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## Social anxiety and posttraumatic stress in combat veterans: Relations to well-being and character strengths

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### Abstract

There are few studies examining the relationship between psychopathology and positive experiences and traits. Although initial studies suggest persons with posttraumatic stress disorder (PTSD) are at increased risk for excessive social anxiety, there have been no studies to date evaluating how these conditions might interact to affect positive experiences and traits. Using self-report scales, informant ratings, and experience-sampling methodologies, we examined the association of social anxiety with well-being and character strengths in veterans with and without PTSD. Controlling for PTSD and trait negative affect, social anxiety was negatively related to global ratings of well-being and character strengths. Social anxiety also accounted for incremental variance in day-to-day well-being (i.e., daily affect balance, percentage of pleasant days, positive social activity, self-esteem, gratitude) over a 14-day assessment period. Although veterans with PTSD reported lower levels of global and daily well-being and character strengths than veterans without PTSD, a diagnosis of PTSD failed to exhibit unique relationships with these constructs. Building on a growing body of work, these data suggest that social anxiety is uniquely associated with disturbances in positive experiences, events, and traits. Our findings support the value of directly addressing social anxiety in the study and treatment of PTSD.

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*Keywords:* Posttraumatic stress disorder; Social anxiety; Well-being; Emotion; Happiness; Veterans

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## Introduction

Substantial data are available on the potential adverse impact of military service on veterans' psychiatric functioning. With few exceptions, *positively* valenced outcomes have been systematically neglected in the study of veterans. Deviating from this trend, one study found that veterans with combat-related posttraumatic stress disorder (PTSD) reported significantly less well-being, including the quality of social relationships, feelings of competence, altruistic behavior, and leisure activity, than a normative comparison group (Frueh, Turner, Beidel, & Cahill, 2001). Other studies have found that veterans with PTSD exhibit considerably impaired social relationships (Cook, Riggs, Thompson, Coyne, & Sheikh, 2004; Jordan et al., 1992; Riggs, Byrne, Weathers, & Litz, 1998). Positive social activity has important health and mental health benefits (Baumeister & Leary, 1995; Uchino, Cacioppo, & Kiecolt-Glaser, 1996), including life longevity (House, Landis, & Umberson, 1988). Factors that interfere with social functioning in veterans may not only exacerbate psychiatric symptoms, but reduce well-being and quality-of-life.

One relevant factor likely to impact social functioning and well-being in veterans is excessive social anxiety (at the extreme, social anxiety disorder; SAD), which is the paralyzing fear of interacting or doing things in front of other people because of evaluative concerns. As a result of real or perceived negative social experiences, socially anxious individuals derive negative views about themselves and the social environment. Upon entering social situations, they believe they have an inferior social status compared to others and will behave inappropriately. Of primary concern to socially anxious individuals is that self-generated actions will lead to disastrous consequences such as loss of social status and relationship deterioration. From an evolutionary perspective, to avoid rejection and ostracism, it is advantageous to engage in submissive strategies as opposed to reward-seeking behaviors and resource acquisition (promotion focus), which may expose individuals to hostility and attacks from dominant others (Gilbert, 2001; Trower & Gilbert, 1989). In socially anxious individuals, maladaptive beliefs about their subordinate social status and concerns about the evaluation and approval of more dominant others leads to a chronic, inflexible prevention focus. This unitary focus is proposed to make positive experiences and events less accessible, causing diminished well-being.

The experience of excessive social anxiety leads to avoidance behavior: individuals avoid, withdraw, or act innocuously to attempt to prevent perceived disastrous consequences from occurring (e.g., being humiliated or rejected) (Clark & Wells, 1995). Although such avoidance behavior may offer temporary protection against fear and rejection, social anxiety and avoidance interferes with the psychological benefits of positive social experiences such as social support, intimacy, and laughter; and thereby, lead to diminished well-being and interpersonal character strengths such as gratitude and forgiveness. Recent replicable data suggest that excessive social anxiety is associated with diminished positive experiences (Brown, Chorpita, & Barlow, 1998; Kashdan, 2002, 2004; Kashdan & Roberts, 2004; Watson, Clark, & Carey, 1988a). These effects were specific to social interaction anxiety and were not mediated by depressive symptoms or general distress (Kashdan 2002, 2004; Kashdan & Roberts, 2004). Two major limitations of this work are that the studies cited above relied exclusively on global self-report scales and the only work with clinical populations narrowly focused on self-reported trait-activated positive emotions. These data suggest that social anxiety is an important, neglected dimension to consider in addressing the social functioning, well-being, and interpersonal strengths of veterans.

Surprisingly few studies have examined social anxiety in veterans who have, or who are at high risk for PTSD. Four initial studies have shown that social anxiety is associated with PTSD (Crowson, Frueh, Beidel, & Turner, 1998; Hofmann, Litz, & Weathers, 2003; Orsillo, Heimberg, Juster, & Garrett, 1996a; Orsillo et al., 1996b); veterans meeting criteria for PTSD were significantly more likely to meet criteria for SAD (ranging from 15% to 72%) compared to non-PTSD veterans (ranging from 1% to 22%). Only one study extended these initial findings (Orsillo et al., 1996a). Thus, the small body of work in this area to date indicates that excessive social anxiety is strongly linked to PTSD and psychological difficulties in veteran populations. Besides prevalence data, the only published work on social anxiety in veterans focused on relationships with other negative emotional experiences (e.g., shame, depressive symptoms).

We sought to extend prior work on social anxiety and PTSD in veterans in three ways. First, we adopted a comprehensive examination of the relationship of PTSD to well-being and character strengths. Expanding on preliminary work by Frueh, Turner, Beidel, & Cahill (2001), we compared adult veterans with and without PTSD. The inclusion of a comparison group of veterans without PTSD can provide insight into whether well-being is diminished in all veterans or is specific to those with PTSD. Instead of confining our assessment of well-being to a single cross-sectional self-report measure, we used a multi-method approach (self-reports, informant reports, experience-sampling) and examined well-being from two different theoretical frameworks. Emotional well-being was operationalized by more frequent and intense positive affect (PA) relative to negative affect (NA) (Diener, Suh, Lucas, & Smith, 1999). Psychological well-being was characterized by some of the primary ingredients of living a good life such as positive relations with others, purpose in life, personal growth opportunities, and feelings of self-determination and self-acceptance (Deci & Ryan, 2000; Ryff & Singer, 1998). Second, we addressed some of the limitations of prior examinations of social anxiety and positive functioning. The prototypical methods for studying social anxiety include retrospective self-report scales or interviews, laboratory experiments, and behavioral assessment tasks (Herbert, Rheingold, & Brandsma, 2001). Differing fundamentally from these traditional methodologies are experience-sampling techniques that allow for unobtrusive, detailed descriptions of everyday experiences and events in a person's life. These naturalistic data permit "the persistence, cyclicity, change, and temporal structure of thought, emotion, and behavior" (Tennen, Suls, & Affleck, 1991, p. 333) to be evaluated.

Third, and of most interest, we evaluated whether (a) increased social anxiety was associated with lower levels of well-being and character strengths independent of the presence of PTSD and (b) the association between social anxiety with well-being and character strengths was stronger in veterans with PTSD than without it. We hypothesized that social anxiety might account for incremental variance in well-being and strengths because of theory and data discussed above suggesting that social anxiety and concomitant avoidance behaviors interfere with the experience of positive social experiences, which support well-being and foster interpersonal character strengths. These mechanisms were thought to operate whether a veteran had PTSD or not. We hypothesized that there would be an interaction between social anxiety and PTSD (i.e., a joint vulnerability model). Veterans with social anxiety and PTSD are likely to avoid social situations because of the expectations of social threats as well as other types of perceived threats (e.g., danger of being attacked by somebody standing behind them) and trauma-related stimuli (e.g., crowds). Moreover, the emotional numbing and hyperarousal symptoms of PTSD (e.g., Litz,

1992), and the chronic, inflexible prevention mode of socially anxious individuals, are proposed to further impair social abilities and deplete the personal resources necessary for positive emotional processing. Therefore, veterans with social anxiety *and* PTSD were thought to have markedly worse social functioning, and diminished well-being and character strengths, than veterans with social anxiety or PTSD alone.

## Method

### *Participants*

Veterans with PTSD were recruited from outpatient and four-week residential specialized mental health treatment programs at the Veterans Affairs (VA) Medical Center in Buffalo, NY. Consecutive patients attending these treatment programs were selected. Our comparison group of veterans without PTSD was recruited from a master list of veterans living in Buffalo, NY. All individuals on the list were VA patients. Using a random number generator, veterans were selected and contacted by telephone. The residential and outpatient programs were specific to Vietnam War veterans suffering from combat-related PTSD. Both treatment programs were cognitive-behavioral in orientation with regular individual and group treatment formats. The major difference was that the 26-day residential program included daily psychoeducation and process groups. Admission criteria for the residential program included psychiatric stability and compliance with available outpatient treatment. Reasons for referral to residential treatment included barriers to outpatient treatment programs for PTSD (e.g., excessive geographical distance) and desire for more intensive treatment. Of the PTSD outpatient participants, 70% (14) had previously served in the residential program.

The final sample was 20 outpatients, 22 residential inpatients, and 35 comparison veterans. All participants were included in analyses focused on trait measures. Of those consecutive patients invited to participate, one outpatient and two residential veterans declined (i.e., we recruited 96.7% and 93.3% of outpatient and residential veterans who were contacted). All outpatient and residential veterans were diagnosed with PTSD based on (a) diagnoses derived from unstructured clinical interviews with treatment program staff psychologists, psychiatrists, or clinical social workers, (b) scores greater than the suggested cutoff of 107 on the Mississippi Scale for combat-related PTSD (Keane, Caddell, & Taylor, 1988), and (c) self-reported combat exposure being verified with each veteran's DD-214 (i.e., military transcript of combat exposure, receipt of military awards, and service dates). Data were excluded from (a) two "PTSD" outpatient and four residential "PTSD" patients whose scores on the Mississippi Scale for combat-related PTSD were *less than* the suggested cutoff of 107 and (b) one comparison veteran whose score was *greater than* the suggested cutoff.

To obtain a reliable cross-section of participants' naturalistic behaviors and experiences, for analyses with daily measures, we only retained veterans completing at least half of the 14 possible daily report entries (mean = 13.5, range = 9–14). Thus, our final sample for analyses included 13 outpatient, 14 residential, and 28 comparison veterans. The subsample for daily report analyses did not differ substantially on any demographic variables or study measures from the larger sample.

### Self-report measures

**PTSD.** Using a 5-point Likert Scale, veterans completed the 35-item Mississippi Scale to assess combat-related PTSD symptoms (Keane et al., 1988) ( $\alpha = .84$ ). Large-scale prevalence studies have used the Mississippi Scale as the primary self-report index of PTSD symptoms (e.g., Kulka et al., 1990). The Mississippi Scale has shown excellent sensitivity and specificity in predicting PTSD diagnoses derived from structured clinical interviews (Keane et al., 1988). The total Mississippi Scale was used to derive diagnoses and assess PTSD symptom severity.

**Social Anxiety.** Social anxiety was operationalized as a dimensional trait as opposed to a clinical diagnosis. Support for studying social anxiety as a continuum is derived from research failing to find qualitative differences between individuals with subthreshold SAD (i.e., excessive social anxiety) and individuals meeting diagnostic criteria for SAD (e.g., Davidson, Hughes, George, & Blazer, 1994). Using a 5-point Likert scale, participants completed the 19-item Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) ( $\alpha = .95$ ). The SIAS has excellent psychometric properties and is highly sensitive to treatments for excessive social anxiety. Veterans with SIAS scores 34 or greater are considered to have clinically significant social anxiety (comparable to patients diagnosed with SAD; Brown et al., 1997).

**Well-Being Questionnaires.** Using a 4-point Likert Scale, the 18-item *Well-Being Scale* (WBS; Tellegen, 1982) measured tendencies to feel good about oneself, the future, and general joyfulness (i.e., affective and cognitive components of happiness) ( $\alpha = .95$ ). The WBS has demonstrated excellent psychometric properties in studies with diverse methodologies (e.g., Kashdan, 2002; Lykken & Tellegen, 1996; Waller, Kojetin, Lykken, Tellegen, & Bouchard, 1990). Using a 5-point Likert Scale, dimensions of general affectivity were assessed with the 20-item *Positive and Negative Affect Schedule* (PANAS; Watson, Clark, & Tellegen, 1988b) and additional items tapping deactivated positive (five items; e.g., relaxed, serene) and negative (six items; e.g., bored, tired) affective states (Barrett & Russell, 1998). For the present examination, we focused on activated and deactivated PA (with activation reflecting degree of arousal) ( $\alpha = .92$  and  $.84$ , respectively), and activated NA ( $\alpha = .95$ ) as a covariate. Activation and deactivation refer to anchors on the affect dimension representing arousal (or activation) in models for the structure of experienced affect (e.g., Barrett & Russell, 1998; Watson, 2000). The PANAS is one of the most widely used measures of affect in clinical trials (demonstrating sensitivity to treatment), experimental studies, and longitudinal investigations (see Watson, 2000 for review). Using a 7-point Likert Scale, the *Basic Psychological Needs Scale* (Gagné, 2003) was used to assess Relatedness (eight items) ( $\alpha = .69$ ), feeling a sense of meaningful connectedness to others, Competence (six items) ( $\alpha = .83$ ), feeling a sense of efficacy in one's activities, and Autonomy (seven items) ( $\alpha = .61$ ), feeling that one's choices and activities are self-determined. This scale has excellent psychometric properties and has shown predictive validity for prosocial behaviors (Gagné, 2003). This scale is part of a "family of scales," and the basic needs scale at work version has been used most often, indicating that fulfilling these needs predicts greater job satisfaction, motivation, and productivity (Deci et al., 2001; Ilardi, Leone, Kasser, & Ryan, 1993). Similarly, fulfilling these needs in relationships predicts relationship attachment security and well-being (La Guardia, Ryan, Couchman, & Deci, 2000).

**Character Strength Questionnaires.** Using an 8-point Likert Scale, the eight item trait *Hope Scale* (Snyder et al., 1991) assessed general goal pursuit tendencies (i.e., beliefs that goals can be

obtained; beliefs that obstacles can be circumvented) ( $\alpha = .92$ ). The Hope Scale exhibits excellent psychometric properties and predictive validity in various domains including academic and athletic performance (Curry, Snyder, Cook, Ruby, & Rehm, 1997), coping with cancer (Irving, Snyder, & Crowson, 1998) and raising children with behavioral disorders (Kashdan et al., 2002), and sensitivity to treatment for depression (Klausner et al., 1998). Using a 7-point Likert Scale, the six item *Life Orientation Test-Revised* (LOT-R; Scheier, Carver, & Bridges, 1994) measured dispositional optimism ( $\alpha = .89$ ). The LOT-R demonstrates excellent psychometric properties, including incremental validity over and above constructs such as self-esteem and locus of control (e.g., Aspinwall & Brunhart, 1996; Scheier et al., 1994). Using a 7-point Likert Scale, the six item *Gratitude Questionnaire-6* (GQ-6; McCullough, Emmons, & Tsang, 2002) assessed general feelings of thankfulness and gratitude toward perceived benefactors ( $\alpha = .86$ ). The GQ-6 demonstrates excellent psychometric properties including associations with daily gratitude experiences (McCullough, Tsang, & Emmons, 2004) and incremental validity over and above extraversion and global PA (McCullough, Emmons, & Tsang, 2002). Using a 4-point Likert Scale, the 18-item *Heartland Forgiveness Scale* (HFS; Thompson et al., 2005) measured dispositional forgiveness or the adaptive framing of perceived transgressions such that one is no longer negatively attached to it ( $\alpha = .92$ ). Over the course of several studies, the HFS demonstrates excellent psychometric properties including predictive validity of romantic relationship duration (over and above constructs such as hope and trust) and reactivity to stress-related illnesses (e.g., psoriasis) (Thompson et al., 2005; Thompson, Snyder, & Hoffman, 2004).

### *Informant ratings of well-being and character strengths*

To supplement self-reports of well-being and character strengths obtained, veterans were asked to have a confidant (e.g., spouse, best friend) complete questionnaires about them. Veterans were instructed to hand envelopes (enclosed with an instruction sheet, postage, and completed mailing information) to third-party informants. Informants were instructed to seal and sign the envelope, and mail the sealed envelope. Overall, 21 of the PTSD and 22 of the non-PTSD comparison groups had an informant return the packet. In the packet, the *Well-Being Scale* ( $\alpha = .92$ ), *Revised Life Orientation Test* ( $\alpha = .96$ ), *Hope Scale* ( $\alpha = .93$ ), and *Gratitude Questionnaire-6* ( $\alpha = .96$ ) were reworded in the third person.

### *Experience-sampling measures*

Participants provided daily reports for up to 14 days on six PA adjectives (happy, proud, interested, determined, strong, and energetic,  $\alpha = .90$ ) and six NA adjectives (anxious, frustrated, angry, irritable, afraid, and depressed;  $\alpha = .94$ ); items were derived from prior experience sampling studies (e.g., Emmons & Colby, 1995; Watson, 1988). Two emotional well-being indices were created from affect assessments (based on Diener, Larsen, Levine, & Emmons, 1985): (1) daily affect balance: subtraction of NA from PA each day (with higher scores indicative of higher well-being), and (2) percentage of happy days (i.e., days when PA exceeded NA) during the assessment period.

Each daily report also assessed different components of psychological well-being. Two positively and two negatively worded items from the Rosenberg Self-Esteem Scale (items 3, 6, 7, and 10; Rosenberg, 1965) were modified to assess daily self-esteem. This four-item daily self-esteem scale has demonstrated excellent psychometric properties in prior experience sampling studies (Nezlek & Plesko, 2001; Nezlek, Feist, Wilson, & Plesko, 2001) (e.g., “On the whole, I am satisfied with myself”) ( $\alpha = .93$ ). We assessed the daily quantity and quality of rewarding social activity with two face-valid items (i.e., “Felt that people in my life cared about me”; “Tended to socialize with other people”) ( $\alpha = .59$ ). Daily engagement in intrinsically motivating activity was assessed with items tapping the self-determined pursuit of novelty and challenge. The two items were derived from a widely accepted definition of intrinsic motivation (i.e., “Found myself doing things purely for the interest and enjoyment of doing them”) (see Ryan & Deci, 2000) and the highest loading item of the Curiosity and Exploration Inventory (i.e., “Found myself looking for new opportunities to grow as a person (e.g., new knowledge, people, resources)”) (Kashdan, Rose, & Fincham, 2004) ( $\alpha = .82$ ). All daily report items were completed using 5-point Likert Scales.

### *Procedures*

After receiving a thorough description of the study, written informed consent was obtained from all participants. Consenting participants completed a packet of questionnaires during scheduled group sessions. At the end of each session, participants were given instructions for completing 14 consecutive daily report entries at the end of each day. The experimenter went over each item on the daily report form to ensure that participants clearly understood the instructions and the meaning of all words. Participants were provided with materials to properly mail the daily reports after every seven days of assessment. Participants were paid \$20 for completing the self-report packet, \$40 for completing the daily reports, and for outpatients and the comparison group, an additional \$10 for travel expenses.

## **Results**

### *Preliminary analyses*

Comparisons were made between the final sample and the participants who were excluded because of excessive missing data on daily reports or failure to meet PTSD criteria. No significant group differences or trends were found on global or daily self-report measures. Outpatient and residential veterans with PTSD were compared on demographic, predictor, and outcome variables to determine whether these samples could be merged. No significant group differences or trends were found on demographic variables, PTSD severity, social anxiety, or measures of well-being and character strengths. These data support the use of a single sample of veterans with PTSD for subsequent analyses.

Veterans with and without PTSD did not significantly differ in age, ethnicity, marital status, income, and length of military service. Of interest, veterans with PTSD reported greater levels of social anxiety compared to non-PTSD veterans,  $t(50) = 7.12, p < .001$ .

Table 1  
Demographic and global self-report scores of final veteran sample

Characteristics	$\alpha$	PTSD ( $n = 42$ )	Non-PTSD ( $n = 35$ )	Cohen's $d$
Age	NA	54.07 $\pm$ 4.52	55.66 $\pm$ 7.07	.27
PTSD severity <sup>a</sup>	.84	128.10 $\pm$ 16.80	77.81 $\pm$ 10.77***	3.53
PANAS-Activated NA <sup>b</sup>	.94	35.12 $\pm$ 8.49	17.66 $\pm$ 6.95***	2.25
Experienced combat (%)	NA	100%	9%***	4.69
Social Anxiety <sup>c</sup>	.95	46.83 $\pm$ 14.49	22.40 $\pm$ 14.98***	1.67
Well-Being Scale <sup>d</sup>	.95	34.31 $\pm$ 9.50	49.24 $\pm$ 8.82***	1.64
PANAS-Activated PA <sup>b</sup>	.90	25.53 $\pm$ 8.53	34.77 $\pm$ 7.23***	1.17
PANAS-Deactivated PA <sup>c</sup>	.86	10.43 $\pm$ 3.57	16.71 $\pm$ 4.25***	1.63
Hope Scale <sup>f</sup>	.92	32.33 $\pm$ 12.00	45.63 $\pm$ 10.93***	1.17
Life Orientation Test <sup>g</sup>	.89	16.52 $\pm$ 7.75	29.91 $\pm$ 7.57***	1.76
Forgiveness <sup>h</sup>	.92	40.05 $\pm$ 10.82	54.40 $\pm$ 7.90***	1.51
Relatedness <sup>i</sup>	.69	34.43 $\pm$ 7.44	43.86 $\pm$ 5.72***	1.42
Competence <sup>i</sup>	.85	20.83 $\pm$ 7.18	31.70 $\pm$ 5.69***	1.68
Autonomy <sup>i</sup>	.61	29.48 $\pm$ 6.26	36.99 $\pm$ 6.68***	1.18

Notes: \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . NA = Not applicable. A series of  $t$ -tests were conducted to examine group differences and degrees of freedom for all tests were 75.

<sup>a</sup>Mississippi Scale for Combat-related PTSD (Keane et al., 1988).

<sup>b</sup>Watson et al. (1988b).

<sup>c</sup>Mattick and Clarke (1998).

<sup>d</sup>Tellegen (1982).

<sup>e</sup>Barrett and Russell (1998).

<sup>f</sup>Snyder et al. (1991).

<sup>g</sup>Scheier et al. (1994).

<sup>h</sup>Thompson et al. (2005).

<sup>i</sup>Gagné (2003).

### Global self-report and informant ratings of well-being and character strengths

**Global Self-Report Scales.** As reported in Table 1, veterans with PTSD reported substantially lower global well-being, activated and deactivated PA, hope, optimism, gratitude, forgiveness, and satisfaction of the psychological need for relatedness, autonomy and competence compared to non-PTSD veterans ( $ps < .001$ ;  $ds$  ranged from 1.17 to 1.76).<sup>1</sup> The differences in well-being and character strengths remained significant after Bonferroni corrections to adjust for potential family wise error.

**Incremental Influence of Social Anxiety on Global Self-Reports.** A series of hierarchical regression analyses was conducted to examine the incremental influence of social anxiety on well-being and character strengths above and beyond PTSD diagnoses and trait activated-NA. At Step 1, PTSD group (PTSD or non-PTSD) and activated-NA were entered. At Step 2, social anxiety was entered to allow for an examination of incremental variance for each outcome. At Step 3, the

<sup>1</sup>Kashdan, Uswatte, and Julian (in press) used a subset of the data in the present study. We previously examined differences between veterans with and without PTSD on trait gratitude and daily gratitude emotions and thus, do not present these data in this paper. We did not previously examine the incremental effects of social anxiety on trait and daily gratitude in veterans.



Table 2

Incremental contribution of social anxiety to global well-being and character strengths: hierarchical regression analyses

Outcome	Step 1						Step 2					Overall model <i>F</i>
	PTSD group			PANAS-activated NA			<i>R</i> <sup>2</sup> Δ	Social anxiety				
	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>B</i>	<i>SE B</i>	<i>β</i>		<i>B</i>	<i>SE B</i>	<i>β</i>	<i>R</i> <sup>2</sup> Δ	
Well-Being Scale	4.71	2.77	.20	-.59	.12	-.58***	.55***	-.26	.07	-.42***	.08***	40.65***
Activated PA	1.15	2.46	.06	-.46	.11	-.59***	.41***	-.18	.06	-.37**	.06**	21.63***
Deactivated PA	1.18	1.09	.12	-.29	.05	-.69***	.61***	-.05	.03	-.18	.01	39.69***
Hope	3.89	3.72	.15	-.54	.16	-.48**	.35***	-.27	.09	-.38**	.06**	17.45***
Optimism	3.45	2.16	.17	-.57	.09	-.66***	.63***	-.21	.05	-.39***	.07***	54.93***
Gratitude	1.73	2.49	.09	-.56	.11	-.65***	.51***	-.23	.06	-.44***	.08***	35.24***
Forgiveness	1.99	2.72	.08	-.71	.12	-.69***	.58***	-.19	.07	-.30**	.04**	38.70***
Relatedness	3.42	2.13	.21	-.34	.09	-.49***	.44***	-.18	.05	-.42***	.08***	26.06***
Competence	3.49	1.96	.21	-.42	.08	-.58***	.56***	-.20	.05	-.44***	.08***	44.59***
Autonomy	-.52	1.86	-.04	-.46	.08	-.73***	.49***	-.13	.05	-.34**	.05**	28.34***

Notes: *n* = 42 (PTSD group) and 35 (non-PTSD group). \**p* < .05. \*\**p* < .01. \*\*\**p* < .001. PTSD group was defined as 1 = PTSD and 2 = non-PTSD. Social Anxiety × PTSD interactions were removed from models for failing to reach or approach statistical significance in nine of 10 models.

Social Anxiety × PTSD interaction was entered. Other than for the model predicting forgiveness (*p* = .03, *R*<sup>2</sup>Δ = .03), none of the other models contained a significant Social Anxiety × PTSD term (*p*-values from .34 to .99 and *R*<sup>2</sup>Δ from .001 to .006). Since interaction terms failed to account for any incremental variance in 9 of 10 models, it was, subsequently removed from the regression models.

As shown in Table 2, PTSD diagnoses accounted for minimal variance (*ps* > .05) whereas activated-NA accounted for a large portion of the variance in outcomes (*ps* < .001) (*R*<sup>2</sup>Δ for step containing both PTSD and activated-NA ranged from .35 to .63). For nine of 10 outcomes, social anxiety accounted for variance above and beyond effects attributable to PTSD diagnoses and activated NA. Specifically, greater levels of social anxiety were uniquely associated with lower global well-being, activated-PA, hope, optimism, gratitude, forgiveness, and feelings of relatedness (or belongingness) and competence (*ps* < .008; *R*<sup>2</sup>Δ ranged from .04 to .08). Overall, social anxiety accounted for a substantial amount of unique variance such that greater social anxiety was associated with diminished well-being and character strengths over and above the large variance accounted for by PTSD and trait activated-NA.

*Informant Ratings.* Using informant reports as outcomes, veterans with PTSD exhibited less global well-being, *t*(41) = -3.53, *p* = .001, *d* = 1.10, hope, *t*(41) = -5.07, *p* < .001, *d* = 1.58, optimism, *t*(41) = -4.71, *p* < .001, *d* = 1.47, and gratitude, *t*(41) = -6.06, *p* < .001, *d* = 1.89, compared to non-PTSD veterans. Overall, based on both respondents and informants, veterans with PTSD were found to be lower in well-being and various character strengths.

*Incremental Influence of Social Anxiety on Informant Ratings.* Following the approach for the self-report analyses, we tested a series of hierarchical regression equations to examine the incremental influence of social anxiety on the informant outcomes. After accounting for PTSD

and activated-NA, social anxiety failed to account for significant, incremental variance for any of the informant ratings ( $ps > .20$ ). However, after accounting for all main effects ( $R^2\Delta$  ranged from .21 to .33), Social Anxiety  $\times$  PTSD severity interaction effects had a trend for informant ratings of hope and well-being ( $ps = .09$  and  $.10$ , respectively;  $R^2\Delta = .03$  for each model). The nature of interaction effects on informant ratings of hope and well-being were decomposed with separate analyses for the PTSD and non-PTSD groups. For non-PTSD veterans, after controlling for activated-NA, social anxiety was associated with lower informant ratings of hope,  $F(1, 32) = 7.18$ ,  $R^2\Delta = .17$ ,  $p = .01$ , and well-being,  $F(1, 32) = 3.84$ ,  $R^2\Delta = .10$ ,  $p = .06$ . In contrast, social anxiety did not account for incremental variance in informant ratings of hope and well-being in veterans with PTSD ( $ps = .59$  and  $.13$ , respectively). Examination of agreement between informant and self-reports within each group suggested that a lack of discrimination in evaluating positive psychological functioning on the part of informants in the PTSD group might have accounted for this unexpected pattern of results. In the non-PTSD group, all informant reports had their strongest correlation with reports on the same scale (well-being,  $r = .74$ ; hope,  $r = .88$ ; optimism,  $r = .75$ ; gratitude,  $r = .60$ ), whereas in the PTSD group informant ratings of gratitude and optimism had their strongest association with self-reported well-being, followed by gratitude and optimism ( $rs = .46$  and  $.51$ , respectively). Overall, thus, results were equivocal on the incremental influence of social anxiety on informant ratings of positive psychological functioning.

#### *Overview of analytic techniques for experience-sampling outcomes*

We examined the covariation between social anxiety and daily outcomes using a hierarchical linear modeling (HLM) approach. Two level models were employed with repeated assessments (Level 1) nested within participants (Level 2). This approach simultaneously controls for dependencies in the same person completing records across different days and permits an accurate estimation of parameters and error variance. The Level 1 repeated assessments data set included daily outcomes of interest: PA and NA, positive social activity, intrinsically motivating activity, and self-esteem. The Level 2 data set included individual difference predictors: social anxiety (SIAS), PTSD (PTSD vs. non-PTSD group), Activated-NA (PANAS-NA), and the Social Anxiety  $\times$  PTSD interaction effect. Variables were grand-mean centered to be most compatible with ordinary least square regression procedures (Nezlek, 2001).

Our primary interest was the association between social anxiety and daily well-being. We initially examined bivariate relationships between social anxiety and well-being. In secondary analyses, an additional set of predictors was included to examine whether social anxiety was uniquely associated with well-being over and above the variance accounted for by PTSD diagnoses and global activated-NA, and whether there was support for Social Anxiety  $\times$  PTSD interactions. For example, the equations used to predict daily positive social activity were as follows:

$$\text{Social Activity}_{ij} = b_{0j} + r_{ij}, \quad (1)$$

$$b_{0j} = \gamma_{00} + \gamma_{01}(\text{PTSD}) + \gamma_{02}(\text{Activated-NA}) + \gamma_{03}(\text{Social Anxiety}) + \gamma_{04}(\text{Social Anxiety} \times \text{PTSD}) + u_{0j} \quad (2)$$

Equation or Level 1 represents within-person effects. Social Activity<sub>ij</sub> is individual *i*'s Social Activity on day *j*, *b*<sub>0*j*</sub> is the intercept (i.e., the individual's Social Activity on the average day) and *r*<sub>ij</sub> refers to random error. Equation or Level 2 represents the effects of individual differences on within-person variables. An individual's average Social Activity across time (*b*<sub>0*j*</sub>) is expressed as a function of PTSD diagnosis, trait activated-NA, social anxiety scores, the interaction between social anxiety scores and the presence of PTSD, and error (*u*<sub>0*j*</sub>). Eq. (2) evaluates the between-person Social Anxiety × PTSD interaction effect on Social Activity, controlling for activated-NA. More simply, these equations test the independent effects of trait social anxiety, PTSD, trait activated-NA, and the Social Anxiety × PTSD interaction on individuals' average Social Activity across days.

All multilevel modeling were conducted using the HLM 5.04 program (Raudenbush, Bryk, Cheong, & Congdon, 2000). HLM5 bases the degrees of freedom on the total sample of participants for between-person variables and the total number of individual data points for within-person variables. We report significance levels and effect sizes to convey the magnitude of relationships.

#### *PTSD group differences in daily well-being*

Multilevel analyses examined differences between veterans with and without PTSD on each daily well-being outcome. As shown in Table 3, veterans with PTSD had significantly less emotional well-being (affect balance, NA, PA), positive social activity, and self-esteem than non-PTSD veterans. The difference between groups in intrinsically motivating activity was not significant.

#### *Bivariate relations between social anxiety and daily well-being*

Multilevel analyses examined bivariate relations between social anxiety and well-being. As shown in Table 4, social anxiety was the only predictor. In each model, social anxiety was significantly associated with less daily emotional and psychological well-being. The magnitude of social anxiety effects, measured by Effect Size *r*, ranged from .31 (for intrinsically motivating activity) to .72 (for NA).

#### *Unique relations between social anxiety and daily well-being*

Our second set of analyses examined the unique contribution of social anxiety to daily well-being over and above the variance accounted for by PTSD and trait activated-NA. Additionally, we were interested in the moderating effect of SA on relationships between PTSD and daily well-being. The main effects for PTSD, trait activated-NA, and PTSD, and the Social Anxiety × PTSD interaction effect were all estimated simultaneously. As for Social Anxiety × PTSD severity interaction effects, none of them approached statistical significance (*p*-values ranged from .13 to .92 and Effect Size *r*s ranged from .00 to .22). Therefore, Social Anxiety × PTSD were subsequently removed from the regression models.

As shown in Table 5, even after accounting for PTSD and global activated-NA, social anxiety was uniquely associated with lower daily emotional well-being (i.e., affect balance, negative

Table 3  
Hierarchical linear models of differences in daily well-being between veterans with and without PTSD

Predictors	Affect balance <sup>a</sup>			Positive affect			Negative affect			Positive social activity			Intrinsically motivating activity			Self-esteem				
	B	t-test	ES	r	B	t-test	ES	r	B	t-test	ES	r	B	t-test	ES	r	B	t-test	ES	r
Intercept	3.72	3.25***	16.62	24.78***	12.89	19.65***	6.22	34.50***	5.06	18.80***	14.48	32.45***	4.83	5.42***	14.48	32.45***	4.83	5.42***	14.48	32.45***
PTSD group	9.29	4.05***	3.18	2.37*	-6.10	-4.65***	.79	2.20*	.65	1.20	.29	.17	.60	.17	.60	.17	.60	.17	.60	.17
ES for PTSD	.49		.32		.55		.29		.17		.60		.17		.60		.17		.60	

Notes: n = 55 (27 PTSD group, 28 non-PTSD group). \*p < .05. \*\*p < .01. \*\*\*p < .001. All p-values were two-tailed. PTSD Group: 1 = PTSD group; 2 = non-PTSD group. ES = Effect size. Affect Balance, higher scores reflect a greater rate of PA compared to NA for each day.

Table 4  
Hierarchical linear models of bivariate relations of social anxiety with daily well-being

Predictors	Affect balance <sup>a</sup>		Positive affect		Negative affect		Positive social activity		Intrinsically motivating activity		Self-esteem	
	<i>B</i>	<i>t</i> -test	<i>B</i>	<i>t</i> -test	<i>B</i>	<i>t</i> -test	<i>B</i>	<i>t</i> -test	<i>B</i>	<i>t</i> -test	<i>B</i>	<i>t</i> -test
Intercept	3.31	3.31***	16.37	24.86***	13.10	23.25***	6.16	37.75***	4.98	19.40***	14.35	34.58***
Social anxiety	-.33	-6.57***	-.12	-3.69***	.21	7.34***	-.03	-4.07***	-.03	-2.33*	-.14	-6.79***
<i>ES</i> for social anxiety	.68		.46		.72		.52		.31		.69	

Notes: *n* = 55 (27 PTSD group, 28 non-PTSD group). \**p* < .05. \*\**p* < .01. \*\*\**p* < .001. All *p*-values were two-tailed. *ES* = Effect size. Affect Balance, higher scores reflect a greater rate of PA compared to NA for each day.

Table 5  
Hierarchical linear models of relations of social anxiety and distress variables with daily emotional well-being

Predictors	Affect balance <sup>a</sup>		Positive affect		Negative affect		Positive social activity		Intrinsically motivating activity		Self-esteem							
	<i>B</i>	<i>t</i> -test	<i>ES</i>	<i>r</i>	<i>B</i>	<i>t</i> -test	<i>ES</i>	<i>r</i>	<i>B</i>	<i>t</i> -test	<i>ES</i>	<i>r</i>						
Intercept	6.52	1.43	.20	18.12	5.75***	.63	11.75	4.65***	.55	6.73	8.10***	.76	5.46	4.33***	.53	14.51	10.04***	.82
PTSD group	-2.12	-.72	.10	-1.16	-.57	.08	.89	.54***	.08	-.37	-.67	.10	-.32	-.39	.06	-.10	-.11	.02
Trait NA	-.39	-2.92**	.38	-.17	-1.83+	.25	.23	3.14**	.41	-.03	-1.68+	.23	-.03	-.79	.11	-.22	-4.95***	.58
Social anxiety	-.19	-2.57*	.34	-.07	-1.29	.18	.12	2.89**	.38	-.02	-2.05*	.28	-.02	-1.10	.16	-.04	-1.78+	.25

Notes: *n* = 55 (27 PTSD group, 28 non-PTSD group). +  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . All *p*-values were two-tailed. *ES* = Effect size. Social Anxiety × PTSD interaction effects were removed from models for failing to reach or approach statistical significance.

<sup>a</sup>For Affect Balance, higher scores reflect a greater rate of PA compared to NA for each day.

affect), positive social activity, and a trend for self-esteem. After controlling for PTSD and trait activated-NA, social anxiety also was associated with less daily gratitude emotions,  $t(51) = 2.36$ ,  $p = .02$ ,  $ESr = .32$  (see footnote one). PTSD,  $t(51) = 2.23$ ,  $p = .02$ ,  $ESr = .30$ , was also related to less daily gratitude emotions, and there was a trend for trait activated-NA ( $p = .10$ ). Social anxiety was a unique predictor for five of seven outcomes with unique effect size  $r$ s ranging from .25 (for self-esteem) to .38 (for NA). As expected, trait activated-NA was uniquely associated with prototypical variables in the psychopathology literature such as daily NA and self-esteem. Surprisingly, trait activated-NA also had a trend toward lower positive social activity. PTSD failed to exhibit unique relationships with daily well-being indicators. Overall, social anxiety was uniquely related to several dimensions of daily well-being in veterans with and without PTSD, with the magnitude of all effects in the medium to large range (Cohen, 1988). As anticipated with these conservative tests, the magnitude of social anxiety effects were substantially reduced after statistically controlling for shared variance with PTSD and global NA (i.e., compare effect sizes for social anxiety in Tables 4 and 5).

#### *PTSD, social anxiety, and percentage of pleasant days*

In contrast to the other experience sampling outcomes, the percentage of pleasant days (i.e., days on which daily PA > NA) during the assessment period was a between-subjects criterion. Veterans with PTSD exhibited significantly fewer pleasant days than veterans without PTSD,  $t(75) = -3.39$ ,  $p < .001$ ,  $d = .78$ . On average, veterans with PTSD had pleasant days during 32.7% of the 2-week assessment period compared to 63.7% for veterans without PTSD. Social anxiety was negatively related to the percentage of pleasant days,  $r(77) = -.55$ ,  $p < .001$ . To examine the incremental effect of social anxiety, hierarchical regression analyses were conducted with PTSD and trait activated-NA entered at Step 1, social anxiety at Step 2, and the Social Anxiety  $\times$  PTSD interaction at Step 3. Results indicated that Step 1 accounted for 24% of the variance,  $F(2, 74) = 11.69$ ,  $p < .001$ , at Step 2, social anxiety explained an additional 8.3% of the variance in pleasant days,  $F\Delta(1, 73) = 8.94$ ,  $p = .004$ , whereas the interaction effect accounted for a non-significant, additional 1.7% of the variance ( $p = .18$ ). Overall, veterans with PTSD had a smaller percentage of pleasant days during the assessment period and social anxiety was uniquely associated with less pleasant days.

## **Discussion**

There is some support for a broadened profile of social anxiety encompassing high negative subjective experiences *and* low positive subjective experiences. For over 10 years, data and theory have indicated that depression can be differentiated from anxiety because only depression is associated with diminished PA and reward responsiveness (Clark & Watson, 1991; Davidson, 1998); whereas both are related to elevated NA. An often ignored caveat to this body of work is the systematic failure to include clients with excessive social anxiety in the anxiety group samples. For those few studies available, social anxiety, as for depressive disorders, has been shown to lead to reports of lower dispositional PA (Brown et al., 1998; Kashdan, 2002, 2004; Watson et al., 1988a). These findings remained even after adjustments for depressive symptoms and global

negative affectivity. Unfortunately, most of this work has been circumscribed to a single global self-report measure of activated PA (i.e., the PANAS; Brown et al., 1998; Watson et al., 1988b) (see Kashdan 2002, 2004 for exceptions).

The present data replicated and extended this work by examining the effects of social anxiety on global and daily positive emotions and experiences in PTSD and non-PTSD samples. Social anxiety accounted for significant incremental variance in the majority of outcomes in PTSD and non-PTSD veterans. After controlling for PTSD and trait NA, social anxiety had unique negative relations with nine of 10 *global* well-being and character strength outcomes and six of eight daily well-being outcomes (i.e., affect balance, NA, positive social activity, self-esteem, gratitude, percentage of pleasant days). However, we failed to find evidence for a “joint vulnerability hypothesis” in which veterans with PTSD and excessive social anxiety would be particularly vulnerable to diminished positive psychological functioning. It is possible that PTSD may amplify the adverse effects of social anxiety in veterans given that PTSD and social anxiety share common sequelae such as heightened vigilance for threats, suppression of emotions, and doubts about self-worth. Our failure to find evidence for Social Anxiety  $\times$  PTSD diagnoses should be considered preliminary, as there are more appropriate methodologies to evaluate this model (see *Study Limitations*).

We speculate that social anxiety has affects on well-being over and above the presence of PTSD diagnoses and general emotional distress because of the importance of rewarding social interactions for positive psychological functioning (Diener & Seligman, 2002; Myers & Diener, 1995) and the unique contribution of excessive social anxiety to interpersonal dysfunction. As discussed in the introduction, persons with excessive social anxiety tend to first, avoid social situations and second, when in social situations, be hypervigilant about social threats (e.g., humiliation, negative evaluations), ruminate about such threats, and engage in self-protective behaviors. Self-protective efforts include restriction of emotional expression, safety behaviors, such as talking and moving very little, and cognitive strategies, such as mentally scrutinizing and filtering language before verbalization for the sole purpose of effortful impression management to prevent rejection (prevention mode; Leary, 1995; Wells et al., 1995). Unfortunately, these sorts of impression management strategies are exerted at the expense of being a fully engaged social partner readily available for the pleasures that are common to social interaction (promotion mode). For example, emotional expressiveness provides salient information including social intentions and judgments, and incentives or disincentives for the subsequent behavior of interaction partners. Restricting emotions disrupts the coordination of social interactions and relationships. These avoidance behaviors are thought to impair social activity above and beyond the direct adverse effects of PTSD-related avoidance behaviors on social interactions. Moreover, the residual effects of social distress and impairment appear to extend to other salient life domains such as occupational functioning, educational attainment, physical health (e.g., Schneier et al., 1994), and even life longevity (Berkman & Syme, 1979).

### *Relationship between PTSD and well-being*

Male veterans with PTSD exhibited greater social anxiety and lower well-being and character strengths compared to non-PTSD veterans. With both global self-report scales and informant ratings, the magnitude of group differences was large. When assessing daily well-being over two



weeks, veterans with PTSD exhibited less emotional well-being (PA, NA, percentage of pleasant days during assessment period), self-esteem, and positive social activity compared to non-PTSD veterans; no group differences were found in intrinsically motivating activity. The magnitude of group differences in global and daily well-being ranged from medium to extremely large effects (Cohen, 1988). Across various constructs and methodologies, these results suggest that PTSD in veterans is associated with decrements in positive psychological functioning.

Cognitive and emotional processing models of PTSD provide possible explanations for the impairments in positive psychological functioning observed in the PTSD group (Ehlers & Clark, 2000; Litz, 1992). According to these models, PTSD symptoms are maintained by the avoidance of trauma related situations and processing of trauma information such that negative appraisals with themes of looming danger, loss, and incompetence predominate. The avoidance behaviors reduce opportunities for survivors to emotionally process and integrate traumatic memories, and modify erroneous cognitions. Moreover, the avoidance behaviors can be expected to directly lead to diminished well-being. The ready triggering of trauma-related sensations leads to an elaboration of mood-congruent aversive experiences, such as intense negative emotions and self-appraisals (Foa & Kozak, 1986). With the majority of attentional resources (at any one time) being allocated to negative appraisals of the self and future, the awareness and accessibility of positive experiences is disrupted. PTSD-related avoidance behaviors especially common among combat veterans, such as avoiding situations where it is difficult to visually monitor others, also directly diminish the opportunity to participate in rewarding social activities, which are the human acts thought to have the strongest link to positive experiences (Baumeister & Leary, 1995). It is important to note, however, that the absence of unique relationships between PTSD and well-being in our data raises the possibility that the low levels of well-being observed in the PTSD group were due to general distress or other co-morbid disorders as opposed to any PTSD-specific mechanisms.

#### *Daily versus global measures of well-being*

Our use of a multi-method approach to well-being, including a prospective, within-person experience sampling design, departed from the majority of research on the correlates and consequences of psychopathology and trauma. The two weeks of diary data can be considered representative slices of veterans' daily phenomenological experiences, and appeared to produce more veridical data than the global self-reports. For daily measures, social anxiety, as would be predicted by the theoretical models presented, was more closely related to interpersonal well-being (e.g., positive social activity, gratitude) than intrapersonal well-being (e.g., intrinsically motivating activity). For global measures, in contrast, social anxiety was equally closely related to both of these dimensions of well-being.

Daily and global reports rely on different memory processes and may tap into different constructs. Attending to momentary experiences in daily reports relies on the retrieval of specific memories (episodic processing) whereas completing global self-report scales relies on a reconstruction of general self-knowledge (semantic processing). These two components of memory are related. However, future research needs to examine how sensitive self-knowledge is to changes in everyday experiences. It would be particularly important for clinical researchers to investigate whether the sensitivity of self-knowledge to changes in everyday experience is affected

by the cognitive processes and biases inherent to specific psychological disorders. With respect to interventions that target positive psychological functioning, it is important to examine whether alterations in daily positive events and experiences lead to changes in self-knowledge and personality rather than ameliorating symptoms alone.

### *Study limitations*

There are several limitations regarding generalizability of the findings. First, the small numbers in each group led to less than satisfactory statistical power. The small sample sizes did not compromise the ability to detect differences in positive psychological functioning between groups or relations between social anxiety and positive psychological functioning because these effects were large. Other associations, which were not as strong, might not have been detected due to inadequate power. Proposed interactions between social anxiety and PTSD may have achieved statistical significance with a larger sample. Second, our recruitment procedures did not lead to a random sampling of veterans with and without PTSD. These concerns were partially addressed by selecting consecutive patients for the PTSD group and having a high rate of consenting patients. Third, the residential group of veterans completed their daily monitoring forms during the course of their treatment stay. However, despite potential concerns about qualitatively different everyday environments for the residential and outpatient groups, we failed to find any significant differences between the residential and outpatient PTSD groups on any global or daily variables under study. Fourth, PTSD was assessed with unstructured clinical interviews. Structured clinical interviews with tests of inter-rater reliability would have led to enhanced confidence in diagnoses. We addressed this issue by supplementing interview-based diagnoses with clinical cut-offs on the Mississippi PTSD Scale (Keane et al., 1988). In addition, as in most studies of emotion and psychopathology, we relied on the PANAS to assess global PA and NA. Unfortunately, these two subscales only address two of the four quadrants of the circumplex structure of affect (e.g., Barrett & Russell, 1998). Although it would have been ideal to have a more comprehensive assessment of NA to test the specificity of social anxiety, prior studies have found similar negative relations between social anxiety and positive experiences even after adjusting for deactivated NA (i.e., depressed mood; Brown et al., 1998).

Another limitation was that our design did not permit examination of the temporal relationship between PTSD and social anxiety. Prior research suggests that excessive social anxiety tends to precede the development of PTSD. More often than not, the onset of SAD precedes comorbid anxiety and mood conditions (68% and 85%, respectively; Brown, Campbell, Lehman, Grisham, & Mancil, 2001). The early onset of impairing social fears can disrupt opportunities for social interactions and relationships and place individuals with excessive social anxiety at a disadvantage for reaping the potent protective psychological and physiological effects of social support against daily hassles and major stressors (Cohen & Willis, 1985; Uchino et al., 1996). Alternately, PTSD symptoms, such as irritability and emotional numbing, and behaviors, such as hostility and the failure to express and share positive feelings, are likely to make social interactions difficult (Cook et al., 2004; Ruscio, Weathers, King, & King, 2002). Such impairment in social functioning can be expected to contribute to rejection, increasing social fears and rejection sensitivity and raising the likelihood of developing social anxiety. Longitudinal studies would permit elucidation of

differential symptom trajectories and whether and how psychological outcomes differ as a function of the onset of excessive social anxiety in relation to trauma. Our study addressed the question whether tendencies to be fearful and avoidant of social interactions due to evaluative concerns was incrementally important in understanding the positive experiences and traits of veterans over and above PTSD symptoms and global NA.

### *Implications for clinical research*

This study provides support for the importance of examining social anxiety and different dimensions of well-being and character strengths in veterans. The results indicate that well-being is impaired in veterans with PTSD. Dovetailing with previous work in non-veteran populations, greater social anxiety in veterans was found to be a substantial contributor to diminished well-being and interpersonal strengths. Interestingly, PTSD and general distress, as indexed by trait-activated NA, did not consistently account for individual differences in daily positive psychological functioning. These findings need to be replicated with a larger sample of veterans, and the relationship between social anxiety and well-being needs to be examined systematically. One approach would be to collect longitudinal data, using experience-sampling methods, on PTSD symptoms, social anxiety, and positive psychological functioning and explore the temporal relations between these variables. Such an approach might yield some light on the causal relations among these variables. Another valuable approach is to conduct laboratory studies that manipulate social anxiety and measure the impact of such manipulations on responses to rewarding stimuli. These and other approaches would help identify the pathways by which social anxiety diminishes well-being. If the findings from this study are confirmed and extended in the manner described, a persuasive argument would be made for developing efficacious interventions that directly address social anxiety in persons with PTSD.

Another implication of our findings is that the scope of clinical research and treatment should be broadened to address the breadth of character functioning in assessment and intervention. If the goal of treatment is to improve the quality of individual's lives, it seems essential to use appropriate constructs and methodologies that can capture a representative picture of what goes on and how people feel in their natural environment. The value of using ecologically valid assessment techniques was supported in this study by findings that suggested that data from daily measures of well-being were more internally consistent than those obtained from the global self-report instruments. The value of measuring a broad spectrum of functioning (i.e., adaptive and maladaptive functioning as well as multiple domains of adaptive functioning) was supported by findings that: (a) the differences between the PTSD and non-PTSD groups were larger for measures of psychopathology and emotional distress than for measures of well-being, and (b) there were stronger relationships between social anxiety and daily interpersonal well-being than between social anxiety and daily intrapersonal well-being. We believe that behind clients' treatment goals such as reducing intrusive thoughts, social fears, and social and occupational impairment, is the burning desire to live pleasant, satisfying, and meaningful lives. Clients suffering from years of pathology and living in a virtual "social cocoon" (Beidel & Turner, 1998), may not even know what this means, much less how to strive toward it.

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