Poisson distribution. For ease of interpretation of results, however, coefficients are converted and presented such that higher presence of meaning scores coincide with stronger meaning in life (i.e., higher scores indicate health). The search for meaning subscale was approximately normally distributed, however, so no transformations were required; linear regression modeling was used for search for meaning. Analyses were conducted in several steps to identify the most parsimonious and optimal fit. In the first step, all variables were entered into the regression equation simultaneously. This initial model was then trimmed by alternately removing and replacing predictors and comparing the resulting goodness-of-fit statistic (i.e., Aikaike's Information Criterion) using the smaller-is-better criterion. Gender interactions were also tested using this same approach. Robust estimation was used for all analyses, and predictors were centered prior to analysis. Power analyses were conducted using G*Power 3.1.3 (Faul, Erdfelder, Buchner, & Lang, 2009). For a two-tailed test with $p = .05$, the current sample size was sufficient to detect small effects—Exp (β) = 1.3 for Poisson regression, $f^2 = .08$ for linear regression—with power $> .80$.

Results

Means, Standard Deviations, and Intercorrelations

Means, standard deviations, and intercorrelations of all variables are displayed in Table 1. Presence of meaning was correlated with less negative affect whereas the search for meaning was correlated with slightly more severe negative emotions. Higher perceived presence of meaning was also significantly correlated with lower search

Table 1
Means, Standard Deviations, and Intercorrelations of All Variables

	1	2	3	4	5	6	7	8
1. Presence of meaning	—							
2. Search for meaning	−.28**	—						
3. Number of deployments	.14	−.06	—					
4. Combat	−.04	.04	.21**	—				
5. Aftermath	−.01	.02	.35**	.59**	—			
6. Trauma exposure	−.14	−.13	.19*	.25**	.33**	—		
7. Negative affect	−.50**	.20**	.00	.02	.14	.20**	—	
8. Gender	−.04	.14	−.16*	−.10	−.14	−.09	.09	—
M	27.73	21.44	2.20	.44	.63	4.59	16.14	−.31
SD	6.57	8.19	1.67	.35	.58	3.13	7.65	.39

* $p < .05$. ** $p < .01$.

for meaning, suggesting that those with a weaker sense of purpose in life tended to report more active search for purpose. A greater number of experienced stressful or potentially traumatic events in life ($M = 4.59$, $SD = 3.13$) was correlated with a greater number of deployments, more intense combat exposure, more frequent aftermath events, and more severe negative affect.

Gender Differences in Trauma Exposure

Participants reported experiencing ($M = 4.59$, $SD = 3.13$) potentially traumatic events during their lives, ranging from a total of zero to 15 endorsed events. Men ($M = 4.74$, $SD = 3.15$) and women ($M = 4.00$, $SD = 3.14$) did not differ in the number of lifetime potentially traumatic events (Mann–Whitney U = −1.374, $p = .169$).

Mean intensity of combat exposure scores ranged from 1.00 (*never*) to 3.09 (*a few times each month*), with an overall mean score of 1.44 ($SD = .35$). Men reported slightly more intense combat exposure (M = 1.45, $SD = .35$) than women (M = 1.36, $SD = .35$), although this difference fell just shy of statistical significance (Mann–Whitney U = −1.784, $p = .074$).

Intensity of aftermath exposure scores ranged from 1.00 (*never*) to 4.33 (*a few times each week*), with an overall mean score of 1.63 ($SD = .58$). Men reported significantly more frequent exposure to aftermath events ($M = 1.66$, $SD = .57$) than women ($M = 1.45$, $SD = .58$; Mann–Whitney U = −2.352, $p = .019$).

Factors Associated With Presence of Meaning in Life

In the initial model (see Table 2), a stronger sense of meaning in life was significantly associated with a greater number of deployments (B = .150, $SE = .034$, $p < .001$), less exposure to noncombat stressors and traumas (B = −.076, $SE = .032$, $p = .017$), less intense combat exposure (B = −.092, $SE = .040$, $p = .023$), and less intense negative affect (B = −.312, $SE = .022$, $p < .001$). To determine if the relationship of combat exposure with meaning in life differed by gender, the Gender × Combat exposure was calculated and added to the regression model. Inclusion of the interaction term was statistically significant (B = .209, $SE = .059$, $p < .001$) and improved model fit.

Table 2
Multivariate Regression Analyses Predicting Presence of Meaning in Life

Step	Predictors	B	*SE*	*p*
1	Number of deployments	0.150	0.034	<.001
	Gender	0.028	0.072	0.703
	Trauma exposure	−0.076	0.032	0.017
	Combat	−0.092	0.040	0.023
	Aftermath	0.069	0.040	0.079
	Negative affect	−0.312	0.022	<.001
2	Number of deployments	0.147	0.034	<.001
	Gender	0.037	0.072	0.607
	Trauma exposure	−0.072	0.032	0.025
	Combat	−0.247	0.058	<.001
	Aftermath	0.085	0.040	0.033
	Negative affect	−0.312	0.022	<.001
	Gender × Combat	0.209	0.059	<.001

Note. Generalized linear regression with robust estimation for Poisson distribution. Combat = combat experiences scale; Aftermath = aftermath of battle scale.

No other gender interactions were statistically significant or contributed to improved fit, however. In the final model, a stronger presence of meaning in life continued to be associated with the previously mentioned variables and was additionally predicted by more intense aftermath of battle exposure (B = .085, $SE = .040$, $p = .033$). As depicted graphically in Figure 1, increased combat intensity was associated with reduced presence of meaning in life for both men and women, but this negative relationship was more pronounced for men. Specifically, men who had experienced low levels of combat reported a stronger meaning in their lives than women, but men who experienced high levels of combat reported less meaning in their lives than women. To test the robustness of these findings among those Airmen with greater combat exposure, we repeated the regression analyses with only those Airmen who had deployed at least two times ($n = 92$), as they had significantly higher combat exposure, $t(176) = 2.088$, $p = .038$ and aftermath of battle exposure, $t(176) = 4.326$, $p < .001$ relative to those Airmen who had never deployed or deployed only once. No differences in the results of regression analyses were found, however.

Factors Associated With Search for Meaning in Life

In the initial model (see Table 3), a greater search for meaning in life was significantly as-

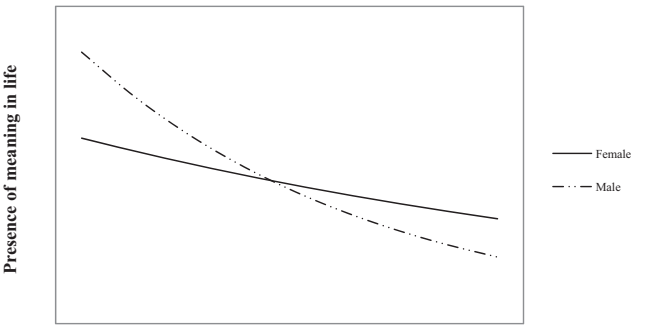

Figure 1. Interaction of gender with intensity of combat exposure on presence of meaning in life. Low combat = 2 *SD*s below the mean, high combat = 2 *SD*s above the mean.

sociated less exposure to noncombat stressors and traumas (B = −1.422, *SE* = .674, *p* = .035) and more intense negative affect (B = 2.001, *SE* = .647, *p* = .002) but was not associated with either combat exposure or aftermath of battle exposure. Similarly, no gender interactions were statistically significant, suggesting no differential effect of predictors on Airmen's search for meaning in life. Results did not differ when considering only those Airmen who had deployed two or more times.

Discussion

In the current sample of active duty Air Force Security Forces personnel, greater presence of meaning in life was associated with a greater number of deployments, fewer experienced lifetime traumas, and less emotional distress. Search for meaning was also associated with fewer experienced lifetime traumas but was also associated with more severe emotional distress. These results align with previous research findings that indicate a negative relationship between presence of meaning and emotional distress and a positive relationship between search for meaning and emotional distress (Linley & Joseph, 2004; Steger et al., 2006). Number of deployments was associated with a stronger presence of meaning in life, indicating that Airmen who had deployed more often tended to report a stronger sense of meaning in life. These findings align with recent research indicating that Iraq and Afghanistan veterans rank their time serving in combat zones among their top three "most life-changing experiences" (Capella University, 2008) and might suggest that successfully completing deployments may establish a greater sense of life meaning among Airmen, which may in turn lead to a tendency to expect to thrive in the future and feeling part of a larger mission and purpose (Maguen et al., 2008).

When considering the type and intensity of deployment-related experiences, however, some notable differences were observed. First, Airmen reporting more intense combat exposure tended to report less presence of meaning in life, whereas more intense aftermath exposure was associated with slightly increased presence of meaning. These data suggest that different types of deployment-related experiences may be differentially related to the presence of meaning in life. Specifically, even for military personnel with an established belief system, acting in combat situations may pose more difficulty to postdeployment integration of life meaning. Frequent exposure to direct violence may lead to questioning whether actions transgress a moral code and internalizing core beliefs

Table 3
Multivariate Regression Analyses Predicting Search for Meaning in Life

Predictors	B	*SE*	*p*
Number of deployments	−0.242	0.715	.735
Gender	1.994	1.577	.206
Trauma exposure	−1.422	0.674	.035
Combat	0.717	0.809	.376
Aftermath	0.048	0.830	.954
Negative affect	2.001	0.647	.002

Note. Combat = combat experiences scale; Aftermath = aftermath of battle scale.

of guilt and shame. This is a different trauma experience from witnessing the aftermath of combat, which centers on basic negative emotions, such as fear, anxiety, or sadness. Playing an active role in combat may require a more complex process of justifying the need for deployment, which has been found to lead to positive descriptions and benefits of having served (Burnell, Boyce, & Hunt, 2011). The current study further suggests that being deployed more often is associated with increased search for meaning in one's life, but searching for one's meaning was not related to exposure to either combat or the aftermath of battle. Given that the presence of meaning in life is associated with positive mental health outcomes and the search for meaning in life is associated negative mental health outcomes, these results suggest that repeated deployments may have benefits as well as drawbacks for Airmen. Additional research is needed to uncover the relationships among deployments, presence of meaning, and search for meaning. Longitudinal studies that track presence of and search for meaning in life across multiple deployments would be especially useful.

A second notable finding was a significant interaction of gender with combat exposure on the presence of meaning in life. More specifically, our data indicate that the negative association of combat exposure with meaning in life is more pronounced for male relative to female Airmen. Male Airmen with less intense combat exposure reported more presence of meaning in life than female Airmen, but male Airmen with more intense combat exposure reported less presence of meaning than female Airmen. This finding is of particular concern because the majority of Operation Enduring Freedom/Operation Iraqi Freedom veterans are men. Previous research has indicated that cultural masculinity norms may impact mental health symptoms and interfere with treatment and recovery (Carpenter & Addis, 2000; Eisler, Skidmore, & Ward, 1988; McDermott, Tull, Soenke, Jukupcak, & Gratz, 2010). Male veterans may also be more likely to behave according to hegemonic masculine role norms, such as exaggerated self-reliance (Levant & Richmond, 2007), avoiding seeking mental health resources (Lane & Addis, 2005), and inexpressiveness (Jakupcak, 2003; Jakupcak, Tull, & Roemer, 2005) at least in part because of hypermasculine military culture (Barrett, 1996; Brooks, 1990). Considering these previous studies, it may be that male veterans who experience distress as a threat to masculinity may avoid behaviors associated with recovery, such as making meaning out of these experiences.

The third significant finding of this study was that with respect to noncombat trauma exposure, Airmen experiencing a greater number of life stressors and traumas tended to report less presence of and search for meaning. This is congruent with research that found that traumatic events before deployment placed individuals as greater risk for later mental health complications, such as PTSD (Bolton, Litz, Adler, & Roemer, 2001; Slusarcick, Ursano, Fullerton, & Dinneen, 1999), and suggests that experiencing more trauma in life may not only degrade a potential buffer for psychopathology and adjustment, but it may also inhibit the desire to actively seek out a meaning, which in turn might prime military personnel for long-term vulnerability to emotional distress. It is important to note, however, that the current study measured simple exposure to a range of traumatic experiences but did not consider the frequency or intensity of this exposure. For instance, experiencing multiple or repeated forms of trauma (e.g., sexual assault) might have incrementally more pronounced effects on one's perceived meaning in life relative to a single episode of victimization, but the current study is unable to address this issue. Additional research is needed to determine how the frequency of noncombat-related traumas could influence service members' sense of meaning in life.

Developing the ability to make meaning of distressing psychological experiences, like the development of resilience, may happen more frequently under moderate, but not overwhelming, levels of trauma (Kumpfer, 1999). In this study, experiencing multiple life stressors may have been a predisposing risk factor or vulnerability of poor adaptive outcome in Airmen, thereby decreasing the ability to make meaning of aversive life experiences. Airmen with high levels of noncombat trauma exposure and life stressors might therefore lack the ability to reintegrate the self using insight and growth because such integration did not exist prior to deployment. Further, this finding may be suggestive of a learned style of explaining events. Those without a history of significant life

trauma and who report fewer life stressors are more likely to explain negative life events as external, only affecting one aspect of life, and unstable, which also leads to greater posttraumatic growth and ability to make meaning of negative experiences (Reiveich, 1995). Airmen who experience a high level of noncombat stress may have developed a consistent, learned style of explaining difficult events as attributable to something negative about themselves, and in a way that generalizes to other bad life events (Peterson, Buchanan, & Seligman, 1995). Future longitudinal research is needed to better understand the relationships among these variables over time.

Results of the current study have important implications for understanding and addressing a trauma survivors' perception of meaning in life, especially given revisions to PTSD diagnostic criteria in *DSM-5*, in which maladaptive beliefs about the self and the world will be included as symptoms (American Psychiatric Association, 2010). First, clinicians treating military personnel with deployment-related concerns should also be mindful of noncombat-related stressors and traumatic events, as helping service members to make meaning out of past traumas may prevent long-term inabilities to reconcile difficult experiences during deployment. Second, preventative education that teaches service members basic cognitive strategies for creating meaning in their lives might lead to stronger relationships, resilience, and a clearer philosophy of life (Joseph & Linley, 2005). For example, Bryan and Morrow (2011) recently described a prevention program developed for military personnel that explicitly incorporates meaning-making and basic skills training in identifying one's purpose in life. Following deployment, combat veterans with especially high levels of exposure to combat violence and aggression might benefit from interventions and treatments that explicitly focus on meaning-making. These approaches encourage individuals to derive positive meaning from negative experiences, strengthen coping by changing perception of traumatic experience, bestow a sense of control over memories, and result in positive well-being (Folkman, 2008; Helgeson, Reynolds, & Tomich, 2006; Martin & Tesser, 1989; North, Pai, Hixon, & Holahan, 2011). For example, a clear statement of the intent and justification of the deployment may be of benefit, helping service members to see combat actions as isolated to the combat setting, not reflective of one's identity, and to draw important and lasting conclusions about life meaning. In addition, empirically validated treatments for trauma such as cognitive processing therapy (Resick, Monson, & Chard, 2007) and prolonged exposure (Foa, Hembree, & Rothbaum, 2007) directly target the maladaptive beliefs about the self and the world that are often associated with a sense of meaninglessness in life. Recovery in cognitive processing therapy and prolonged exposure has been observed to be associated with the development of a new meaning in life with respect to the traumatic event. Overall, these results suggest that it is important to consider and understand how a service member or veteran personally understands the meaning in his or her life, as well as how they seek to establish meaning in their lives, especially within the context of stressful or traumatic life experiences.

With respect to male Airmen, these findings have additional implications. Specifically, treatment efforts that acknowledge those elements of masculinity that may play a role in recovery, such as avoidance of considering the significance of one's combat experiences, are likely to be much more effective. Masculine ideals, such as inexpressiveness, may contribute to a reluctance to examine and discuss the long-term implications of their trauma, as well as willingness to complete recommended care. Clinicians might therefore introduce discussions regarding how what male veterans are taught about being a man has impacted their military experience, their mental health symptoms, and attitudes toward treatment.

Several limitations of the current study warrant discussion. First, the cross-sectional design of our study does not allow us to determine causality. This is especially important in light of how little is known about how judgments regarding one's meaning in life are formed and are sustained over time (Steger et al., 2006). Although it is generally believed that one's sense of meaning and purpose can fluctuate over time in response to life experiences (Tedeschi et al., 1998), to date there has been little investigation of the stability of this construct over time. Future studies that can track meaning in life over time in relation to combat exposure would be especially useful in better understand-

ing how the variables mentioned here, such as number of deployments, frequency of traumas, gender, and type of combat experienced, interact. Second, our study is limited by our use of a single Air Force unit with a primary ground combat mission and higher operations tempo, which is unique among Air Force units. Nonetheless, despite this mission set, the reported levels of combat exposure are lower than other ground combat units (e.g., Army or Marine infantry), which could limit generalizability. Similarly, conclusions might not generalize to noncombatant military personnel or veterans who are no longer on active duty. Our study should therefore be replicated with a more representative military and veteran sample. In addition, our reliance on self-report methodology for historical data (e.g., trauma exposure) could potentially limit conclusions due to biases in memory and recall. Despite these limitations, the current study provides useful preliminary data regarding gender differences in the relationships among various types of traumas with meaning in life among military personnel.

References

American Psychiatric Association. (2010). *DSM implementation and support*. Washington, DC: Author. Retrieved from www.dsm5.org

Barrett, F. (1996). The organizational construction of hegemonic masculinity: The case of the U.S. Navy. *Gender, Work, and Organization, 3,* 129–142. doi:10.1111/j.1468-0432.1996.tb00054.x

Bolton, E. E., Litz, B. T., Adler, A. B., & Roemer, L. (2001). Reports of prior exposure to potentially traumatic events and PTSD in troops poised for deployment. *Journal of Traumatic Stress, 14,* 249–256. doi:10.1023/A:1007864305207

Bonanno, G. A., Sortman, C. B., Lehman, D. R., Tweed, R. W., Sonnega, J., Carr, D., & Nesse, R. M. (2002). Resilience to loss and chronic grief: A prospective study from preloss to 18-months postloss. *Journal of Personality and Social Psychology, 83,* 1150–1164. doi:10.1037/0022-3514.83.5.1150

Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist, 59,* 20–28. doi:10.1037/0003-066X.59.1.20

Brooks, G. (1990). Post-Vietnam gender role strain: A needed concept: *Professional Psychology: Research and Practice, 21,* 18–25. doi:10.1037/0735-7028.21.1.18

Brooks, N. A., & Matson, R. R. (1982). Social-psychological adjustment to multiple sclerosis: A longitudinal study. *Social Science & Medicine, 16,* 2129–2135. doi:10.1016/0277-9536(82)90262-3

Bryan, C. J., & Morrow, C. E. (2011). Circumventing mental health stigma by embracing the warrior culture: Feasibility and acceptability of the Defender's Edge Program. *Professional Psychology: Research and Practice, 42,* 16–23. doi:10.1037/a0022290

Burnell, K. J., Boyce, N., & Hunt, N. (2011). A good war? Exploring British veterans' moral evaluation of deployment. *Journal of Anxiety Disorders, 25,* 36–42. doi:10.1016/j.janxdis.2010.07.003

Capella University. (2008). *Joining Forces America: Community support for returning servicemembers*. Retrieved from www.joiningforcesamerica.org/download/JFA_Full_Report.pdf

Carpenter, K. M., & Addis, M. E. (2000). Alexithymia, gender, and responses to depressive symptoms. *Sex Roles, 43,* 629–644. doi:10.1023/A:1007100523844

Currier, J. M., Holland, J. M., Chisty, K., & Allen, D. (2011). Meaning made following deployment in Iraq and Afghanistan: Examining unique associations with posttraumatic stress and clinical outcomes. *Journal of Traumatic Stress, 24,* 691–698. doi:10.1002/jts.20691

Eisler, R. M., Skidmore, J. R., & Ward, C. H. (1988). Masculine gender-role stress: Predictor of anger, anxiety, and health-risk behaviors. *Journal of Personality Assessment, 52,* 133–141. doi:10.1207/s15327752jpa5201_12

Elder, G. H., & Clipp, E. C. (1989). Combat experience and emotional health: Impairment and resilience in later life. *Journal of Personality, 57,* 311–341. doi:10.1111/j.1467-6494.1989.tb00485.x

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41,* 1149–1160. doi:10.3758/BRM.41.4.1149

Foa, E. B., Hembree, E. A., & Rothbaum, B. O. (2007). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences*. New York, NY: Oxford University Press.

Folkman, S. (2008). The case for positive emotions in the stress process. *Anxiety, Stress & Coping: An International Journal, 21,* 3–14.

Fontana, A., & Rosenheck, R. (2005). The role of loss of meaning in the pursuit of treatment for posttraumatic stress disorder. *Journal of Traumatic Stress, 18,* 133–136. doi:10.1002/jts.20014

Gillies, J., & Neimeyer, R. A. (2006). Loss, grief, and the search for significance: Toward a model of meaning reconstruction in bereavement. *Journal of Constructivist Psychology, 19,* 31–65. doi:10.1080/10720530500311182

Helgeson, V. S., Reynolds, K. A., & Tomich, P. L. (2006). A meta-analytic review of benefit finding and growth. *Journal of Consulting and Clinical Psychology, 74,* 797–816. doi:10.1037/0022-006X.74.5.797

Hoge, C. W., Auchterlonie, J. L., & Milliken, C. S. (2006). Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. *JAMA: Journal of the American Medical Association, 295,* 1023–1032. doi:10.1001/jama.295.9.1023

Hoge, C. W., Castro, C. A., Messer, S. C., McGurk, D., Cotting, D. I., & Koffman, R. L. (2004). Combat duty in Iraq and Afghanistan, mental health problems and barriers to care. *New England Journal of Medicine, 351,* 13–22. doi:10.1056/NEJMoa040603

Holahan, C. J., Moos, R. H., Holahan, C. K., & Brennan, P. L. (1995). Social support, coping, and depressive symtoms in a late-middle-aged sample of patients reporting cardiac illness. *Health Psychology, 14,* 152–163. doi:10.1037/0278-6133.14.2.152

Horowitz, M. J. (1990). Stress, states, and person schemas. *Psychological Inquiry, 1,* 25–26. doi:10.1207/s15327965pli0101_6

Jakupcak, M. (2003). Masculine gender role stress and men's fear of emotions as predictors of self-reported aggression and violence. *Violence and Victims, 18,* 533–541. doi:10.1891/vivi.2003.18.5.533

Jakupcak, M., Tull, M. T., & Roemer, L. (2005). Masculinity, shame, and fear of emotions as predictors of men's expressions of anger and hostility. *Psychology of Men & Masculinity, 6,* 275–284.

Johnson, J., Wood, A. M., Gooding, P., Taylor, P. J., & Tarrier, N. (2011). Resilience to suicidality: The buffering hypothesis. *Clinical Psychology Review, 31,* 563–591. doi:10.1016/j.cpr.2010.12.007

Joseph, S., & Linley, P. A. (2005). Positive adjustment to threatening events: An organismic valuing theory of growth through adversity. *Review of General Psychology, 9,* 262–280.

Joseph, S., & Linley, P. A. (2008). Positive psychological perspectives on posttraumatic stress: An integrative psychosocial framework. In S. Joseph & P. A. Linley (Eds.), *Trauma, recovery, and growth: Positive psychological perspectives on posttraumatic stress* (pp. 3–20). Hoboken, NJ: Wiley. doi:10.1002/9781118269718

King, D. W., King, L. A., & Vogt, D. S. (2003). *Manual for the Deployment Risk and Resilience Inventory (DRRI): A collection of measures for studying deployment-related experiences in military veterans*. Boston, MA: National Center for PTSD.

Kumpfer, K. (1999). Factors and processes contributing to resilience: The resilience framework. In M. D. Glantz & J. L. Johnson (Eds.), *Resilience and development: Positive life adaptations* (pp. 179–224). New York, NY: Kluwer Academic/Plenum Press Publishers.

Lane, J. M., & Addis, M. E. (2005). Male gender role conflict and patterns of help seeking in Costa Rica and the United States. *Psychology of Men & Masculinity, 6,* 155–168. doi:10.1037/1524-9220.6.3.155

Levant, R. F., & Richmond, K. (2007). A review of research on masculinity ideologies using the male roles norms inventory. *Journal of Men's Studies, 15,* 130–146. doi:10.3149/jms.1502.130

Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress, 17,* 11–21.

Linley, P. A., & Joseph, S. (2011). Meaning in life and posttraumatic growth. *Journal of Loss and Trauma, 16,* 150–159. doi:10.1080/15325024.2010.519287

Maguen, S., Turcotte, D. M., Peterson, A. L., Dremsa, T. L., Garb, H., McNally, R. J., & Litz, B. T. (2008). Description of risk and resilience factors among military medical personnel before deployment to Iraq. *Military Medicine, 173,* 1–9.

Martin, L. L., & Tesser, A. (1989). Toward a motivational and structural theory of ruminative thought. In J. A. Bargh (Ed.), *Unintended thought* (pp. 306–326). New York: Guilford Press.

McDermott, M. J., Tull, M. T., Soenke, M., Jakupcak, M., & Gratz, K. L. (2010). Masculine gender role stress and posttraumatic stress disorder symptom severity among inpatient male crack/cocaine users. *Psychology of Men & Masculinity, 11,* 225–232. doi:10.1037/a0016671

North, R. J., Pai, A. V., Hixon, J. G., & Holahan, C. J. (2011). Finding happiness in negative emotions: An experimental test of a novel expressive writing paradigm. *The Journal of Positive Psychology, 6,* 192–203. doi:10.1080/17439760.2011.570365

Osman, A., Freedenthal, S., Gutierrez, P. M., Wong, J. L., Emmerich, A., & Lozano, G. (2011). The Anxiety Depression Distress Inventory-27 (ADDI-27): a short version of the Mood and Anxiety Symptom Questionnaire-90. *Journal of Clinical Psychology, 67,* 591–608. doi:10.1002/jclp.20784

Owens, G. P., Steger, M. F., Whitesell, A. A., & Herrera, C. J. (2009). Posttraumatic stress disorder, giult, depression, and meaning in life among military veterans. *Journal of Traumatic Stress, 22,* 654–657.

Park, C. L. (2010). Making sense of the meaning literature: An integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin, 136,* 257–301. doi:10.1037/a0018301

Park, C. L., & Ai, A. L. (2006). Meaning making and growth: New directions for research on survivors of trauma. *Journal of Loss and Trauma, 11,* 389–407. doi:10.1080/15325020600685295

Park, C. L., & Folkman, S. (1997). Meaning in the context of stress and coping. *Review of General Psychology, 1,* 115–144. doi:10.1037/1089-2680.1.2.115

Peterson, C., Buchanan, G. M., & Seligman, M. E. P. (1995). Explanatory style: History and evolution for the field. In G. M. Buchanan & M. E. P. Seligman (Eds.), *Explanatory style* (pp. 1–20). Hillsdale, NJ: Erlbaum.

Reiveich, K. (1995). The measurement of explanatory style. In G. M. Buchanan & M. E. P. Seligman (Eds.), *Explanatory style* (pp. 21–27). Hillsdale, NJ: Erlbaum.

Resick, P. A., Monson, C. M., & Chard, K. M. (2007). *Cognitive processing therapy: Veteran/military version*. Washington, DC: Department of Veterans Affairs.

Schok, M. L., Kleber, R. J., Elands, M., & Weerts, J. M. P. (2008). Meaning as a mission: A review of empirical studies on appraisals of war and peacekeeping experiences. *Clinical Psychology Review, 28,* 357–365. doi:10.1016/j.cpr.2007.04.005

Schwartzberg, S. S., & Janoff-Bulman, R. (1991). Grief and the search for meaning: Exploring the assumptive worlds of bereaved college students. *Journal of Social and Clinical Psychology, 10,* 270–288. doi:10.1521/jscp.1991.10.3.270

Shuchter, S. R., & Zisook, S. (1993). The course of normal grief. In M. S. Stroebe, W. Stroebe, & M. Hansson (Eds.), *Handbook of bereavement: Theory, research, and intervention* (pp. 23–43). Cambridge, UK: Cambridge University Press. doi:10.1017/CBO9780511664076.003

Slusarcick, A. L., Ursano, R. J., Fullerton, C. S., & Dinneen, M. P. (1999). Life events in health care providers before and during Persian Gulf War deployment: The USNS Comfort. *Military Medicine, 164,* 675–682.

Southwick, S. M., Gilmartin, R., McDonough, P., & Morrissey, P. (2006). Logotherapy as an adjunctive treatment for chronic combat-related PTSD: A meaning-based intervention. *American Journal of Psychotherapy, 60,* 161–174.

Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The Meaning in Life Questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology, 53,* 80–93. doi:10.1037/0022-0167.53.1.80

Tanielian, T., & Jaycox, L. H. (2008). *Invisible wounds of war: Psychological and cognitive injuries, their consequences, and services to assist recovery*. Santa Monica, CA: RAND Corporation. doi:10.1037/e527612010-001

Tedeschi, R. G., & Calhoun, L. G. (2004). A clinical approach to posttraumatic growth. In P. A. Linley & S. Joseph (Eds.), *Positive psychology in practice* (pp. 405–419). Hoboken, NJ: Wiley.

Tedeschi, R. G., Park, C. L., & Calhoun, L. G. (1998). Posttraumatic growth: Conceptual issues. In R. G. Tedeschi, C. L. Park, & L. G. Calhoun (Eds.), *Posttraumatic growth: Positive changes in the aftermath of crisis* (pp. 23–42). Hillsdale, NJ: Erlbaum.

Vasterling, J. J., Proctor, S. P., Friedman, M. J., Hoge, C. W., Heeren, T., King, L. A., & King, D. W. (2010). PTSD symptom increases in Iraq-deployed soldiers: Comparison with nondeployed soldiers and associations with baseline symptoms, deployment experiences, and postdeployment stress. *Journal of Traumatic Stress, 23,* 41–51.

Vogt, D. S., Proctor, S. P., King, D. W., King, L. A., & Vasterling, J. J. (2008). Validation of scales from the Deployment Risk and Resilience Inventory in a sample of Operation Iraqi Freedom veterans. *Assessment, 15,* 391–403. doi:10.1177/1073191108316030

Zika, S., & Chamberlain, K. (1992). On the relation of meaning in life and psychological well-being. *British Journal of Psychology, 83,* 133–145. doi:10.1111/j.2044-8295.1992.tb02429.x

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